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IMPORTANT

New for the 2003 RS equipped with the 2.4L is a combined Powertrain Control Module and Transmission Control Module in a single control module. This new module is the Next Generation Controller (NGC) for DaimlerChrysler and will be referred to as the Powertrain Control Module (PCM).
New Diagnostics procedures and New DTC numbers are some of the changes you will see which reflect the new combined module technology. The PCM will have four color coded connectors C1 through C4, (C1-BLK, C2-ORANGE, C3-WHITE, C4-GREEN), each PCM connector will have 38 pins each. Two new tools are introduced to help in diagnosing and repairing the new PCM terminals and harness connectors. The Miller #3638 terminal removal pick is introduced, you must use the Miller #3638 tool to release the connector terminals or harness and connector damage will occur. Also, the Miller #8815 Pinout Box is introduced, you must use the Miller #8815 tool to probe the PCM terminals or terminal damage will occur. There is also a new Verification test and module replacement procedure for the new PCM.

1.0 INTRODUCTION

The procedures contained in this manual include specifications, instructions, and graphics needed to diagnose the PCM Powertrain System. The diagnostics in this manual are based on the failure condition or symptom being present at time of diagnosis.

Please follow the recommendations below when choosing your diagnostic path.

1. First make sure the DRBIII® is communicating with the appropriate modules; ie., if the DRBIII® displays a No Response condition, you must diagnose this first before proceeding.
2. Read DTC's (diagnostic trouble codes) with the DRBIII®.
3. If no DTC's are present, identify the customer complaint.
4. Once the DTC or customer complaint is identified, locate the matching test in the Table of Contents and begin to diagnose the symptom.

All component location views are in Section 8.0. All connector pinouts are in Section 9.0. All system schematics are in Section 10.0.

An * placed before the symptom description indicates a customer complaint.

When repairs are required, refer to the appropriate service information for the proper removal and repair procedure.

Diagnostic procedures change every year. New diagnostic systems may be added; carryover systems may be enhanced. READ THIS DIAGNOSTIC INFORMATION BEFORE TRYING TO DIAGNOSE A VEHICLE CODE. It is recommended that you review the entire diagnostic information to become familiar with all new and changed diagnostic procedures.

If you have any comments or recommendations after reviewing the diagnostic information, please fill out the form at the back of the book and mail it back to us.

1.1 SYSTEM COVERAGE

This diagnostic procedures manual covers the 2003 RS vehicle equipped with the following engines and powertrain control modules:

- 2.4L (NGC)
- 3.3L/3.8L (SBEC)

1.2 SIX-STEP TROUBLESHOOTING PROCEDURE

Diagnosis of the powertrain control module (PCM) is done in six basic steps:

- verification of complaint
- verification of any related symptoms
- symptom analysis
- problem isolation
- repair of isolated problem
- verification of proper operation

2.0 IDENTIFICATION OF SYSTEM

The Powertrain Control Module (PCM) monitors and controls:

- Fuel System
- Idle Air Control System
- Ignition System
- Charging System
- Speed Control System
- Cooling system

3.0 SYSTEM DESCRIPTION AND FUNCTIONAL OPERATION

3.1 GENERAL DESCRIPTION

These Sequential Fuel Injection (SFI) engine systems have the latest in technical advances. The OBDII/Euro Stage III OBD diagnostics incorporated with the Powertrain Control Module (PCM) are intended to assist the field technician in repairing vehicle problems by the quickest means.

3.2 FUNCTIONAL OPERATION

3.2.1 FUEL CONTROL

The PCM controls the air/fuel ratio of the engine by varying fuel injector on time. Mass air flow is calculated using the speed density method using enigne speed, manifold absolute pressure, and air temperature change.

Different fuel calculation strategies are used depending on the operational state of the engine. During crank mode, a longer pulse width fuel pulse is delivered followed by fuel pulses determined by a crank time strategy. Cold engine operation is determined via an open loop strategy until the O2 sensors have reached operating temperature. At this point, the strategy enters a closed loop mode where fuel requirements are based upon the state of the O2 sensors, engine speed, MAP, throttle position, air temperature, battery voltage, and coolant temperature.

3.2.2 ON-BOARD DIAGNOSTICS

The PCM has been programmed to monitor many different circuits of the fuel injection system. This monitoring is called on-board diagnosis.

Certain criteria, or arming conditions, must be met for a trouble code to be entered into the PCM memory. The criteria may be a range of: engine rpm, engine temperature, and/or input voltage to the PCM. If a problem is sensed with a monitored circuit, and all of the criteria or arming conditions are met, then a trouble code will be stored in the PCM.

It is possible that a trouble code for a monitored circuit may not be entered into the PCM memory even though a malfunction has occurred. This may happen because one of the trouble code criteria have not been met.

The PCM compares input signal voltages from each input device with specifications (the established high and low limits of the range) that are programmed into it for that device. If the input voltage is not within specifications and other trouble code criteria are met, a trouble code will be stored in the PCM memory.

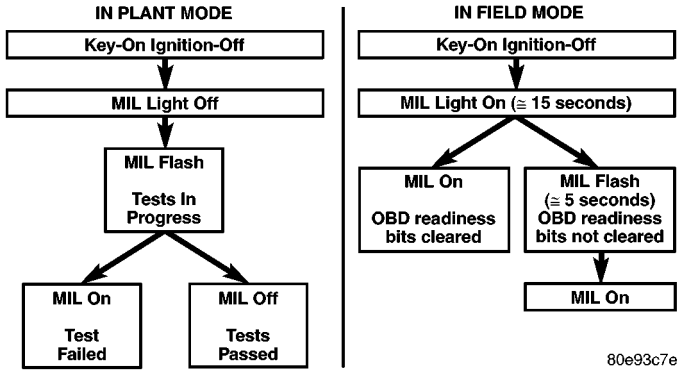
The On Board Diagnostics have evolved to the second Generation of Diagnostics referred to as OBDII/Euro Stage III OBD. These OBDII/Euro Stage III OBD Diagnostics control the functions necessary to meet the requirements of California OBDII, Federal OBD regulation and European regulation. These requirements specify the inclusion of a Malfunction Indicator Light (MIL) located on the instrument panel. The purpose of the MIL is to inform the vehicle operator in the event of a malfunction of any emission system or component.

MIL Lamp Strategy

I/M Readiness OK to test = **Key On Engine OFF** – MIL Lamp will remain on until the vehicle is started or Ignition is turned off.

I/M not ready for testing **= Key On Engine OFF** – MIL Lamp on solid for (15) seconds then MIL Lamp will flash on/off for (5) seconds then it will remain on until the vehicle is started or the Ignition is turned off.

In order to meet mandated regulations, a new feature has been added to engine control modules for 2002 to provide an OBDII I/M (In-Field Inspection & Maintenance) readiness indicator. When the engine controller is in in-field mode, turning the key on with the engine off will activate the MIL light for approximately 15 seconds. After this time, if the vehicle is ready for I/M testing the MIL light will remain fully illuminated. If the vehicle is not ready, the MIL light will blink for approximately 5 seconds and then remain on until the first engine crank or the key is turned off. This differs from the previous behavior of the MIL light, which was only activated with a failure in the system. For in-plant mode, the MIL light will function as in previous model years. Below are diagrams of how the MIL light will operate.



OBD II/EURO STAGE III OBD MONITOR INFORMATION

Comprehensive Components Monitor	Major Monitors Non Fuel Control & Non Misfire	Major Monitors Fuel Control & Misfire
Run constantly	Run Once Per Trip	Run Constantly
Includes All Engine Hardware - Sensors, Switches, Solenoids, etc.	Monitors Entire Emission System	Monitors Entire System
One Trip Faults - Turns On The MIL and Sets DTC After One Failure	Two Trip Faults - Turns On The MIL and Sets DTC After Two Consecutive Failures	Two Trip Faults - Turns On The MIL and Sets DTC After Two Consecutive Failures
Priority 3	**Priority 1 or 3**	**Priority 2 or 4**
All Checked For Continuity Open Short To Ground Short To Voltage	Done Stop Testing = Yes Oxygen Sensor Heater Oxygen Sensor Response	**Fuel Control Monitor** Monitors Fuel Control System For: Fuel System Lean Fuel System Rich Requires 3 Consecutive *Fuel System Good Trips* To Extinguish The MIL
Inputs Checked For Rationality	Catalytic Converter Efficiency Except EWMA - up to 6 tests per trip and a one trip fault	
Outputs Checked For Functionality	EGR System Evaporative Emission System	**Misfire Monitor** Monitors For Engine Misfire at: 1000 RPM Counter (Type B) **200 RPM Counter (Type A) Requires 3 Consecutive *Misfire Good Trips* To Extinguish the MIL **Type A misfire is a two trip failure. The MIL will illuminate and blink at the first failure.
Requires 3 Consecutive *Global/Alternate Good Trips* to Extinguish the MIL*	Requires 3 Consecutive *Global Good Trips* to Extinguish the MIL*	

***40 Warm Up Cycles** are required to erase DTC's *after* the MIL has been extinguished.

OBDII Monitor Run Process 2.0L/2.4L NGC Vehicles

The following procedure has been established to assist Technicians in the field with enabling and running OBDII Monitors. The order listed in the following procedure is intended to allow the technician to effectively complete each monitor and to set the CARB Readiness Status in the least time possible.

NOTE

A. Once the monitor run process has begun, do not turn off the ignition. By turning the ignition key off, monitor enabling conditions will be lost. NVLD Monitor runs after key off.
B. By performing a Battery Disconnect, or Selecting Erase DTCs, the CARB Readiness and all additional OBDII information will be cleared.

Monitor Preliminary Checks:

1. Plug a DRBIII® into the vehicle's DLC.
2. Turn the ignition, KEY ON–ENGINE OFF. Watch for MIL lamp illumination during the bulb check. MIL lamp must have illuminated, if not, repair MIL lamp.
3. On the DRB III® Select #1 DRB III Standalone.
4. Select #1 1998-2002 Diagnostics
5. Select #1 Engine
6. Select #2 DTCs and Related Functions
7. Select #1 Read DTCs
   *Verify that No Emissions Related DTCs are Present.
   *If an Emissions DTC is Present, the OBD II Monitors may not run and the CARB Readiness will not update.
   *The Emissions related DTC, will need to be repaired, then cleared. By clearing DTCs, the OBD Monitors will need to be run and completed to set the CARB Readiness Status.
8. Return to Engine Select Function Menu and Select #9, OBD II Monitors.
9. Select #3 CARB Readiness Status.

Do all the CARB Readiness Status Locations read **YES**?

*__YES__, then all monitors have been completed and this vehicle is ready to be I/M or Emission Tested.
*__NO__, then the following procedure needs to be followed to run/complete all available monitors.

NOTE

A. Only the monitors, which are **not** YES in the CARB Readiness Status, need to be completed.
B. Specific criteria need to be met for each monitor. Each monitor has a Pre-Test screen to assist in running the monitor.

For additional information, refer to the Chrysler Corporation Technical Training Workbook titled On Board Diagnostics: OBDII/EOBD, part number 81-699-01050.

The most efficient order to run the monitors has been outlined below, including suggestions to aid the process.

A. NATURAL VACUUM LEAK DETECTION WITH PURGE MONITOR

This monitor requires a cool down cycle, usually an overnight soak for at least 8 hours without the engine running. The ambient temperature must decrease overnight – parking the vehicle outside is advised. To run this test the fuel level must be between 15-85% full. For the monitor run conditions select the EVAP MON PRE-TEST in the DRB III®, OBD II Monitors Menu. The Purge monitor will run if the small leak test reports a pass. Criteria for NVLD monitor.

1. Engine off time greater than @ one hour
2. Fuel Level between 15% and 85%
3. Start Up ECT and IAT within 10°C (18°F).
4. Vehicle started and run until Purge Monitor reports a result.

NOTE: If the vehicle does not report a result and the conditions where correct. It may take up to two weeks to fail the small leak monitor. DO NOT use this test to attempt to determine a fault. Use the appropriate service information procedure for finding a small leak. If there are no faults and the conditions are correct this test will run and report a pass. Note the Small leak test can find leaks less than 10 thousands of an inch. If a small leak is present it takes approximately one week of normal driving to report a failure.

B. CATALYST/O2 MONITOR

With NGC, Catalyst and O2 Monitor information are acquired and processed at the same time. Most vehicles will need to be driven at highway speed (<50 mph) for a few minutes. Some trucks run the monitor at idle in drive. If the vehicle is equipped with a manual transmission, using 4th gear may assist in meeting the monitor running criteria. For the monitor run conditions, select the BANK 1 CAT MON PRE-TEST in the DRB III®, OBD II Monitors Menu.

C. EGR MONITOR

The EGR monitor now runs in a closed throttle decel or at idle on a warm vehicle. However, it is necessary to maintain the TPS, Map and RPM ranges to allow the monitor to complete itself. For

the monitor run conditions, select the EGR PRE-TEST in the DRB III®, OBD II Monitors Menu.

D. 02 SENSOR HEATER MONITOR

This monitor is now continuously running once the heaters are energized. Pass information will be processed at power down. For the monitor run conditions, select the O2S HEATER MON PRE-TEST in the DRB III®, OBD II Monitors Menu.

OBDII Monitor Run Process 3.3L/3.8L SBEC Vehicles

The following procedure has been established to assist Technicians in the field with enabling and running OBDII Monitors. The order listed in the following procedure is intended to allow the technician to effectively complete each monitor and to set the CARB Readiness Status in the least time possible.

NOTE

A. Once the monitor run process has begun, do not turn off the ignition. By turning the ignition key off, monitor enabling conditions will be lost. Only the 02 Heater Monitor runs after key off.
B. By performing a Battery Disconnect, or Selecting Erase DTCs, the CARB Readiness and all additional OBD information will be cleared.

Monitor Preliminary Checks:

1. Plug a DRBIII into the vehicle's DLC.
2. Turn the ignition, KEY ON–ENGINE OFF. Watch for MIL lamp illumination during the bulb check. MIL lamp must have illuminated, if not, repair MIL lamp.
3. On the DRB III Select #1 DRB III Standalone.
4. Select #1 1998-2002 Diagnostics
5. Select #1 Engine
6. Select #2 DTCs and Related Functions
7. Select #1 Read DTCs
   *Verify that No Emissions Related DTCs are Present.
   *If an Emissions DTC is Present, the OBD II Monitors may not run and the CARB Readiness will not update.
   *The Emissions related DTC, will need to be repaired, then cleared. By clearing DTCs, the OBD Monitors will need to be run and completed to set the CARB Readiness Status.
8. Return to Engine Select Function Menu and Select #9, OBD II Monitors.
9. Select #3 CARB Readiness Status.

Do all the CARB Readiness Status Locations read YES?

*YES, then all monitors have been completed and this vehicle is ready to be I/M or Emission Tested.
*NO, then the following procedure needs to be followed to run/complete all available monitors.

NOTE

A. Only the monitors, which are **not** YES in the CARB Readiness Status, need to be completed.
B. Specific criteria need to be met for each monitor. Each monitor has a Pre-Test screen to assist in running the monitor. For additional information, refer to the Chrysler Corporation Technical Training Workbook titled On Board Diagnostics, part number 81-699-97094.

The most efficient order to run the monitors has been outlined below, including suggestions to aid the process.

2. EVAPORATIVE LEAK DETECTION MONITOR (IF THE VEHICLE IS EQUIPPED WITH A LDP SYSTEM)

This monitor requires a cold start, usually an overnight soak or parked for at least 8 hours without the engine running. The engine coolant must be within 10 degrees of ambient/battery temperature, and the sensed Ambient (outside) Temperature must be between approximately 40°F and 90°F. For the monitor run conditions select the EVAP LDP MON PRE-TEST in the DRB III, OBD II Monitors Menu.

1. Catalyst Monitor

The vehicle will need to be driven at highway speed for a few minutes. If the vehicle is equipped with a manual transmission, using 4th gear may assist in meeting the monitor running criteria. For the monitor run conditions, select the EWMA CAT MON PRE-TEST in the DRB III, OBD II Monitors Menu.

2. EGR Monitor

The EGR monitor enable conditions are basic. However, it is necessary to maintain the TPS, Map and RPM ranges to allow the monitor to complete itself. For the monitor run conditions, select the EGR PRE-TEST in the DRB III, OBD II Monitors Menu.

3. O2 Sensor Monitor

The vehicle will need to be driven for a period of time and brought to a stop for a short period of time with the Automatic Transmission left in Drive. The O2S Monitor will not run in Park or Neutral on an Automatic Transmission equipped vehicle. For the monitor run conditions, select the O2S MON PRE-TEST in the DRB III, OBD II Monitors Menu.

4. Purge Monitor

All the Purge Free (PF) cells must update on the ADAPTIVE MEMORY screen before the Purge

Flow Monitor will run. For the monitor run conditions, select the PURGE FLOW MON PRE-TEST in the DRB III, OBD II Monitors Menu. The Purge Flow Monitor will not run in Park or Neutral on an Automatic Transmission equipped vehicle. The Purge Flow Monitor will attempt to run every **other** throttle closure. If all of the parameters are met and it still does not run, with your foot firmly on the Service Brake, slightly (1/4) open the Throttle and quickly close the Throttle. This will allow the Purge Free update to happen, and then the Purge Flow Monitor will Run.

5. O2 Sensor Heater Monitor

Make sure the Open Throtle Time on the O2 Heater Pre-Test Screen has been exceeded, if not, more driving will be necessary to enable this Monitor. This is an ignition key OFF monitor. Do this monitor only after all other monitors have been completed. It will be necessary to turn the ignition key back on after the DRB III goes to No Response, which indicates that the O2 Heater Monitor has completed and the PCM has gone to sleep (shut off) (approximately 3 minutes). Turn the Ignition Key back ON to see if the CARB Readiness is YES. For the monitor run conditions, select the O2S HEATER MON PRE-TEST in the DRB III, OBD II Monitors Menu.

3.2.3 OTHER CONTROLS

CHARGING SYSTEM (NGC)

The charging system is turned on when the engine is started. The Generator field is control by the PCM using a 12-volt high-side driver and a body ground circuit. The Generator output voltage is determined by the PCM. When more system voltage is needed, the PCM will applies a longer duty cycle using the 12-volt high-side drive and shortens duty cycle or none at all when less voltage is needed.

O2 SENSOR (NGC)

The O2 system with ignition on and engine off has a normalized O2 voltage of around 5 volts as displayed on the DRBIII or measured with a high impedance voltmeter. As the O2 sensor starts generating a signal the voltage will move towards 2.5 volts. The voltage will typically vary between 2.5 volts and 3.5 volts on a normal running engine. The goal voltage is also typically between 2.5 and 3.5 volts. This implies that the 0-volt through 1-volt range that you are used to is still valid, only it is shifted up by a 2.5 volt offset. This 2.5 volt supply is being delivered through the sensor return line.

SPEED CONTROL SYSTEM

The PCM controls vehicle speed by operation of the speed control servo vacuum and vent solenoids. Energizing the vacuum solenoid applies vacuum to the servo to increase throttle position. Operation of the vent solenoid slowly releases the vacuum allowing throttle position to decrease. A special vacuum dump solenoid allows immediate release of the throttle during speed control operation.

Speed control may be cancelled by braking, driver input using the speed control switches, shifting into neutral, excessive engine speed (wheels spinning), or turning the ignition off.

NOTE: If two speed control switches are selected simultaneously, the PCM will detect an illegal switch operation and turn the speed control off.

NATURAL VACUUM LEAK DETECTION (NVLD) – IF EQUIPPED

The Natural Vacuum Leak Detection (NVLD) system is the next generation evaporative leak detection system that will first be used on vehicles equipped with the Powertrain Control Module (PCM) or Next Generation Controller (NGC) starting in 2002 M.Y. This new system replaces the leak detection pump as the method of evaporative system leak detection. The current CARB requirement is to detect a leak equivalent to a 0.020″ (0.5 mm) hole. This system has the capability to detect holes of this size very dependably.

The basic leak detection theory employed with NVLD is the ″Gas Law″. This is to say that the pressure in a sealed vessel will change if the temperature of the gas in the vessel changes. The vessel will only see this effect if it is indeed sealed. Even small leaks will allow the pressure in the vessel to come to equilibrium with the ambient pressure.

In addition to the detection of very small leaks, this system has the capability of detecting medium as well as large evaporative system leaks.

THE NVLD UTILIZES THE GAS LAW PRINCIPLES

A vent valve seals the canister vent during engine off conditions. If the vapor system has a leak of less than the failure threshold, the evaporative system will be pulled into a vacuum, either due to the cool down from operating temperature or diurnal ambient temperature cycling. The diurnal effect is considered one of the primary contributors to the leak determination by this diagnostic. When the vacuum in the system exceeds about 1″ H2O (0.25 KPA), a vacuum switch closes. The switch closure sends a signal to the PCM. The PCM, via appropriate logic strategies (described below), utilizes the switch signal, or lack thereof, to make a determination of whether a leak is present.

THE NVLD DEVICE AND HOW IT FUNCTIONS

The NVLD Assembly is designed with a normally open vacuum switch, a normally closed solenoid, and a seal, which is actuated by both the solenoid and a diaphragm. The NVLD is located on the atmospheric vent side of the canister.

The normally open vacuum switch will close with about 1″ H2O (0.25 KPA) vacuum in the evaporative system. The diaphragm actuates the switch. This is above the opening point of the fuel inlet check valve in the fill tube so cap off leaks can be detected. Submerged fill systems must have recirculation lines that do not have the in-line normally closed check valve that protects the system from failed nozzle liquid ingestion, in order to detect cap off conditions.

The normally closed valve in the NVLD is intended to maintain the seal on the evaporative system during the engine off condition. If vacuum in the evaporative system exceeds 3″ to 6″ H2O (0.75 to 1.5 KPA), the valve will be pulled off the seat, opening the seal. This will protect the system from excessive vacuum as well as allowing sufficient purge flow in the event that the solenoid was to become inoperative. The solenoid actuates the valve to unseal the canister vent while the engine is running. It also will be used to close the vent during the medium and large leak tests and during the purge flow check. This solenoid requires initial 1.5 amps of current to pull the valve open but after 100 ms. will be duty cycled down to an average of about 150 mA for the remainder of the drive cycle.

Another feature in the NVLD Assembly is a diaphragm that will open the seal with pressure in the evaporative system. The seal will be opened at about 0.5″ H2O (0.12 KPA) pressure to permit the venting of vapors during refueling. An added benefit to this is that it will also allow the tank to ″breathe″ during increasing temperatures, thus limiting the pressure in the tank to this low level. This is beneficial because the induced vacuum during a subsequent declining temperature will achieve the switch closed (pass threshold) sooner than if the tank had to decay from a built up pressure.

The NVLD Assembly itself has 3 wires: Switch sense, solenoid driver and ground. It also includes a resistor to protect the switch from a short to battery or a short to ground. The PCM utilizes a high-side driver to energize and duty-cycle the solenoid.

THE PCM'S ROLE IN NVLD DIAGNOSIS:

The integral part of the diagnostic system that makes engine-off leak detection possible is a special circuit in the PCM controller. After the vehicle is turned off, a special part of the controller stays alive and monitors for an NVLD switch closure. This circuit within the PCM is very specific in its function and consumes very little power. If a switch closure is detected, it will log the event and time from key-off, and then power down. This information will be processed at the next key cycle.

NVLD LEAK DETECTION

Small Leak Test (Passive)

If, after a specified delay after key off (perhaps 5 minutes), the switch closes or is closed, the test will be pass, indicating that there is no leak. The PCM records the switch closure. The NVLD circuit in the PCM will shut down for the remainder of that particular engine off (soak) period. When the engine is started, the switch closure is recorded as a ″Pass,″ and the timers that are recording accumulated time are reset.

This diagnostic test can take at least a week to mature a leak fault. A week has been chosen for this because the vehicle will have been exposed to the largest possible drive scenarios before a decision is made (most vehicles should see both daily work and weekend driving cycles). This also satisfies CARB's stated goal of getting 3 MIL illuminations within a month for 0.020″ (0.5 mm) leak detection diagnostic.

The diagnostics will log engine run time and engine off time to determine when a week has elapsed. There is a limit on the total amount of run time that is applied to the one-week timer. There is also a limit on the total soak time that will be allowed to be applied to the one-week timer. There will be a limit on the amount of accrued run time during one specific drive that can be applied to the one-week timer.

The enabling criteria to run this monitor are:

- Fuel level less than 85%
- Ambient temperature greater than 40 °F (4.4 °C)

Rationality Tests

1. The rationality check of the switch, solenoid and seal will be performed as follows:

- At key-on, the NVLD solenoid will be energized to vent any vacuum that may be trapped in the evaporative system from the previous soak. This should result in an open switch condition.
- The solenoid will be de-energized (to seal the system) at the point where purge begins. The system / NVLD component rationality passes for that drive cycle if the switch closes after purge begins.
- The solenoid is then re-energized for the remainder of the drive cycle.
- If the switch events are not seen in a certain period of time, the rationality check will have failed (2 trip rule).

2. Purge Flow:

The above rationality check is considered sufficient to confirm purge solenoid function and conformance with the purge flow test requirement. The Purge Flow Monitor is passed based on switch activity when purge is turned on or based on a rich fuel control shift when purge is turned on.

Medium and Large Leak Test (Intrusive)

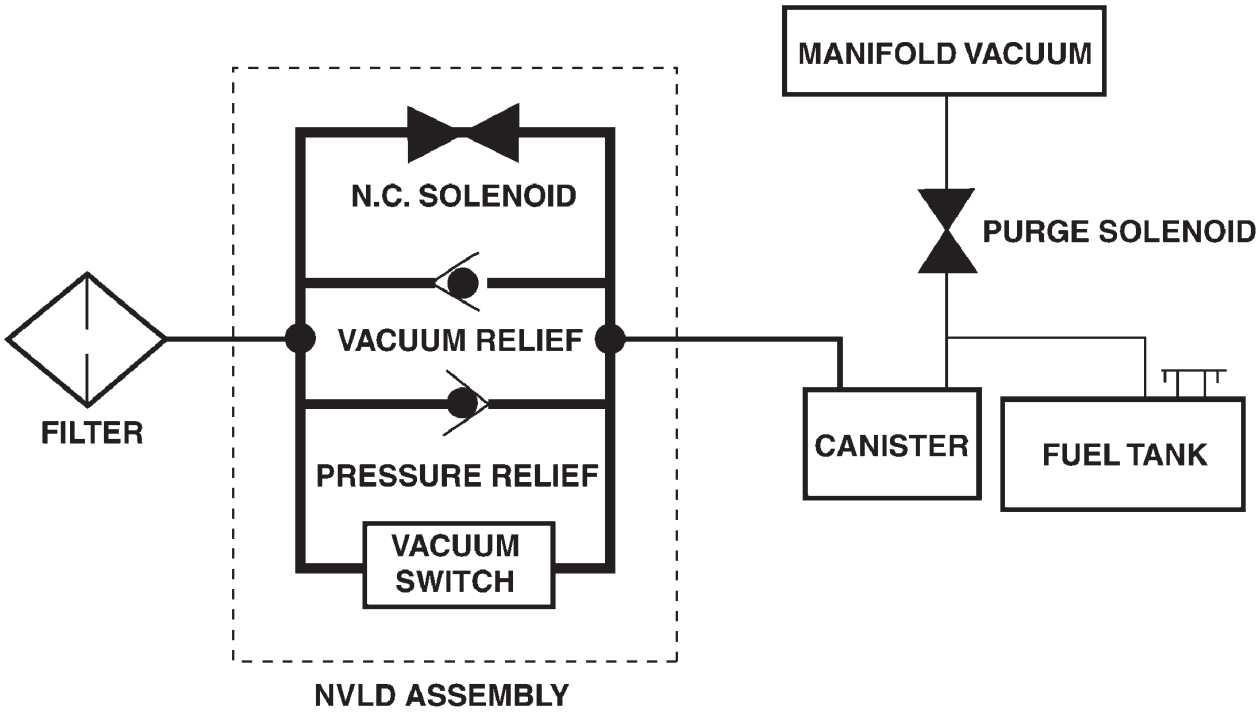
NOTE: This intrusive test will only be run if the Small Leak (passive) test fails, or is inconclusive (the switch does not close)

Enabling Conditions:

- 40 °F to 90 °F
- Engine temperature at startup within 10 °F of the ambient temperature
- Fuel level less than 85%

The intrusive Medium and Large leak are conducted as follows:

- De-energize the NVLD solenoid to seal the canister vent.
- Activate purge shortly after closed loop. Pull the tank vacuum past the vacuum switch point (1″ H2O vacuum) of the NVLD for a specific time while tracking the standard purge flow rate.
- Turn purge off and determine how long it takes to decay the tank vacuum and reopen the switch. Determine the leak size from the time it took to reopen the switch. Note: Fuel level is an important determining factor.
- If the switch does not close, a more aggressive purge flow will be applied to determine if it is a very large leak, missing fuel cap, problem with the NVLD device, purge flow problem, etc...



NATURAL VACUUM LEAK DETECTION SYSTEM

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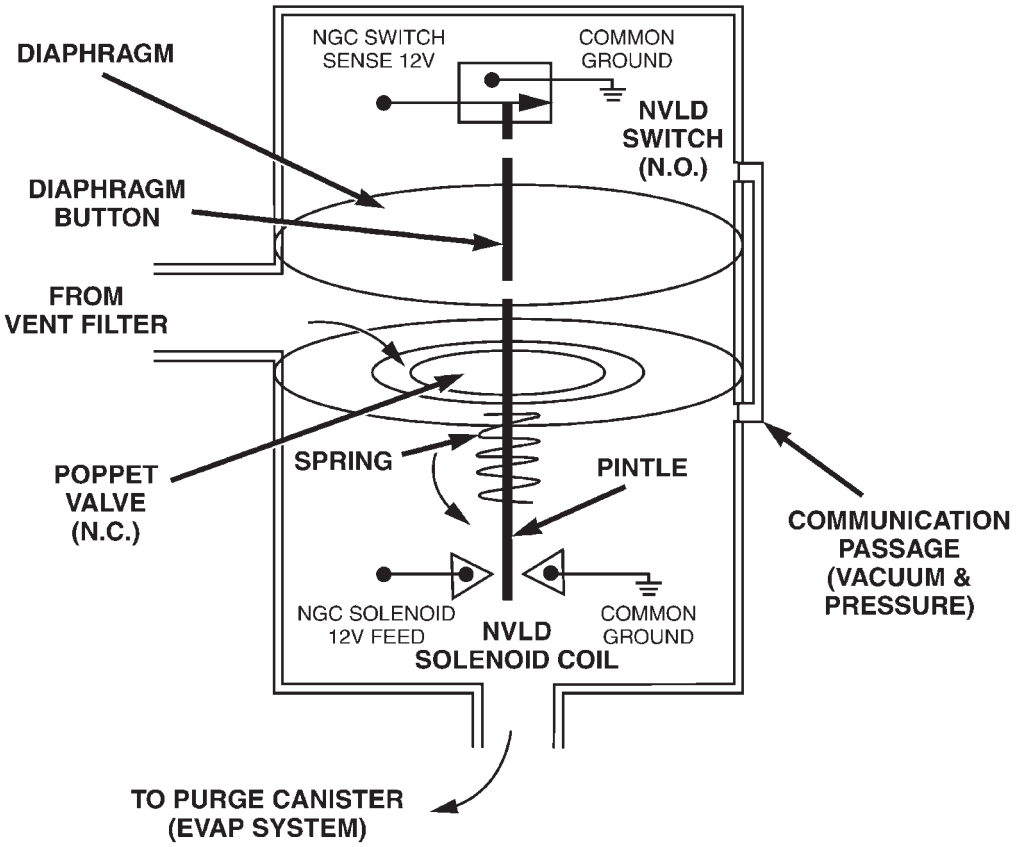
FIGURE 1

NVLD ASSEMBLY INTERNAL SCHEMATIC



NVLD Switch Closure happens at 1" H2O (Water) Vacuum (+ - 12% when new). Vacuum draws the Diaphragm up closing the Switch.

- **PRESSURE RELIEF:** The Poppet Valve is spring loaded closed (up). It opens at 1" H2O Pressure. Pressure from the Purge Canister (EVAP System) enters the top of the diaphragm chamber via an internal communication passage. Pressure then pushes the Diaphragm down unseating the Poppet Valve allow the EVAP pressure to exit to the Vent Filter.
- **VACUUM RELIEF:** The Poppet Valve is spring loaded closed (up). The Poppet Valve begins to open at 3" - 4" H2O Vacuum, and is completely open at 6" H2O (flows 70 Liters per Minute). Vacuum acts on the bottom of the Poppet Valve & draws it down to open the Purge Canister (EVAP System) to the Vent Filter.

NVLD Solenoid has a Resistance of 8 Ohms (+ - 0.5 Ohm) at 68 Degrees F. When Energized, it pulls the Pintle down thus opening the Poppet Valve and connects the Purge Canister with the Vent Filter (Atmosphere).

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FIGURE 2

LEAK DETECTION PUMP SYSTEM — IF EQUIPPED

The evaporative emission system is designed to prevent the escape of fuel vapors from the fuel system. Leaks in the system, even small ones, can allow fuel vapors to escape into the atmosphere. Government regulations require onboard testing to make sure that the evaporative (EVAP) system is functioning properly. The leak detection system tests for EVAP system leaks and blockage. It also performs self-diagnostics. During self-diagnostics, the Powertrain Control Module (PCM) first checks the Leak Detection Pump (LDP) for electrical and mechanical faults. If the first checks pass, the PCM then uses the LDP to seal the vent valve and pump air into the system to pressurize it. If a leak is present, the PCM will continue pumping the LDP to replace the air that leaks out. The PCM determines the size of the leak based on how fast/long it must pump the LDP as it tries to maintain pressure in the system.

EVAP LEAK DETECTION SYSTEM COMPONENTS (FIGURE 1)

Service Port: Used with special tools like the Miller Evaporative Emissions Leak Detector (EELD) to test for leaks in the system.

EVAP Purge Solenoid: The PCM uses the EVAP purge solenoid to control purging of excess fuel vapors stored in the EVAP canister. It remains closed during leak testing to prevent loss of pressure.

EVAP Canister: The EVAP canister stores fuel vapors from the fuel tank for purging.

EVAP Purge Orifice: Limits purge volume.

EVAP System Air Filter: Provides air to the LDP for pressurizing the system. It filters out dirt while allowing a vent to atmosphere for the EVAP system.

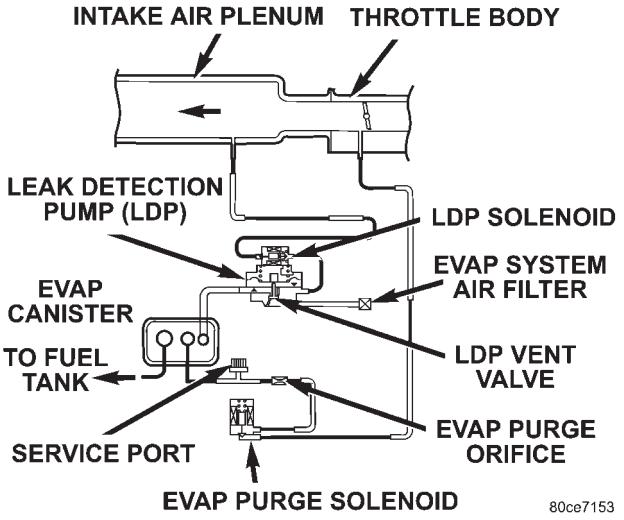


FIGURE 1

Leak Detection Pump (LDP) Components:

The main purpose of the LDP is to pressurize the fuel system for leak checking. It closes the EVAP system vent to atmospheric pressure so the system can be pressurized for leak testing. The diaphragm is powered by engine vacuum. It pumps air into the EVAP system to develop a pressure of about 7.5″ H_2O (¼) psi. A reed switch in the LDP allows the PCM to monitor the position of the LDP diaphragm. The PCM uses the reed switch input to monitor how fast the LDP is pumping air into the EVAP system. This allows detection of leaks and blockage.

The LDP assembly consists of several parts (Figure 2). The solenoid is controlled by the PCM, and it connects the upper pump cavity to either engine vacuum or atmospheric pressure. A vent valve closes the EVAP system to atmosphere, sealing the system during leak testing. The pump section of the LDP consists of a diaphragm that moves up and down to bring air in through the air filter and inlet check valve, and pump it out through an outlet check valve into the EVAP system.

The diaphragm is pulled up by engine vacuum, and pushed down by spring pressure, as the LDP solenoid turns on and off. The LDP also has a magnetic reed switch to signal diaphragm position to the PCM. When the diaphragm is down, the switch is closed, which sends a 12 V (system voltage) signal to the PCM. When the diaphragm is up, the switch is open, and there is no voltage sent to the PCM. This allows the PCM to monitor LDP pumping action as it turns the LDP solenoid on and off.

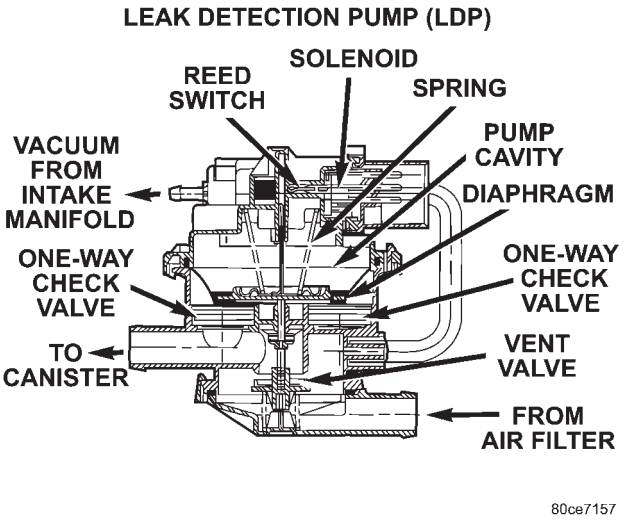


FIGURE 2

LDP AT REST (NOT POWERED)

When the LDP is at rest (no electrical/vacuum) the diaphragm is allowed to drop down if the internal (EVAP system) pressure is not greater than the return spring. The LDP solenoid blocks the engine vacuum port and opens the atmospheric

pressure port connected through the EVAP system air filter. The vent valve is held open by the diaphragm. This allows the canister to see atmospheric pressure (Figure 3).

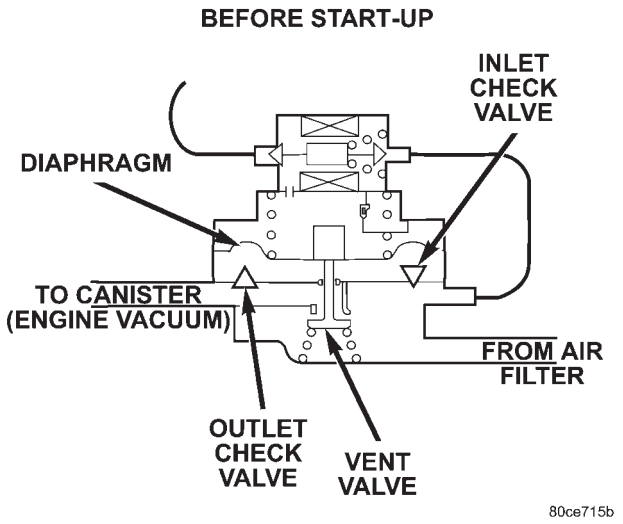


FIGURE 3

DIAPHRAGM UPWARD MOVEMENT

When the PCM energizes the LDP solenoid, the solenoid blocks the atmospheric port leading through the EVAP air filter and at the same time opens the engine vacuum port to the pump cavity above the diaphragm. The diaphragm moves upward when the vacuum above the diaphragm exceeds spring force. This upward movement closes the vent valve. It also causes low pressure below the diaphragm, unseating the inlet check valve and allowing air in from the EVAP air filter. When the diaphragm completes its upward movement, the LDP reed switch turns from closed to open (Figure 4).

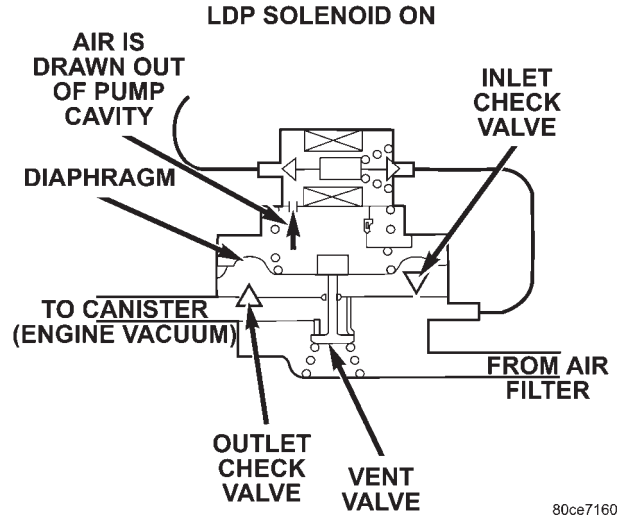


FIGURE 4

DIAPHRAGM DOWNWARD MOVEMENT

Based on reed switch input, the PCM de-energizes the LDP solenoid, causing it to block the vacuum port, and open the atmospheric port. This connects the upper pump cavity to atmosphere through the EVAP air filter. The spring is now able to push the diaphragm down. The downward movement of the diaphragm closes the inlet check valve and opens the outlet check valve pumping air into the evaporative system. The LDP reed switch turns from open to closed, allowing the PCM to monitor LDP pumping (diaphragm up/down) activity (Figure 5). During the pumping mode, the diaphragm will not move down far enough to open the vent valve.

The pumping cycle is repeated as the solenoid is turned on and off. When the evaporative system begins to pressurize, the pressure on the bottom of the diaphragm will begin to oppose the spring pressure, slowing the pumping action. The PCM watches the time from when the solenoid is de-energized, until the diaphragm drops down far enough for the reed switch to change from open to closed. If the reed switch changes too quickly, a leak may be indicated. The longer it takes the reed switch to change state, the tighter the evaporative system is sealed. If the system pressurizes too quickly, a restriction somewhere in the EVAP system may be indicated.

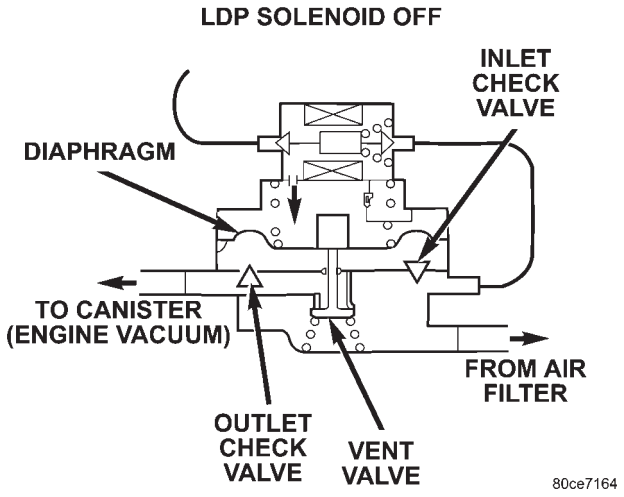


FIGURE 5

PUMPING ACTION

During portions of this test, the PCM uses the reed switch to monitor diaphragm movement. The solenoid is only turned on by the PCM after the reed switch changes from open to closed, indicating that the diaphragm has moved down. At other times during the test, the PCM will rapidly cycle the LDP solenoid on and off to quickly pressurize the system. During rapid cycling, the diaphragm will not move enough to change the reed switch state. In the state

of rapid cycling, the PCM will use a fixed time interval to cycle the solenoid.

If the system does not pass the EVAP Leak Detection Test, the following DTCs may be set:

- P0442 - EVAP LEAK MONITOR 0.040″ LEAK DETECTED
- P0455 - EVAP LEAK MONITOR LARGE LEAK DETECTED
- P0456 - EVAP LEAK MONITOR 0.020″ LEAK DETECTED
- P1486 - EVAP LEAK MON PINCHED HOSE FOUND
- P1494 - LEAK DETECTION PUMP SW OR MECH FAULT
- P1495 - LEAK DETECTION PUMP SOLENOID CIRCUIT

ENABLING CONDITIONS TO RUN EVAP LEAK DETECTION TEST

1. Cold start: with ambient temperature (obtained from modeling the inlet air temperature sensor on passenger vehicles and the battery temperature sensor on Jeep & truck vehicles) between 4°C (40°F) and 32°C (90°F) for 0.040 leak. Between 4°C (40°F) and 29°C (85°F) for 0.020 leak.
2. Engine coolant temperature within: -12° to -8°C (10° to 18°F) of battery/ambient.
3. Battery voltage between 10 and 15 volts.

NOTE: If battery voltage drops below 10 volts for more than 5 seconds during engine cranking, the EVAP Leak Detection Test will not run.

4. Low fuel warning light off (fuel level must be between 15% and 85%).
5. MAP sensor reading 22 in Hg or above (This is the manifold absolute pressure, not vacuum).
6. No engine stall during test.

NOTE: The following values are approximate and vehicle specific. Use the values seen in pre test/monitor test screen on the DRBIII®. See TSB 25-02-98 for more detail.

A DTC will not set if a one-trip fault is set or if the MIL is illuminated for any of the following:

- Purge Solenoid
- All engine Controller Self Test Faults
- All Cam and/or Crank Sensor Faults
- MAP Sensor Faults
- Ambient/Battery Temperature Sensor Electrical Faults
- All Coolant Sensor Faults
- All TPS Faults
- LDP Pressure Switch Faults
- EGR Solenoid Electrical Faults
- All Injector Faults
- Baro Out Of Range
- Vehicle Speed Faults
- LDP Solenoid Circuit

FIGURE 6 SECTION 1

When the ignition key is turned to “ON”, the LDP diaphragm should be in the down position and the LDP reed switch should be closed. If the EVAP system has residual pressure, the LDP diaphragm may be up. This could result in the LDP reed switch being open when the key is turned to “ON” and a P1494 fault could be set because the PCM is expecting the reed switch to be closed.

After the key is turned “ON”, the PCM immediately tests the LDP solenoid circuit for electrical faults. If a fault is detected, DTC P1495 will set, the MIL will illuminate, and the remaining EVAP Leak Detection Test is canceled.

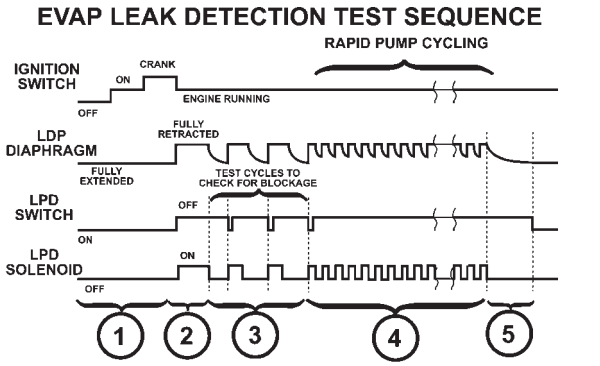


FIGURE 6

NOTE: If battery temperature is not within range, or if the engine coolant temperature is not within a specified range of the battery temperature, the PCM will not run tests for DTC P1494, P1486, P0442, P0455 and P0441. These temperature calibrations may be different between models.

FIGURE 6 SECTION 2

If DTC P1495 is not set, the PCM will check for DTC P1494. If the LDP reed switch was closed when the key was turned to “ON”, the PCM energizes the LDP solenoid for up to 8 seconds and monitors the LDP switch. As the LDP diaphragm is pulled up by engine vacuum, the LDP reed switch should change from closed to open. If it does not, the

PCM sets a temporary fault (P1494) in memory, and waits until the next time the Enabling Conditions are met to run the test again. If this is again detected, P1494 is stored and the MIL is illuminated. If the problem is not detected during the next enabling cycle, the temporary fault will be cleared.

However, if the PCM detects the reed switch open when the key is turned to "ON", the PCM must determine if this condition is due to residual pressure in the EVAP system, or an actual fault. The PCM stores information in memory on EVAP system purging from previous engine run or drive cycles.

If little or no purging took place, residual pressure could be holding the LDP diaphragm up, causing the LDP switch to be open. Since this is not a malfunction, the PCM cancels the EVAP Leak Detection Test without setting the temporary fault.

If there was sufficient purging during the previous cycle to eliminate EVAP system pressure, the PCM judges that this is a malfunction and sets a temporary fault in memory. The next time that the Enabling Conditions are met, the test will run again. If the fault is again detected, the MIL will illuminate and DTC 1494 will be stored. If the fault is not detected, the temporary fault will be cleared.

FIGURE 6 SECTION 3

If no fault has been detected so far, the PCM begins testing for possible blockage in the EVAP system between the LDP and the fuel tank. This is done by monitoring the time required for the LDP to pump air into the EVAP system during two to three pump cycles. If no blockage is present, the LDP diaphragm is able to quickly pump air out of the LDP each time the PCM turns off the LDP solenoid. If a blockage is present, the PCM detects that the LDP takes longer to complete each pump cycle. If the pump cycles take longer than expected (approximately 6 to 10 seconds) the PCM will suspect a blockage. On the next drive when Enabling Conditions are met, the test will run again. If blockage is again detected, P1486 is stored, and the MIL is illuminated.

FIGURE 6 SECTION 4

After the LDP blockage tests are completed, the PCM then tests for EVAP system leakage. First, the PCM commands the LDP to rapidly pump for 20 to 50 seconds (depending on fuel level) to build pressure in the EVAP system. This evaluates the system to see if it can be sufficiently pressurized. This evaluation (rapid pump cycling) may occur several times prior to leak checking. The LDP reed switch does not close and open during rapid pumping because the diaphragm does not travel through its full range during this part of the test.

FIGURE 6 SECTION 5

Next, the PCM performs one or more test cycles by monitoring the time required for the LDP reed switch to close (diaphragm to drop) after the LDP solenoid is turned off.

If the switch does not close, or closes after a long delay, it means that the system does not have any significant leakage and the EVAP Leak Detection Test is complete.

However, if the LDP reed switch closes quickly, there may be a leak or the fuel level may be low enough that the LDP must pump more to finish pressurizing the EVAP system. In this case, the PCM will rapidly pump the LDP again to build pressure in the EVAP system, and follow that by monitoring the time needed for several LDP test cycles. This process of rapid pumping followed by several LDP test cycles may repeat several times before the PCM judges that a leak is present.

When leaks are present, the LDP test cycle time will be inversely proportional to the size of the leak. The larger the leak, the shorter the test cycle time. The smaller the leak, the longer the test cycle time. DTC's may be set when a leak as small as 0.5 mm (0.020″) diameter is present.

If the system detects a leak, a temporary fault will be stored in PCM memory. The time it takes to detect a .020, .040, or Large leak is based on calibrations that vary from model to model. The important point to remember is if a leak is again detected on the next EVAP Leak Detection Test, the MIL will illuminate and a DTC will be stored based on the size of leak detected. If no leak is detected during the next test, the temporary fault will be cleared.

DIAGNOSTIC TIPS

During diagnosis, you can compare the LDP solenoid activity with the monitor sequence in Figure 6. If the PCM detects a problem that could set a DTC, the testing is halted and LDP solenoid activity will stop. As each section of the test begins, it indicates that the previous section passed successfully. By watching to see which tests complete, you can see if any conditions are present that the PCM considers abnormal.

For example, if the LDP solenoid is energized for the test cycles to test for blockage (P1486), it means that the LDP has already passed its test for P1494. Then, if the PCM detects a possible blockage, it will set a temporary fault without turning on the MIL and continue the leak portion of the test. However, the PCM will assume that the system is already pressurized and skip the rapid pump cycles.

Always diagnose leaks, if possible, before disconnecting connections. Disconnecting connections may mask a leak condition.

Keep in mind that if the purge solenoid seat is leaking, it could go undetected since the leak would end up in the intake manifold. Disconnect the purge solenoid at the manifold when leak checking. In addition, a pinched hose fault (P1486) could set if the purge solenoid does not purge the fuel system properly (blocked seat). The purge solenoid must vent the fuel system prior to the LDP system test. If the purge solenoid cannot properly vent the system the LDP cannot properly complete the test for P1486 and this fault can set due to pressure being in the EVAP system during the test sequence.

Multiple actuation's of the DRBIII® Leak Detection Pump (LDP) Monitor Test can hide a 0.020 leak because of excess vapor generation. Additionally, any source for additional vapor generation can hide a small leak in the EVAP system. Excess vapor generation can delay the fall of the LDP diaphragm thus hiding the small leak. An example of this condition could be bringing a cold vehicle into a warm shop for testing or high ambient temperatures.

Fully plugged and partially plugged underhood vacuum lines have been known to set MIL conditions. P1494 and P0456 can be set for this reason. Always, thoroughly, check plumbing for pinches or blockage before condemning components.

TEST EQUIPMENT

The Evaporative Emission Leak Detector (EELD) Miller Special Tool 8404 is capable of visually detecting leaks in the evaporative system and will take the place of the ultrasonic leak detector 6917A. The EELD utilizes shop air and a smoke generator to visually detect leaks down to 0.020 or smaller. The food grade oil used to make the smoke includes an UV trace dye that will leave telltale signs of the leak under a black light. This is helpful when components have to be removed to determine the exact leak location. For detailed test instructions, follow the operators manual packaged with the EELD.

IMPORTANT

Be sure that the PCM has the latest software update. Reprogram as indicated by any applicable Technical Service Bulletin. After LDP repairs are completed, verify the repair by running the DRBIII® Leak Detection Pump (LDP) Monitor Test as described in Technical Service Bulletin 18-12-99.

3.2.4 PCM OPERATING MODES

As input signals to the PCM change, the PCM adjusts its response to output devices. For example, the PCM must calculate a different injector pulse width and ignition timing for idle than it does for wide open throttle. There are several different modes of operation that determine how the PCM responds to the various input signals.

There are two types of engine control operation: **open loop** and **closed loop.**

In **open loop** operation, the PCM receives input signals and responds according to preset programming. Inputs from the heated oxygen sensors are not monitored.

In **closed loop** operation, the PCM monitors the inputs from the heated oxygen sensors. This input indicates to the PCM whether or not the calculated injector pulse width results in the ideal air-fuel ratio of 14.7 parts air to 1 part fuel. By monitoring the exhaust oxygen content through the oxygen sensor, the PCM can fine tune injector pulse width. Fine tuning injector pulse width allows the PCM to achieve the lowest emission levels while maintaining optimum fuel economy.

The engine start-up (crank), engine warm-up, and wide open throttle modes are open loop modes. Under most operating conditions, closed loop modes occur with the engine at operating temperature.

3.2.5 NON-MONITORED CIRCUITS

The PCM does not monitor the following circuits, systems, and conditions even though they could have malfunctions that result in driveability problems. A diagnostic code may not be displayed for the following conditions. However, problems with these systems may cause a diagnostic code to be displayed for other systems. For example, a fuel pressure problem will not register a diagnostic code directly, but could cause a rich or lean condition. This could cause an oxygen sensor, fuel system, or misfire monitor trouble code to be stored in the PCM.

Engine Timing − The PCM cannot detect an incorrectly indexed timing chain, camshaft sprocket, or crankshaft sprocket. The PCM also cannot detect an incorrectly indexed distributor.(*)

Fuel Pressure − Fuel pressure is controlled by the fuel pressure regulator. The PCM cannot detect a clogged fuel pump inlet filter, clogged in-line filter, or a pinched fuel supply.(*)

Fuel Injectors − The PCM cannot detect if a fuel injector is clogged, the pintle is sticking, or the wrong injectors are installed.(*)

Fuel Requirements − Poor quality gasoline can cause problems such as hard starting, stalling, and stumble. Use of methanol-gasoline blends may result in starting and driveability problems. See individual symptoms and their definitions in Section 6.0 (Glossary of Terms).

PCM Grounds − The PCM cannot detect a poor system ground. However, a diagnostic trouble code may be stored in the PCM as a result of this condition.

Throttle Body Air Flow − The PCM cannot detect a clogged or restricted air cleaner inlet or filter element.(*)

Exhaust System − The PCM cannot detect a plugged, restricted, or leaking exhaust system.(*)

Cylinder Compression − The PCM cannot detect uneven, low, or high engine cylinder compression.(*)

Excessive Oil Consumption − Although the PCM monitors the exhaust stream oxygen content through the oxygen sensor when the system is in a closed loop, it cannot determine excessive oil consumption.

NOTE: Any of these conditions could result in a rich or lean condition causing an oxygen sensor TROUBLE CODE to be stored in the PCM, or the vehicle may exhibit one or more of the driveability symptoms listed in the Table of Contents.

3.2.6 SKIS OVERVIEW

The Sentry Key Immobilizer System (SKIS) is designed to prevent unauthorized vehicle operation. The system consists of a Sentry Key Immobilizer Module (SKIM), ignition key(s) equipped with a transponder chip and PCM. When the ignition switch is turned on, the SKIM interrogates the ignition key. If the ignition key is Valid or Invalid, the SKIM sends a PCI Bus message to the PCM indicating ignition key status. Upon receiving this message the PCM will terminate engine operation, or allow the engine to continue to operate.

3.2.7 SKIM ON-BOARD DIAGNOSTICS

The SKIM has been programmed to transmit and monitor many different coded messages as well as PCI Bus messages. This monitoring is called On Board Diagnosis.

Certain criteria must be met for a diagnostic trouble code to be entered into the SKIM memory. The criteria may be a range of; Input voltage, PCI Bus message, or coded messages to the SKIM. If all of the criteria for monitoring a circuit or function are met and a fault is sensed, a diagnostic trouble code will be stored in the SKIM memory.

3.2.8 SKIS OPERATION

When ignition power is supplied to the SKIM, the SKIM performs an internal self-test. After the self-test is completed, the SKIM energizes the antenna (this activates the transponder chip) and sends a challenge to the transponder chip. The transponder chip responds to the challenge by generating an encrypted response message using the following:

Secret Key - This is an electronically stored value (identification number) that is unique to each SKIS. The secret key is stored in the SKIM, PCM and all ignition key transponders.

Challenge - This is a random number that is generated by the SKIM at each ignition key cycle.

The secret key and challenge are the two variables used in the algorithm that produces the encrypted response message. The transponder uses the crypto algorithm to receive, decode and respond to the message sent by the SKIM. After responding to the coded message, the transponder sends a transponder I.D. message to the SKIM. The SKIM compares the transponder I.D. to the available valid key codes in the SKIM memory (8 key maximum at any one time). After validating the key ignition the SKIM sends a PCI Bus message called a Seed Request to the engine controller then waits for a PCM response. If the PCM does not respond, the SKIM will send the seed request again. After three failed attempts the SKIM will stop sending the seed request and store a trouble code. If the PCM sends a seed response, the SKIM sends a valid/invalid key message to the PCM. This is an encrypted message that is generated using the following:

VIN - Vehicle Identification Number

Seed - This is a random number that is generated by the PCM at each ignition key cycle.

The VIN and seed are the two variables used in the rolling code algorithm that encrypts the valid/invalid key message. The PCM uses the rolling code algorithm to receive, decode and respond to the valid/invalid key message sent by the SKIM. After sending the valid/invalid key message the SKIM waits 3.5 seconds for a PCM status message from the PCM. If the PCM does not respond with a valid key message to the SKIM, a fault is detected and a trouble code is stored.

The SKIS incorporates a VTSS LED located on the instrument panel upper cover. The LED receives switched ignition voltage and is hardwired to the body control module. The LED is actuated when the SKIM sends a PCI Bus message to the body controller requesting the LED on. The body controller then provides the ground for the LED. The SKIM will request VTSS LED operation for the following:

- bulb checks at ignition on
- to alert the vehicle operator to a SKIS malfunction
- customer key programming mode

For all faults except transponder faults and VTSS LED remains on steady. In the event of a transponder fault the LED flashes at a rate of 1 Hz (once per second). If a fault is present the LED will remain on or flashing for the complete ignition cycle. If a fault is stored in SKIM memory which prevents the system from operating properly, the PCM will allow

the engine to start and run (for 2 seconds) up to six times. After the sixth attempt, the PCM disables the starter relay until the fault is corrected.

3.2.9 PROGRAMMING THE POWERTRAIN CONTROL MODULE

Important Note: Before replacing the PCM for a failed driver, control circuit or ground circuit, be sure to check the related component/circuit integrity for failures not detected due to a double fault in the circuit. Most PCM driver/control circuit failures are caused by internal failure to components (i.e. 12-volt pull-ups, drivers and ground sensors). These failures are difficult to detect when a double fault has occurred and only one DTC has set.

NOTE: If the PCM and the SKIM are replaced at the same time, program the VIN into the PCM first. All vehicle keys will then need to be replaced and programmed to the new SKIM.

The SKIS Secret Key is an I.D. code that is unique to each SKIS. This code is programmed and stored in the SKIM, engine controller and transponder chip (ignition key). When replacing the PCM it is necessary to program the secret key into the PCM.

NOTE: After replacing the PCM, you must reprogram pinion factor.

1. Turn the ignition on (transmission in park/ neutral).
2. Use the DRBIII® and select THEFT ALARM, SKIM then MISCELLANEOUS.
3. Select PCM REPLACED.
4. Enter secured access mode by entering the vehicle four-digit PIN.

NOTE: If three attempts are made to enter the secure access mode using an incorrect PIN, secured access mode will be locked out for one hour. To exit this lockout mode, turn the ignition to the run position for one hour then enter the correct PIN. (Ensure all accessories are turned off. Also monitor the battery state and connect a battery charger if necessary).

5. Press ENTER to transfer the secret key (the SKIM will send the secret key to the PCM).

3.2.10 PROGRAMMING THE SENTRY KEY IMMOBILIZER MODULE

NOTE: If the PCM and the SKIM are replaced at the same time, program the VIN into the PCM first. All vehicle keys will then need to be replaced and programmed to the new SKIM.

1. Turn the ignition on (transmission in park/ neutral).
2. Use the DRBIII® and select THEFT ALARM, SKIM then MISCELLANEOUS.
3. Select SKIM MODULE REPLACEMENT (GASOLINE).
4. Program the vehicle four-digit PIN into the SKIM.
5. Select COUNTRY CODE and enter the correct country.

NOTE: Be sure to enter the correct country code. If the incorrect country code is programmed into SKIM, the SKIM must be replaced.

6. Select UPDATE VIN (the SKIM will learn the VIN from the PCM).
7. Press ENTER to transfer the VIN (the PCM will send the VIN to the SKIM).
8. The DRBIII® will ask if you want to transfer the secret key. Select ENTER to transfer secret key from the PCM. This will ensure the current vehicle ignition keys will still operate the SKIS system.

3.2.11 PROGRAMMING THE IGNITION KEYS TO THE SENTRY KEY IMMOBILIZER MODULE

1. Turn the ignition on (transmission in park/ neutral).
2. Use the DRBIII® and select THEFT ALARM, SKIM, then MISCELLANEOUS.
3. Select PROGRAM IGNITION KEYS.
4. Enter secured access mode by entering the vehicle four-digit PIN.

NOTE: A maximum of eight keys can be learned to each SKIM AT ONE TIME. Once a key is learned to a SKIM it (the key) cannot be transferred to another vehicle.

If ignition key programming is unsuccessful, the DRBIII® will display one of the following messages:

Programming Not Attempted - The DRBIII® attempts to read the programmed key status and there are no keys programmed in the SKIM memory.

Programming Key Failed - (Possible Used Key From Wrong Vehicle) - SKIM is unable to program key due to one of the following:

– faulty ignition key transponder

– ignition key is programmed to another vehicle.

8 Keys Already Learned, Programming Not Done - SKIM transponder ID memory is full.

1. Obtain ignition keys to be programmed from customer (8 keys maximum)
2. Using the DRBIII®, erase all ignition keys by selecting MISCELLANEOUS and ERASE ALL CURRENT IGN. KEYS
3. Program all ignition keys.

Learned Key In Ignition - Ignition key transponder ID is currently programmed in SKIM memory.

3.3 DIAGNOSTIC TROUBLE CODES

Each diagnostic trouble code is diagnosed by following a specific testing procedure. The diagnostic test procedures contain step-by-step instructions for determining the cause of trouble codes as well as no trouble code problems. It is not necessary to perform all of the tests in this book to diagnose an individual code.

Always begin by reading the diagnostic trouble codes using the DRBIII®.

3.3.1 HARD CODE

A diagnostic trouble code that comes back within one cycle of the ignition key is a hard code. This means that the defect is there every time the powertrain control module checks that circuit or function. Procedures in this manual verify if the DTC is a hard code at the beginning of each test. When it is not a hard code, an intermittent test must be performed.

DTC's that are for OBDII/Euro Stage III OBD monitors will not set with just the ignition key on. Comparing these to non-emission DTC's, they will seem like an intermittent. These DTC's require a set of parameters to be performed (The DRBIII® pre-test screens will help with this for MONITOR DTC's), this is called a TRIP. All OBDII/Euro Stage III OBD DTCs will be set after one or in some cases two trip failures, and the MIL will be turned on. These DTC's require three successful, no failures, TRIPS to extinguish the MIL, followed by 40 warm-up cycles to erase the DTC. For further explanation of TRIPS, Pre-test screens, Warm-up cycles, and the use of the DRBIII®, refer to the On Board Diagnostic training booklet #81-699-97094.

3.3.2 INTERMITTENT CODE

A diagnostic trouble code that is not there every time the PCM checks the circuit is an intermittent DTC. Most intermittent DTC's are caused by wiring or connector problems. Defects that come and go like this are the most difficult to diagnose; they must be looked for under specific conditions that cause them. The following checks may assist you in identifying a possible intermittent problem:

- Visually inspect related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals.
- Visually inspect the related harnesses. Look for chafed, pierced, or partially broken wire.
- Refer to any technical service bulletins that may apply.
- Use the DRBIII® data recorder or co-pilot.

3.3.3 STARTS SINCE SET COUNTER

The start since set counter counts the number of times the vehicle has been started since codes were last set, erased, or the battery was disconnected. The reset counter will count up to 255 start counts.

The number of starts helps determine when the trouble code actually happened. This is recorded by the PCM and can be viewed on the DRBIII® as STARTS since set.

When there are no trouble codes stored in memory, the DRBIII® will display NO DTC's Detected and the reset counter will show STARTS since clear = XXX.

3.3.4 DISTANCE SINCE MI SET

The Euro Stage III OBD directive requires that the distance traveled by the vehicle while the MI is activated must be available at any instant through the serial port on the standard data link connector. This feature works as follows:

1. If the MI is illuminated due to a fault, the distance count is updated (i.e. it is counting).
2. If there is a stale MI fault (i.e. the fault is still frozen in memory but the MI has been extinguished due to 3 good trips), the distance count is held (i.e. frozen).
3. If the distance count is being held due to (Item 2.) and the fault is cleared, the distance is cleared (set to zero).
4. If the distance count is being held due to (Item 2.) and another MI occurs, the distance count is reset (to) and begins updating anew.
5. If a fault occurs while the MI is already illuminated due to a previous fault (the distance count

is updating), then the distance count continues to update w/out interruption.

6. If the MI is flashing due to active misfire and there is an active fault (i.e. matured fault for which 3 good trips have not occurred), the distance count behaves as the MI in ON.
7. If the MI is flashing due to active misfire and there is no active fault (i.e. the MI is flashing for a 1 malf.), the distance count behaves as if the MI is off (because it is not yet a matured fault).
8. The distance count is cleared whenever the fault is cleared. (Via 40 warm up cycles, or via scan tool).

3.4 USING THE DRBIII®

Refer to the DRBIII® user's guide for instructions and assistance with reading DTC's, erasing DTC's, and other DRBIII® functions.

3.5 DRBIII® ERROR MESSAGES AND BLANK SCREEN

Under normal operation, the DRBIII® will display one of only two error messages:

– User-Requested WARM Boot or User-Requested COLD Boot

If the DRBIII® should display any other error message, record the entire display and call the Star Center for information and assistance. This is a sample of such an error message display:

```
ver: 2.14
date: 26 Jul93
file: key_itf.cc
date: Jul 26 1993
line: 548
err: 0x1
User-Requested COLD Boot

Press MORE to switch between this display
   and the application screen.
Press F4 when done noting information.
```

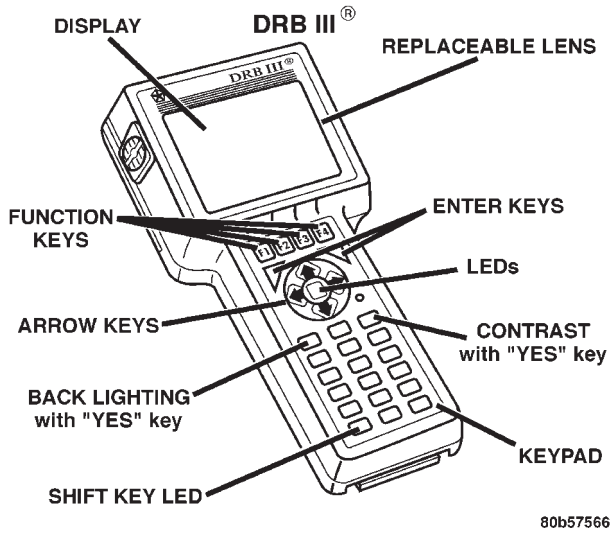
3.5.1 DRBIII® DOES NOT POWER UP

If the LED's do not light or no sound is emitted at start up, check for loose cable connections or a bad cable. Check the vehicle battery voltage (data link connector cavity 16). A minimum of 11 volts is required to adequately power the DRBIII®.

If all connections are proper between theDRBIII® and the vehicle or other devices, and the vehicle battery is fully charged, and inoperative DRBIII® may be the result of faulty cable or vehicle wiring.

3.5.2 DISPLAY IS NOT VISIBLE

Low temperatures will affect the visibility of the display. Adjust the contrast to compensate for this condition



4.0 DISCLAIMERS, SAFETY, WARNINGS

4.1 DISCLAIMERS

All information, illustrations, and specifications contained in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

4.2 SAFETY

4.2.1 TECHNICIAN SAFETY INFORMATION

WARNING: ENGINES PRODUCE CARBON MONOXIDE THAT IS ODORLESS, CAUSES SLOWER REACTION TIME, AND CAN LEAD TO SERIOUS INJURY. WHEN THE ENGINE IS OPERATING, KEEP SERVICE AREAS WELL VENTILATED OR ATTACH THE VEHICLE EXHAUST SYSTEM TO THE SHOP EXHAUST REMOVAL SYSTEM.

Set the parking brake and block the wheels before testing or repairing the vehicle. It is especially important to block the wheels on front-wheel drive vehicles; the parking brake does not hold the drive wheels.

When servicing a vehicle, always wear eye protection, and remove any metal jewelry such as watchbands or bracelets that might make an inadvertent electrical contact.

When diagnosing a powertrain system problem, it is important to follow approved procedures where applicable. These procedures can be found in service manual procedures. Following these procedures is very important to the safety of individuals performing diagnostic tests.

4.2.2 VEHICLE PREPARATION FOR TESTING

Make sure the vehicle being tested has a fully charged battery. If it does not, false diagnostic codes or error messages may occur.

4.2.3 SERVICING SUB ASSEMBLIES

Some components of the powertrain system are intended to be serviced in assembly only. Attempting to remove or repair certain system subcomponents may result in personal injury and/or improper system operation. Only those components with approved repair and installation procedures in the service manual should be serviced.

4.2.4 DRBIII® SAFETY INFORMATION

WARNING: EXCEEDING THE LIMITS OF THE DRBIII® MULTIMETER IS DANGEROUS. IT CAN EXPOSE YOU TO SERIOUS INJURY. CAREFULLY READ AND UNDERSTAND THE CAUTIONS AND THE SPECIFICATION LIMITS.

Follow the vehicle manufacturer's service specifications at all times.

- Do not use the DRBIII® if it has been damaged.
- Do not use the test leads if the insulation is damaged or if metal is exposed.
- To avoid electrical shock, do not touch the test leads, tips, or the circuit being tested.
- Choose the proper range and function for the measurement. Do not try voltage or current measurements that may exceed the rated capacity.
- Do not exceed the limits shown in the table below:

FUNCTION	INPUT LIMIT
Volts	0 - 500 peak volts AC 0 - 500 volts DC
Ohms (resistance)*	0 - 1.12 megohms
Frequency Measured Frequency Generated	0 - 10 kHz
Temperature	-58 - 1100°F -50 - 600°C

* Ohms cannot be measured if voltage is present. Ohms can be measured only in a non-powered circuit.

- Voltage between any terminal and ground must not exceed 500v DC or 500v peak AC.
- Use caution when measuring voltage above 25v DC or 25v AC.
- The circuit being tested must be protected by a 10A fuse or circuit breaker.
- Use the low current shunt to measure circuits up to 10A. Use the high current clamp to measure circuits exceeding 10A.
- When testing for the presence of voltage or current, make sure the meter is functioning correctly. Take a reading of a known voltage or current before accepting a zero reading.
- When measuring current, connect the meter in series with the load.
- Disconnect the live test lead before disconnecting the common test lead.
- When using the meter function, keep the DRBIII® away from spark plug or coil wires to avoid measuring error from outside interference.

4.3 WARNINGS AND CAUTIONS

4.3.1 ROAD TEST WARNINGS

Some complaints will require a test drive as part of the repair verification procedure. The purpose of the test drive is to try to duplicate the diagnostic code or symptom condition.

CAUTION: Before road testing a vehicle, be sure that all components are reassembled. During the test drive, do not try to read the DRBIII® screen while in motion. Do not hang the DRBIII® from the rear view mirror or operate it yourself. Have an assistant available to operate the DRBIII®.

4.3.2 VEHICLE DAMAGE CAUTIONS

Before disconnecting any control module, make sure the ignition is off. Failure to do so could damage the module.

When testing voltage or continuity at any control module, use the terminal side (not the wire end) of the connector. Do not probe a wire through the insulation; this will damage it and eventually cause it to fail because of corrosion.

Be careful when performing electrical tests so as to prevent accidental shorting of terminals. Such mistakes can damage fuses or components. Also, a second DTC could be set, making diagnosis of the original problem more difficult.

5.0 REQUIRED TOOLS AND EQUIPMENT

DRBIII® (diagnostic read-out box) scan tool
Evaporative System Diagnostic Kit #6917
fuel filler adapter #8382
fuel pressure adapter (C-6631) or #6539
fuel pressure kit (C-4799-B) or #5069
fuel release hose (C-4799-1)
Min Air flow fitting #6714
Pinout Box (Miller #8815)
jumper wires
ohmmeter
oscilloscope
vacuum gauge
voltmeter
12 volt test light minimum 25 ohms resistance with probe #6801

CAUTION: A 12 volt test light should not be used for the following circuits, damage to the powertrain controller will occur.

- 5 Volt Supply
- 8 Volt Supply
- J1850 PCI Bus
- CCD Bus
- CKP Sensor Signal
- CMP Sensor Signal
- Vehicle Speed Sensor Signal
- O2 Sensor Signal

6.0 GLOSSARY OF TERMS

ABS	anti-lock brake system
backfire, popback	fuel ignites in either the intake or the exhaust system
CKP	crank position sensor
CMP	camshaft position sensor
cuts out, misses	a steady pulsation or the inability of the engine to maintain a consistent rpm
DLC	data link connector (previously called engine diagnostic connector)
detonation, spark knock	a mild to severe ping, especially under loaded engine conditions
ECT	engine coolant temperature sensor
EGR	exhaust gas recirculation valve and system
generator	previously called alternator
hard start	The engine takes longer than usual to start, even though it is able to crank normally.
hesitation, sag, stumble	There is a momentary lack of response when the throttle is opened. This can occur at all vehicle speeds. If it is severe enough, the engine may stall.
IAT	intake/inlet air temperature sensor
IAC	idle air control motor
JTEC	Combined engine and transmission control module
lack of power, sluggish	The engine has less than expected power, with little or no increase in vehicle speed when the throttle is opened.
LDP	leak detection pump
MAP	manifold absolute pressure sensor
MIL	malfunction indicator lamp
MTV	manifold tuning valve
NGC	next generation controller
O2S	oxygen sensor
PCI	programmable communication interface
PCM	powertrain control module
PCV	positive crankcase ventilation
PEP	peripheral expansion port
poor fuel economy	There is significantly less fuel mileage than other vehicles of the same design ad configuration
rough, unstable, or erratic idle stalling	The engine runs unevenly at idle and causes the engine to shake if it is severe enough. The engine idle rpm may vary (called hunting). This condition may cause stalling if it is severe enough.
SBEC	single board engine controller
SKIM	sentry key immobilizer module
SKIS	sentry key immobilizer system
start & stall	The engine starts but immediately dies.

surge	engine rpm fluctuation without corresponding change in throttle position sensor
TPS	throttle position sensor
TRS	transmission range sensor
VSS	vehicle speed sensor/signal

NOTES

7.0

DIAGNOSTIC INFORMATION AND PROCEDURES

Symptom:

*NO RESPONSE FROM PCM (PCI BUS) - NGC

POSSIBLE CAUSES
PCM PCI NO RESPONSE
POWERTRAIN CONTROL MODULE
PCI BUS CIRCUIT OPEN

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: As soon as one or more module communicates with the DRB, answer the question.** With the DRB, enter Body then Body Computer With the DRB, enter Body then Electro/Mechanical Cluster (MIC). With the DRB, enter Passive Restraints then Airbag. Were you able to establish communications with any of the modules? Yes → Go To 2 No → Refer to symptom PCI Bus Communication Failure in the Communications category. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
2	With the DRB read the Powertrain DTC's. This is to ensure power and grounds to the PCM are operational. **NOTE: If the DRB will not read PCM DTC's, follow the NO RESPONSE TO PCM (PCM SCI only) symptom path.** Turn the ignition off. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the appropriate terminal of special tool #8815. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Repair the PCI Bus circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom:

*NO RESPONSE FROM PCM (PCI BUS) - SBEC

POSSIBLE CAUSES
PCM PCI NO RESPONSE
PCI BUS CIRCUIT OPEN
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: As soon as one or more module communicates with the DRB, answer the question.** With the DRB, enter Body then Body Computer. With the DRB, enter Anti-Lock Brakes. With the DRB, enter Body then Electro/Mechanical Cluster (MIC). With the DRB, enter Passive Restraints then Airbag. Were you able to establish communications with any of the modules? Yes → Go To 2 No → Refer to symptom PCI Bus Communication Failure in the Communications category. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

*NO RESPONSE FROM PCM (PCI BUS) - SBEC — Continued

TEST	ACTION	APPLICABILITY
2	With the DRB read PCM Diagnostic Trouble Codes. This is to ensure power and grounds to the PCM are operational. **NOTE: If the DRB will not read PCM DTC's, follow the NO RESPONSE TO PCM (SCI only) symptom path.** **NOTE: If the vehicle will not start and the DRBIII® displays a no response message, refer to the appropriate symptom in the powertrain diagnostic procedures.** Turn the ignition off. Disconnect the PCM C2 harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. Install DRBIII® SuperCard 2 CH8361 into DRBIII®. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the PCM ground. Connect the Red lead to the PCI Bus circuit in the PCM connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Repair the PCI Bus circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

Symptom:

*NO RESPONSE FROM PCM (PCM SCI ONLY) - NGC

POSSIBLE CAUSES
CHECK PCM POWERS AND GROUNDS
PCM SCI TRANSMIT CIRCUIT SHORTED TO VOLTAGE
PCM SCI RECEIVE CIRCUIT SHORTED TO VOLTAGE
PCM SCI CIRCUITS SHORTED TOGETHER
PCM SCI TRANSMIT CIRCUIT SHORTED TO GROUND
PCM SCI RECEIVE CIRCUIT SHORTED TO GROUND
PCM SCI RECEIVE CIRCUIT OPEN
PCM SCI TRANSMIT CIRCUIT OPEN
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Perform the symptom Checking PCM Power and Ground Circuits in the Driveability category. **NOTE: With the DRBIII® in the generic scan tool mode, attempt to communicate with the PCM.** **NOTE: If the DRBIII® can communicate with the PCM in the generic scan tool mode, it may not be necessary to perform this step.** Did the vehicle pass this test? Yes → Go To 2 No → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
2	Turn the ignition off. Disconnect the DRBIII® from the DLC. Disconnect the PCM harness connectors. Turn the ignition on. Measure the voltage of the PCM SCI Transmit circuit at the Data Link harness connector (cav 7). Is the voltage above 1.0 volt? Yes → Repair the PCM SCI Transmit circuit for a short to voltage. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Go To 3	All
3	Turn the ignition off. Disconnect the DRBIII® from the DLC. Disconnect the PCM harness connectors. Turn the ignition on. Measure the voltage of the PCM SCI Receive circuit at the Data Link harness connector (cav 12). Is the voltage above 1.0 volt? Yes → Repair the PCM SCI Receive circuit for a short to voltage. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Go To 4	All

*NO RESPONSE FROM PCM (PCM SCI ONLY) - NGC — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the DRBIII® from the DLC. Disconnect the PCM harness connectors. Measure the resistance between the PCM SCI Transmit circuit and the PCM SCI Receive circuit at the Data Link harness connector (cavs 7 and 12). Is the resistance below 5.0 ohms? Yes → Repair the short between the PCM SCI Transmit and the PCM SCI Receive circuits. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the PCM harness connectors. Disconnect the DRBIII® from the DLC. Measure the resistance between ground and the PCM SCI Transmit circuit at the Data Link harness connector (cav 7). Is the resistance below 5.0 ohms? Yes → Repair the PCM SCI Transmit circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Go To 6	All
6	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the DRBIII® from the DLC. Measure the resistance between ground and the PCM SCI Receive circuit in the Data Link harness connector (cav 12). Is the resistance below 5.0 ohms? Yes → Repair the PCM SCI Receive circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Go To 7	All
7	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the DRBIII® from the DLC. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the PCM SCI Receive circuit from the Data Link harness connector (cav 12) to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 8 No → Repair the PCM SCI Receive circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

*NO RESPONSE FROM PCM (PCM SCI ONLY) - NGC — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the DRBIII® from the DLC. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the PCM SCI Transmit circuit from the Data Link harness connector (cav 7) to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the PCM SCI Transmit circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
9	If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom:

*NO RESPONSE FROM PCM (SCI ONLY) - SBEC

POSSIBLE CAUSES
CHECK PCM POWERS AND GROUNDS
SCI TRANSMIT CIRCUIT SHORTED TO VOLTAGE
TRANSMISSION CONTROL MODULE
SCI RECEIVE CIRCUIT SHORTED TO VOLTAGE
SCI CIRCUITS SHORTED TOGETHER
SCI TRANSMIT CIRCUIT SHORTED TO GROUND
SCI RECEIVE CIRCUIT SHORTED TO GROUND
SCI RECEIVE CIRCUIT OPEN
SCI TRANSMIT CIRCUIT OPEN
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Perform the symptom Checking PCM Power and Ground Circuits in the Driveability category. **NOTE: With the DRBIII® in the generic scan tool mode, attempt to communicate with the PCM.** **NOTE: If the DRBIII® can communicate with the PCM in the generic scan tool mode, it may not be necessary to perform this step.** Did the vehicle pass this test? Yes → Go To 2 No → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
2	Turn the ignition off. Disconnect the PCM C2 harness connector. Disconnect the DRB from the DLC. Measure the resistance between ground and the SCI Transmit (PCM) circuit. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Go To 4	All
3	Turn the ignition off. Disconnect the TCM harness connector (if equipped). **NOTE: If vehicle is not equipped with a TCM, answer yes to the question.** Measure the resistance between ground and the SCI Transmit (PCM) circuit. Is the resistance below 5.0 ohms? Yes → Repair the SCI Transmit (PCM) circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Replace the Transmission Control Module in accordance with the service information. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

*NO RESPONSE FROM PCM (SCI ONLY) - SBEC — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the DRB from the DLC. Disconnect the PCM harness connectors. Disconnect the TCM harness connector (if equipped). Turn the ignition on. Measure the voltage of the SCI Transmit (PCM) circuit at the DLC connector. Is the voltage above 1.0 volt? Yes → Repair the SCI Transmit (PCM) circuit for a short to voltage. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the DRB from the DLC. Disconnect the PCM harness connectors. Turn the ignition on. Measure the voltage of the SCI Receive (PCM) circuit at the DLC connector. Is the voltage above 1.0 volt? Yes → Repair the SCI Receive (PCM) circuit for a short to voltage. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 6	All
6	Turn the ignition off. Disconnect the DRB from the DLC. Disconnect the PCM harness connectors. Measure the resistance between the SCI Transmit (PCM) circuit and the SCI Receive (PCM) circuit at the PCM connector. Is the resistance below 5.0 ohms? Yes → Repair the short between the SCI Transmit (PCM) and the SCI Receive (PCM) circuits. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 7	All
7	Turn the ignition off. Disconnect the PCM C2 harness connector. Disconnect the DRB from the DLC. Measure the resistance between ground and the SCI Receive (PCM) circuit. Is the resistance below 5.0 ohms? Yes → Repair the SCI Receive (PCM) circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 8	All
8	Turn the ignition off. Disconnect the PCM C2 harness connector. Disconnect the DRB from the DLC. Measure the resistance of the SCI Receive (PCM) circuit between the PCM C2 connector and the DLC. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the SCI Receive (PCM) circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

*NO RESPONSE FROM PCM (SCI ONLY) - SBEC — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off. Disconnect the PCM C2 harness connector. Disconnect the DRB from the DLC. Measure the resistance of the SCI Transmit (PCM) circuit between the PCM C2 connector and the DLC. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the SCI Transmit (PCM) circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
10	If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

Symptom:
*PCI BUS COMMUNICATION FAILURE

POSSIBLE CAUSES
WIRING HARNESS INTERMITTENT
OPEN PCI BUS CIRCUIT AT THE DATA LINK CONNECTOR (DLC)
PCI BUS CIRCUIT SHORTED TO VOLTAGE
MODULE SHORT TO VOLTAGE
PCI BUS CIRCUIT SHORTED TO GROUND
MODULE SHORT TO GROUND

TEST	ACTION	APPLICABILITY
1	**Note: Determine which modules this vehicle is equipped with before beginning.** **Note: When attempting to communicate with any of the modules on this vehicle, the DRB will display 1 of 2 different communication errors: a NO RESPONSE message or a BUS +/- SIGNALS OPEN message.** Turn the ignition on. Using the DRB, attempt to communicate with the following control modules: Airbag Control Module Body Control Module MIC (INSTRUMENT CLUSTER) Was the DRBIII® able to communicate with one or more Module(s)? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition off. **Note: Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires.** **Note: Visually inspect the related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: If the DRB can not communicate with a single module, refer to the category list for the related symptom.** Were any problems found? Yes → Repair wiring harness/connectors as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

*PCI BUS COMMUNICATION FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the PCM/ECM harness connector. Note: If equipped with NGC follow the caution below. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Disconnect the DRB from the Data Link Connector (DLC). Disconnect the negative battery cable. Measure the resistance of the PCI Bus circuit between the Data Link Connector (DLC) and the PCM/ECM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	**NOTE: Reconnect the PCM/ECM harness connector and the negative battery cable.** Turn the ignition on. Measure the voltage of the PCI Bus circuit at the Data Link Connector (DLC). Is the voltage above 7.0 volts? Yes → Go To 5 No → Go To 6	All
5	Turn the ignition off. Using a voltmeter, connect one end to the PCI Bus circuit at the DLC, and the other end to ground. **Note: When performing the next step turn the ignition off (wait one minute) before disconnecting any module. When the module is disconnected turn the ignition on to check for a short to voltage.** Turn the ignition on. While monitoring the voltmeter, disconnect each module the vehicle is equipped with one at a time. Is the voltage steadily above 7.0 volts with all the modules disconnected? Yes → Repair the PCI Bus circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the module that when disconnected the short to voltage was eliminated. Perform BODY VERIFICATION TEST - VER 1.	All

*PCI BUS COMMUNICATION FAILURE — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the negative battery cable. Using a ohmmeter, connect one end to the PCI Bus circuit at the DLC, and the other end to ground. While monitoring the ohmmeter, disconnect each module the vehicle is equipped with one at a time. **NOTE: Total bus resistance to ground thru all of the modules is typically between 350 to 1000 ohms. The more modules on the bus, the lower the total bus resistance will be.** Is the resistance below 150.0 ohms with all the modules disconnected? Yes → Repair the PCI Bus circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the module that when disconnected the short to ground was eliminated. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

P0106-BAROMETRIC PRESSURE OUT OF RANGE

When Monitored and Set Condition:

P0106-BAROMETRIC PRESSURE OUT OF RANGE

When Monitored: With the ignition key on. No Cam or Crank signal within 75 ms. Engine speed at less than 250 RPM. Battery voltage greater than 10.4 volts.

Set Condition: The PCM senses the voltage from the MAP sensor to be less than 2.196 volts but above 0.0392 volts for 300 milliseconds.

POSSIBLE CAUSES
MAP SENSOR VOLTAGE BELOW 2.2 VOLTS
(F855) 5-VOLT SUPPLY CIRCUIT SHORTED TO VOLTAGE
(F855) 5-VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(F855) 5-VOLT SUPPLY CIRCUIT OPEN
(K1) MAP SENSOR SIGNAL CIRCUIT OPEN
(K1) MAP SENSOR SIGNAL CIRCUIT SHORTED TO GROUND
(K1) MAP SENSOR SIGNAL CIRCUIT SHORT TO (K900) SENSOR GROUND
MAP SENSOR INTERNAL FAILURE
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. (Do not start engine) With the DRBIII®, read the MAP Sensor voltage. Is the voltage below 2.2 volts? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Disconnect the MAP Sensor harness connector. Turn the ignition on. Measure the voltage of the (F855) 5-volt Supply circuit in the MAP Sensor harness connector. Is the voltage between 4.5 to 5.2 volts? Yes → Go To 3 No → Go To 7	All

P0106-BAROMETRIC PRESSURE OUT OF RANGE — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K1) MAP Sensor Signal circuit between the MAP Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the open in the (K1) MAP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K1) MAP Sensor Signal circuit in the MAP Sensor harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K1) MAP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the Map Sensor harness connector. Disconnect PCM harness connector. Measure the resistance of the (K1) MAP Sensor Signal circuit in the MAP Sensor harness connector to (K900) Sensor Ground circuit. Is the resistance below 100 ohms? Yes → Repair the short to (K900) Sensor Ground in the (K1) MAP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	Turn the ignition off. Disconnect the MAP Sensor harness connector. Turn the ignition on. With the DRBIII®, monitor the MAP Sensor voltage. Is the voltage above 2.2 volts? Yes → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 10	All
7	Turn the ignition off. Disconnect the MAP Sensor harness connector. Turn the ignition on. Measure the voltage of the (F855) 5-volt Supply circuit in the MAP Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the the short to battery voltage in the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 8	All

P0106-BAROMETRIC PRESSURE OUT OF RANGE — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F855) 5-volt Supply circuit in the MAP Sensor harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 9	All
9	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F855) 5-volt Supply circuit between the MAP Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the open in the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
10	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0107-MAP SENSOR VOLTAGE TOO LOW

When Monitored and Set Condition:

P0107-MAP SENSOR VOLTAGE TOO LOW

When Monitored: Engine speed between 600 to 3500 RPM. TPS voltage less than 1.2 volts. Battery voltage greater than 10.4 volts.

Set Condition: The MAP sensor signal voltage is below 0.0392 volt for 1.7 seconds.

POSSIBLE CAUSES
MAP SENSOR VOLTAGE BELOW .04 VOLTS
(F855) 5-VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(F855) 5-VOLT SUPPLY CIRCUIT OPEN
MAP SENSOR INTERNAL FAILURE
(K1) MAP SENSOR SIGNAL CIRCUIT SHORTED TO GROUND
(K1) MAP SENSOR SIGNAL CIRCUIT SHORTED TO (K900) SENSOR GROUND CIRCUIT
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read the MAP Sensor voltage. Is the voltage below 1.2 volts? Yes → Go To 3 No → Go To 2	All
2	Start the engine. With the DRBIII®, read the MAP Sensor voltage. Is the voltage below .04 volts? Yes → Go To 3 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
3	Turn the ignition off. Disconnect the MAP Sensor harness connector. Turn the ignition on. Measure the voltage of the (F855) 5-volt Supply circuit in the MAP Sensor harness connector. Is the voltage between 4.5 to 5.2 volts? Yes → Go To 4 No → Go To 7	All

P0107-MAP SENSOR VOLTAGE TOO LOW — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K1) MAP Sensor Signal circuit between the MAP Sensor harness connector and ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K1) MAP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K1) MAP Sensor Signal circuit and the (K900) Sensor Ground circuit in the MAP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to (K900) Sensor Ground circuit in the (K1) MAP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	Turn the ignition off. Disconnect the MAP Sensor harness connector. Turn the ignition on. With the DRBIII®, monitor the MAP Sensor voltage. Is the voltage above 1.2 volts? Yes → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 9	All
7	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F855) 5-volt Supply circuit in the MAP Sensor harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 8	All
8	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F855) 5-volt Supply circuit between the MAP Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the open in the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0107-MAP SENSOR VOLTAGE TOO LOW — Continued

TEST	ACTION	APPLICABILITY
9	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0108-MAP SENSOR VOLTAGE TOO HIGH

When Monitored and Set Condition:

P0108-MAP SENSOR VOLTAGE TOO HIGH

When Monitored: Engine speed between 600 to 3500 RPM. TP sensor voltage less than 1.2 volts for greater than 1.7 seconds. Battery voltage greater than 10.4 volts

Set Condition: The MAP sensor signal voltage is greater than 4.96 volts.

POSSIBLE CAUSES
MAP SENSOR VOLTAGE ABOVE 4.6 VOLTS
(K1) MAP SENSOR SIGNAL CIRCUIT SHORTED TO (F855) 5-VOLT SUPPLY CIRCUIT
(K1) MAP SENSOR SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
(K1) MAP SENSOR SIGNAL CIRCUIT OPEN
(K900) SENSOR GROUND CIRCUIT OPEN
MAP SENSOR INTERNAL FAILURE
PCM

TEST	ACTION	APPLICABILITY
1	Start the engine. With the DRBIII®, read the MAP Sensor voltage. Is the voltage above 4.6 volts? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K1) MAP Sensor Signal circuit and the (F855) 5-volt Supply circuit in the MAP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to the (F855) 5-volt Supply circuit in the (K1) MAP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All

P0108-MAP SENSOR VOLTAGE TOO HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the MAP Sensor harness connector. Turn the ignition on. Measure the voltage of the (K1) MAP Sensor Signal circuit in the MAP Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the the short to battery voltage in the (K1) MAP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K1) MAP Sensor Signal circuit between the MAP Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the (K1) MAP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K900) Sensor Ground circuit between the MAP Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K900) Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	Turn the ignition off. Disconnect the MAP Sensor harness connector. Connect a jumper wire between the (K1) MAP Sensor Signal circuit and the (K900) Sensor ground circuit. With the DRBIII®, monitor the MAP Sensor voltage. Turn the ignition on. Is the voltage below 1.0 volt? Yes → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 7	All
7	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0111-INTAKE AIR TEMP SENSOR PERFORMANCE

When Monitored and Set Condition:

P0111-INTAKE AIR TEMP SENSOR PERFORMANCE

When Monitored: With the ignition on. Coolant Temperature greater than 71°C (160°F) No Inlet Air Temperature Sensor Faults present

Set Condition: After 5 warm cycles have occurred (coolant increases from great than 4.4°C (40°F) to a minimum of 71°C (160°F) and the odometer mileage has increased 196.6 miles and the Inlet Air Temperature has increased less than 3°C (5.4°F) change in temperature. Two trip fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
IAT SENSOR VOLTAGE BELOW 1.0 VOLTS
RESISTANCE IN THE (K900) SENSOR GROUND CIRCUIT
RESISTANCE IN THE (K21) IAT SENSOR SIGNAL CIRCUIT VOLTAGE DROP
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: If DTC P1192 or P1193 have set along with P0111, diagnose P1192 or P1193 first before continuing.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Disconnect the Inlet Air Temperature Sensor harness connector. Turn the ignition on. With the DRBIII®, read the IAT voltage. Is the voltage above 4.6 volts? Yes → Go To 3 No → Go To 4	All

P0111-INTAKE AIR TEMP SENSOR PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Inlet Air Temperature Sensor harness connector. Using a jumper wire, jumper across the IAT Sensor harness connector. Turn the ignition on. With the DRBIII®, read the IAT voltage. Is the voltage below 1.0 volt? Yes → Replace the Inlet Air Temperature Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	**NOTE: Ensure the voltmeter leads meet the terminals in the connector and that there is good terminal to wire connection.** **NOTE: Ensure the voltmeter leads are connected for positive polarity** Backprobe (K900) Sensor ground circuit at the IAT Sensor harness connector and PCM harness connector. Start the engine. Allow the engine to idle. Is the voltage below 0.10 volt? Yes → Go To 5 No → Repair the high resistance in the (K900) Sensor Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	**NOTE: Ensure the voltmeter leads meet the terminals in the connector and that there is good terminal to wire connection.** **NOTE: Ensure the voltmeter leads are connected for positive polarity** Backprobe the (K21) IAT Sensor Signal circuit at the IAT Sensor harness connector and PCM harness connector. Start the engine. Allow the engine to idle. Is the voltage below 0.10 volt? Yes → Go To 6 No → Repair the high resistance in the (K21) IAT Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0117-ECT SENSOR VOLTAGE TOO LOW

When Monitored and Set Condition:

P0117-ECT SENSOR VOLTAGE TOO LOW

When Monitored: With the ignition on. Battery voltage greater than 10.4 volts.

Set Condition: The Engine Coolant Temperature (ECT) sensor circuit voltage at the PCM is less than 0.5 volt for more than 2.6 seconds.

POSSIBLE CAUSES
ECT SENSOR VOLTAGE BELOW 1.0 VOLTS
ECT SENSOR INTERNAL FAILURE
(K2) ECT SENSOR SIGNAL SHORTED TO GROUND
(K2) ECT SENSOR SIGNAL SHORTED TO (K900) SENSOR GROUND CIRCUIT
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read the ECT voltage. Is the voltage below 1.0 volt? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Disconnect the ECT harness connector. Turn the ignition on. With the DRBIII®, read ECT voltage. Is the voltage above 1.0 volt? Yes → Replace the ECT Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All
3	Turn the ignition off. Disconnect the ECT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K2) ECT Sensor Signal circuit in the ECT Sensor harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K2) ECT Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All

P0117-ECT SENSOR VOLTAGE TOO LOW — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the ECT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K2) ECT Sensor Signal circuit and the (K900) Sensor Ground circuit in the ECT Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to the (K900) Sensor Ground circuit in the (K2) ECT Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0118-ECT SENSOR VOLTAGE TOO HIGH

When Monitored and Set Condition:

P0118-ECT SENSOR VOLTAGE TOO HIGH

When Monitored: With the ignition on. Battery voltage greater than 10.4 volts.

Set Condition: The Engine Coolant Temperature (ECT) sensor circuit voltage at the PCM is greater than 4.96 volts for more than 2.6 seconds.

POSSIBLE CAUSES
ECT SENSOR VOLTAGE ABOVE 4.6 VOLTS
(K2) ECT SENSOR SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
ECT SENSOR INTERNAL FAILURE
(K2) ECT SENSOR SIGNAL CIRCUIT OPEN
(K900) SENSOR GROUND CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read the ECT voltage. Is the voltage above 4.6 volts? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Disconnect the ECT Sensor harness connector. Turn the ignition on. Measure the voltage of the (K2) ECT Sensor Signal circuit in the ECT Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to battery voltage in the (K2) ECT Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All

P0118-ECT SENSOR VOLTAGE TOO HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the ECT harness connector. Connect a jumper wire between the (K2) ECT Sensor Signal circuit and the (K900) Sensor ground circuit in the ECT harness connector. Turn the ignition on. With the DRBIII®, read ECT voltage. Is the voltage below 1.0 volt? Yes → Replace the ECT Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Disconnect the ECT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K2) ECT Sensor Signal circuit between the ECT Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the (K2) ECT Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	Turn the ignition off. Disconnect the ECT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K900) Sensor Ground circuit between the ECT Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K900) Sensor Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0121-TPS VOLTAGE DOES NOT AGREE WITH MAP

When Monitored and Set Condition:

P0121-TPS VOLTAGE DOES NOT AGREE WITH MAP

When Monitored: With the engine running and no MAP Sensor or TP Sensor DTC's set.

Set Condition: When the manifold vacuum is low, the TP sensor signal should be high. Conversely, when manifold vacuum is high, the TP sensor signal should be low. If the MAP Sensor and TP Sensor do not respond within 4 seconds as stated above, a DTC will be set.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
HIGH RESISTANCE IN (F855) 5-VOLT SUPPLY CIRCUIT
(F855) 5-VOLT SUPPLY CIRCUIT SHORTED TO GROUND
MAP SENSOR
HIGH RESISTANCE IN THE (K1) MAP SENSOR SIGNAL CIRCUIT
(K1) MAP SENSOR SIGNAL CIRCUIT SHORTED TO GROUND
HIGH RESISTANCE IN (K900) SENSOR GROUND CIRCUIT
TP SENSOR OPERATION
HIGH RESISTANCE IN (F855) 5-VOLT SUPPLY CIRCUIT
(F855) 5-VOLT SUPPLY CIRCUIT SHORTED TO GROUND
TP SENSOR
HIGH RESISTANCE IN (K22) TP SENSOR SIGNAL CIRCUIT
(K22) TP SENSOR SIGNAL CIRCUIT SHORT TO GROUND
HIGH RESISTANCE IN THE (K900) SENSOR GROUND CIRCUIT
PCM

P0121-TPS VOLTAGE DOES NOT AGREE WITH MAP — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Diagnose any TP Sensor or MAP Sensor component DTC first before continuing.** **NOTE: If the P0500 - No Vehicle Speed Signal is set long with this DTC, refer to the P0500 diagnostics before continuing.** **NOTE: The throttle plate and linkage should be free from binding and carbon build up.** **NOTE: Ensure the throttle plate is at the idle position.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Start the engine. With the DRBIII®, monitor the MAP Sensor voltage. Snap the throttle. Does the MAP Sensor voltage vary from below 2.0 volts at idle to above 3.5 volts at WOT. Yes → Go To 3 No → Go To 10	All
3	Turn the ignition on. With the DRBIII®, monitor the TP Sensor voltage while slowly depressing the throttle pedal from the idle position to the wide open throttle position. Does voltage start approximately at 0.8 of a volt and go above 3.5 volts with a smooth voltage chang Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F855) 5-volt Supply circuit from the TP Sensor harness connector to the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the high resistance in the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K6) 5-volt Supply circuit from the TP Sensor harness connector to ground. Is the resistance above 100k ohms? Yes → Go To 6 No → Repair the short to ground in the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0121-TPS VOLTAGE DOES NOT AGREE WITH MAP — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K22) TP Sensor Signal circuit from the TP Sensor harness connector to the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the high resistance in the (K22) TP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
7	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K22) TP Sensor Signal circuit from the TP Sensor harness connector to ground. Is the resistance above 100k ohms? Yes → Go To 8 No → Repair the short to ground in the (K22) TP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
8	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K900) Sensor Ground circuit from the TP Sensor harness connector to the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the high resistance in the (K900) Sensor Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
9	Connect a jumper wire between the (K22) TP Sensor Signal circuit and the (K4) Sensor Ground circuit . Does the DRBIII® display TP voltage from approximately 4.9 volts to below 0.5 of a volt? Yes → Replace the TP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 16	All
10	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F855) 5-volt Supply circuit from the MAP Sensor harness connector to the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 11 No → Repair the high resistance in the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0121-TPS VOLTAGE DOES NOT AGREE WITH MAP — Continued

TEST	ACTION	APPLICABILITY
11	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F855) 5-volt Supply circuit from the MAP Sensor harness connector to ground. Is the resistance above 100k ohms? Yes → Go To 12 No → Repair the short to ground in the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
12	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K1) MAP Sensor Signal circuit from the MAP Sensor harness connector to the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 13 No → Repair the high resistance in the (K1) MAP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
13	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K1) MAP Sensor Signal circuit from the MAP Sensor harness connector to ground. Is the resistance above 100k ohms? Yes → Go To 14 No → Repair the short to ground in the (K1) MAP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
14	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K900) Sensor ground circuit from the MAP Sensor harness connector to the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 15 No → Repair the high resistance in the (K900) Sensor Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0121-TPS VOLTAGE DOES NOT AGREE WITH MAP — Continued

TEST	ACTION	APPLICABILITY
15	Turn the ignition off. Disconnect the MAP Sensor harness connector. With the DRBIII®, monitor the MAP Sensor voltage. Turn the ignition on. Connect a jumper wire between the (K1) MAP Sensor Signal circuit and the (K4) Sensor Ground circuit . Cycle the ignition switch off and then on again. With the DRBIII®, monitor the MAP Sensor voltage. Does the DRBIII® display MAP voltage from approximately 4.9 volts to below 0.5 volt? Yes → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 16	All
16	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0122-THROTTLE POSITION SENSOR VOLTAGE LOW

When Monitored and Set Condition:

P0122-THROTTLE POSITION SENSOR VOLTAGE LOW

When Monitored: With the ignition on. Battery voltage greater than 10.4 volts.

Set Condition: Throttle Position Sensor voltage at the PCM is less than 0.16 volt for 0.7 seconds.

POSSIBLE CAUSES
TP SENSOR VOLTAGE BELOW 0.2
(F855) 5-VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(F855) 5-VOLT SUPPLY CIRCUIT SHORTED TO (K900) SENSOR GROUND CIRCUIT
(F855) 5-VOLT SUPPLY CIRCUIT OPEN
TP SENSOR INTERNAL FAILURE
(K22) TP SENSOR SIGNAL CIRCUIT SHORTED TO GROUND
(K22) TP SENSOR SIGNAL CIRCUIT SHORTED TO (K900) SENSOR GROUND CIRCUIT
TCM INTERNALLY SHORTED TP SIGNAL CIRCUIT
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read the TP Sensor voltage. Is the voltage below 0.2 of a volt? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Disconnect the MAP Sensor harness connector. Turn the ignition on. Measure the voltage of the (F855) 5-volt Supply circuit in the MAP Sensor harness connector. Is the voltage between 4.5 to 5.2 volts? Yes → Go To 3 No → Go To 7	All

P0122-THROTTLE POSITION SENSOR VOLTAGE LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the TP Sensor harness connector. With the DRBIII®, monitor the TP Sensor voltage. Turn the ignition on. Is the voltage above 4.5 volts? Yes → Replace the TP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K22) TP Sensor Signal circuit in the TP Sensor harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K22) TP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K22) TP Sensor Signal circuit and the (K900) Sensor Ground circuit in the TP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to (K900) Sensor Ground circuit in the (K22) Throttle Position Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the TCM harness connector. With the DRBIII®, monitor the TP Sensor voltage. Turn the ignition on. Is the voltage above 4.5 volts? Yes → Replace the Transmission Control Module. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 7	All
7	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F855) 5-volt Supply circuit in the TP Sensor harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 8	All

P0122-THROTTLE POSITION SENSOR VOLTAGE LOW — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F855) 5-volt Supply circuit in the TP Sensor harness connector to (K900) Sensor Ground circuit. Is the resistance below 100 ohms? Yes → Repair the short to (K900) Sensor Ground circuit in the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 9	All
9	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F855) 5-volt Supply circuit between the TP Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the open in the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
10	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0123-THROTTLE POSITION SENSOR VOLTAGE HIGH

When Monitored and Set Condition:

P0123-THROTTLE POSITION SENSOR VOLTAGE HIGH

When Monitored: With the ignition on. Battery voltage greater than 10.4 volts.

Set Condition: Throttle Position Sensor voltage at the PCM is greater than 4.5 volts for 0.7 seconds.

POSSIBLE CAUSES
THROTTLE POSITION SENSOR SWEEP
INTERMITTENT CONDITION
(K22) TP SENSOR SIGNAL CIRCUIT SHORTED TO (F855) 5-VOLT SUPPLY CIRCUIT
(K22) TP SENSOR SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
TP SENSOR INTERNAL FAILURE
(K22) TP SENSOR SIGNAL CIRCUIT OPEN
(K900) SENSOR GROUND CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the throttle is fully closed and free from binding or carbon build up.** Start the engine. With the DRBIII®, read the TP Sensor voltage. Is the voltage above 4.5 volts? Yes → Go To 2 No → Go To 8	All
2	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K22) TP Sensor Signal circuit and the (F855) 5-volt Supply circuit in the TP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to the (F855) 5-volt Supply circuit in the (K22) Throttle Position Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All

P0123-THROTTLE POSITION SENSOR VOLTAGE HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the TP Sensor harness connector. Turn the ignition on. Measure the voltage of the (K22) TP Sensor Signal circuit in the TP Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to battery voltage in the (K22) TP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Disconnect the TP Sensor harness connector. Connect a jumper wire between the (K22) TP Sensor Signal circuit and the (K900) Sensor ground circuit. With the DRBIII®, monitor the TP Sensor voltage. Turn the ignition on. Is the voltage below 0.5 of a volt? Yes → Replace the Throttle Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K22) TP Sensor Signal circuit between the TP Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K22) Throttle Position Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K900) Sensor Ground circuit between the TP Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the open in the (K900) Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
7	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0123-THROTTLE POSITION SENSOR VOLTAGE HIGH — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition on. With the DRBIII®, monitor the TP Sensor voltage. Slowly open the throttle from the idle position to the wide open throttle position. Does voltage start at approximately 0.8 of a volt and go above 3.5 volts with a smooth transition? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Replace the Throttle Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0125-CLOSED LOOP TEMP NOT REACHED

When Monitored and Set Condition:

P0125-CLOSED LOOP TEMP NOT REACHED

When Monitored: With battery voltage greater than 10.4 volts, after engine is started.

Set Condition: The engine temperature does not go above 15°C (60°F). Failure time depends on start-up coolant temperature and ambient temperature. (i.e. 2 minutes for a start temp of 10°C (50°F) or up to 10 mintues for a vehicle with a start-up temp of -28°C (20°F). Two trips are required to set this DTC.

POSSIBLE CAUSES
LOW COOLANT LEVEL
THERMOSTAT OPERATION
ENGINE COOLANT TEMPERATURE SENSOR

TEST	ACTION	APPLICABILITY
1	**NOTE: If a Engine Coolant Temperature (ECT) DTC is set along with this code, diagnose the ECT DTC first.** **NOTE: Inspect the ECT terminals and related PCM terminals. Ensure the terminals are free from corrosion and damage.** **NOTE: The best way to diagnose this DTC is to allow the vehicle to sit overnight outside in order to have a totally cold soaked engine.** **Note: Extremely cold outside ambient temperatures may have caused this DTC to set.** **WARNING: Never open the cooling system when the engine is hot. The system is under pressure. Extreme burns or scalding may result. Allow the engine to cool before opening the cooling system.** Check the coolant system to make sure that the coolant is in good condition and at the proper level. Is the coolant level and condition OK? Yes → Go To 2 No → Inspect the vehicle for a coolant leak and add the necessary amount of coolant. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0125-CLOSED LOOP TEMP NOT REACHED — Continued

TEST	ACTION	APPLICABILITY
2	**Note: This test works best if performed on a cold engine (cold soak)** Turn the ignition on. With the DRBIII®, read the Eng Coolant Tmp Deg value. If the engine was allowed to sit overnight (cold soak), the temperature value should be a sensible value that is somewhere close to the ambient temperature. **Note: If engine coolant temperature is above 82°C (180°F), allow the engine to cool until 65°C (150°F) is reached.** Start the Engine. Using the appropriate service information, determine the proper opening temperature of the thermostat. Did the thermostat open at the proper temperature? Yes → Go To 3 No → Replace the thermostat. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
3	Turn the ignition on. With the DRBIII®, read the Eng Coolant Tmp Deg value. If the engine was allowed to sit overnight (cold soak), the temperature value should be a sensible value that is somewhere close to the ambient temperature. **Note: If engine coolant temperature is above 82°C (180°F), allow the engine to cool until 65°C (150°F) is reached.** Start the Engine. During engine warm-up monitor the Eng Coolant Tmp Deg value. The temp deg value change should be a smooth transition from start up to normal operating temp 82°C (180°F) . Also monitor the actual coolant temperature with a thermometer. **NOTE: As the engine warms up to operating temperature, the actual coolant temperature (thermometer reading) and the Eng Coolant Tmp Deg in the DRB values should stay relatively close to each other.** Does the actual coolant temperature and the reading on the DRBIII® remain relatively the same with a Yes → Test Complete. No → Replace the Engine Coolant Temperature Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom List:

P0131-1/1 O2 SENSOR SHORTED TO GROUND
P0137-1/2 O2 SENSOR SHORTED TO GROUND

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0131-1/1 O2 SENSOR SHORTED TO GROUND.

When Monitored and Set Condition:

P0131-1/1 O2 SENSOR SHORTED TO GROUND

When Monitored: At engine shutdown O2 Heater Diagnostics test. Then at subsequent cold start. Cold start is defined as engine coolant below 37°C (100°F), ambient/battery sensor reading within 6.6°C (44°F), and engine coolant temperature above 63°C (146°F) on the previous key off.

Set Condition: The oxygen sensor signal voltage is below 0.078 volts for 5 seconds after starting engine.

P0137-1/2 O2 SENSOR SHORTED TO GROUND

When Monitored: Engine running for 119 seconds. Coolant temperature above 80°C (176°F). Vehicle speed greater than 40 mph. Two trip fault.

Set Condition: The oxygen sensor signal voltage is below 0.078 volts for 61 seconds after starting engine.

POSSIBLE CAUSES
O2 SENSOR BELOW 0.08 VOLTS
O2 SENSOR OPERATION
O2 SENSOR SIGNAL CIRCUIT SHORTED TO GROUND
O2 SENSOR SIGNAL CIRCUIT SHORTED TO SENSOR GROUND CIRCUIT
O2 SENSOR SIGNAL SHORTED TO HEATER CONTROL/GROUND CIRCUIT
PCM

TEST	ACTION	APPLICABILITY
1	Start the engine. Allow the engine to reach normal operating temperature. With the DRBIII®, read the O2 Sensor voltage. Is the voltage below 0.08? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0131-1/1 O2 SENSOR SHORTED TO GROUND — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Disconnect the O2 Sensor harness connector. With the DRBIII®, monitor the O2 Sensor voltage. Is the O2 Sensor voltage above 0.08? Yes → Replace the O2 Sensor Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All
3	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the O2 Sensor Signal circuit in the O2 Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the O2 Sensor Signal circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the O2 Sensor Signal circuit and the Sensor ground circuit in the O2 Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the O2 Sensor Signal circuit for a short to the Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the O2 Sensor Signal circuit and the Heater control/ground circuit in the O2 Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the O2 Sensor Signal circuit for a short to the Heater control/ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom List:

P0132-1/1 O2 SENSOR SHORTED TO VOLTAGE
P0138-1/2 O2 SENSOR SHORTED TO VOLTAGE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0132-1/1 O2 SENSOR SHORTED TO VOLTAGE.

When Monitored and Set Condition:

P0132-1/1 O2 SENSOR SHORTED TO VOLTAGE

When Monitored: Engine running for 119 seconds. Battery voltage greater than 10 volts. Coolant temperature above 80°C (176°F).

Set Condition: The Oxygen Sensor voltage is above 1.21 volts for 2.8 seconds. One trip fault.

P0138-1/2 O2 SENSOR SHORTED TO VOLTAGE

When Monitored: The engine running for 119 seconds. Battery voltage greater than 10.4 volts. Coolant temperature above 80°C (176°F).

Set Condition: The Oxygen Sensor voltage is above 1.21 volts for 2.8 seconds. Two trip fault.

POSSIBLE CAUSES
O2 SENSOR BELOW 1.2 VOLTS
O2 SENSOR OPERATION
O2 SENSOR SIGNAL SHORTED TO VOLTAGE
O2 SENSOR SIGNAL OPEN
O2 SENSOR GROUND CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Start the engine. Allow the engine to idle. With the DRBIII®, read the O2 Sensor voltage. Is the voltage above 1.2 volts? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0132-1/1 O2 SENSOR SHORTED TO VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Disconnect the O2 Sensor harness connector. With the DRBIII®, monitor the O2 Sensor voltage. Is the O2 Sensor voltage below 1.2 volts? Yes → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All
3	Turn the ignition off. Disconnect the O2 Sensor harness connector **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine and allow the engine to idle. Measure the voltage of the O2 Sensor Signal circuit in the O2 Sensor harness connector. Is the voltage above 1.2 volts? Yes → Repair the O2 Sensor Signal circuit for a shorted to voltage. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Disconnect the O2 Sensor harness connector Disconnect the PCM harness connector. Measure the resistance of the O2 Sensor Signal circuit between the O2 Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the O2 Sensor Signal for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	Turn the ignition off. Disconnect the O2 Sensor harness connector Disconnect the PCM harness connector. Measure the resistance of the O2 Sensor ground circuit from the O2 Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the O2 Sensor ground cirucit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0132-1/1 O2 SENSOR SHORTED TO VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
6	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom List:

P0133-1/1 O2 SENSOR SLOW RESPONSE
P0139-1/2 O2 SENSOR SLOW RESPONSE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0133-1/1 O2 SENSOR SLOW RESPONSE.

When Monitored and Set Condition:

P0133-1/1 O2 SENSOR SLOW RESPONSE

When Monitored: Start and drive vehicle greater than 10 MPH with throttle open for a minimum 200 seconds. Coolant greater than 70°C (158°F). EVAP Purge is active. Test performs in idle drive.

Set Condition: The oxygen sensor signal voltage is switching from below 0.33 volts to above 0.61 volts and back fewer times than required in 60 seconds. Two trip fault..

P0139-1/2 O2 SENSOR SLOW RESPONSE

When Monitored: Start engine. Allow engine to idle. For 1st part of test, if limits are exceeded, test passes. If not, 2nd part of test runs. Engine running for grater than 295 seconds. amb/batt temp >44°F, Baro >22.13″ HG, MAP >13.8 & <21.6″ HG, RPM >1400 & <2500 (4cylinder) RPM > 1120 & <1950(6 cylinder) and vss >22 and < 60 MPH.

Set Condition: The oxygen sensor signal voltage is has not switched below 0.35 volts to above 0.53 volts in 411 seconds of engine run. Two trip fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
EXHAUST LEAK
O2 SENSOR SIGNAL CIRCUIT VOLTAGE DROP
O2 SENSOR GROUND CIRCUIT VOLTAGE DROP
O2 SENSOR

TEST	ACTION	APPLICABILITY
1	**NOTE: Check for contaminates that may have damaged the O2 Sensor: contaminated fuel, unapproved silicone, oil and coolant.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0133-1/1 O2 SENSOR SLOW RESPONSE — Continued

TEST	ACTION	APPLICABILITY
2	Start the engine. Inspect the exhaust system for leak between the engine and the O2 sensors. Are there any exhaust leaks? Yes → Repair or replace the leaking exhaust parts as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All
3	**NOTE: Ensure the voltmeter leads meet the terminals in the connector and that there is good terminal to wire connection.** **NOTE: Ensure the voltmeter leads are connected for positive polarity** Perform a voltage drop test by backprobing the O2 Sensor Signal circuit at the O2 Sensor harness connector and at the PCM harness connector. Start the engine. Allow the engine to idle. Is the voltage below 0.10 volt? Yes → Go To 4 No → Repair the high resistance on the O2 Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	**NOTE: Ensure the voltmeter leads meet the terminals in the connector and that there is good terminal to wire connection.** **NOTE: Ensure the voltmeter leads are connected for positive polarity** Backprobe between the O2 Sensor ground circuit at the O2 Sensor harness connector and PCM harness connector. Start the engine. Allow the engine to idle. Is the voltage below 0.10 volt? Yes → Go To 5 No → Repair the high resistance on the O2 Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	If there are no possible causes remaining, view repair. Repair Replace the O2 Sensor Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom List:

P0134-1/1 O2 SENSOR STAYS AT CENTER
P0140-1/2 O2 SENSOR STAYS AT CENTER

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0134-1/1 O2 SENSOR STAYS AT CENTER.

When Monitored and Set Condition:

P0134-1/1 O2 SENSOR STAYS AT CENTER

When Monitored: Engine running for greater than 121 second. Coolant Temperature greater than 66°C (150.8°F). Engine in closed loop fuel control mode.

Set Condition: O2 signal voltage is between .35 volt and .58 volt for a total of 30 seconds and then O2 signal volt is 1.5 volts for 60 seconds. One trip fault.

P0140-1/2 O2 SENSOR STAYS AT CENTER

When Monitored: Engine running for greater than 121 second. Coolant Temperature greater than 66°C (150.8°F). Engine in closed loop fuel control mode. Vehicle Speed greater than 40 MPH.

Set Condition: O2 signal voltage is between .35 volt and .58 volt for a total of 30 seconds and then O2 signal volt is 1.5 volts for 60 seconds. Two trip fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
O2 SENSOR OPERATION
O2 SENSOR GROUND CIRCUIT OPEN
O2 SENSOR SIGNAL OPEN
O2 SENSOR GROUND CIRCUIT VOLTAGE DROP
O2 SENSOR SIGNAL CIRCUIT VOLTAGE DROP
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Check for contaminates that may have damaged the O2 Sensor: contaminated fuel, unapproved silicone, oil and coolant.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0134-1/1 O2 SENSOR STAYS AT CENTER — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. Disconnect the O2 Sensor harness connector. Turn the ignition on. Connect a test light to battery voltage, probe the O2 Sensor Signal circuit in the O2 Sensor harness connector. With the DRBIII®, read the O2 Sensor voltage. Is the voltage above 1.0 volts? Yes → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All
3	Turn the ignition off. Disconnect the O2 Sensor harness connector Disconnect the PCM harness connector. Measure the resistance of the O2 Sensor ground circuit between the O2 Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the O2 Sensor ground circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	Turn the ignition off. Disconnect the O2 Sensor harness connector Disconnect the PCM harness connector. Measure the resistance of the O2 Sensor Signal circuit between the O2 Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the O2 Sensor Signal for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	**NOTE: Ensure the voltmeter leads meet the terminals in the connector and that there is good terminal to wire connection.** **NOTE: Ensure the voltmeter leads are connected for positive polarity** Perform a voltage drop test by back probing between the O2 Sensor ground circuit at the O2 Sensor harness connector and PCM harness connector. Start the engine. Allow the engine to idle. Is the voltage below 0.10 volt? Yes → Go To 6 No → Repair the high resistance on the O2 Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0134-1/1 O2 SENSOR STAYS AT CENTER — Continued

TEST	ACTION	APPLICABILITY
6	**NOTE: Ensure the voltmeter leads meet the terminals in the connector and that there is good terminal to wire connection.** **NOTE: Ensure the voltmeter leads are connected for positive polarity** Perform a voltage drop test by back probing between the O2 Sensor Signal circuit at the O2 Sensor harness connector and PCM harness connector. Start the engine. Allow the engine to idle. Is the voltage below 0.10 volt? Yes → Go To 7 No → Repair the high resistance on the O2 Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
7	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0135-1/1 O2 SENSOR HEATER FAILURE

When Monitored and Set Condition:

P0135-1/1 O2 SENSOR HEATER FAILURE

When Monitored: During vehicle shutdown after vehicle had been driven greater than 10 MPH with throttle open for a minimum of 3 minutes. Battery voltage greater than 11.0 volts.

Set Condition: O2 sensor voltage continues to rise (instead of fall) after the diagnostics has turned the ASD relay back on. Two trip fault.

POSSIBLE CAUSES
O2 SENSOR HEATER OPERATION
O2 HEATER ELEMENT
O2 SENSOR HEATER CONTROL CIRCUIT OPEN
O2 SENSOR HEATER CONTROL CIRCUIT SHORTED TO GROUND
ASD RELAY OUTPUT CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip display and equal to zero? Yes → Go To 3 No → Go To 2	All
2	Turn the ignition off. **NOTE: Wait a minimum of 8 minutes to allow the O2 Sensor to cool down before continuing the test. Allow the O2 Sensor voltage to stabilize between 0.4 to 0.6 volts.** Turn the ignition on. With the DRBIII®, actuate the O2 Heater Test. With the DRBIII®, monitor O2 Sensor voltage for at least 2 minutes. Does the voltage stay between 0.4 and 0.6 Yes → Go To 3 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0135-1/1 O2 SENSOR HEATER FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	**NOTE: Allow the O2 sensor to cool down to room temperature.** Turn the ignition off. Disconnect the O2 Sensor harness connector. Measure the resistance across the O2 Sensor Heater element component side. Is the resistance between 2.0 and 7.0 ohms? Yes → Go To 4 No → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the O2 Sensor Heater Control circuit between the O2 Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the O2 Sensor Heater Control circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the O2 Sensor Heater Control circuit in the O2 Sensor harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the O2 Sensor Heater Control circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	Turn the ignition off. Disconnect the O2 Sensor harness connector. With the DRBIII®, actuate the O2 Heater Test. Measure the voltage of the ASD Relay Output circuit in the O2 Sensor harness connector. Is the voltage above 11.0 volts? Yes → Go To 7 No → Repair the ASD Relay Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
7	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0141-1/2 O2 SENSOR HEATER FAILURE

When Monitored and Set Condition:

P0141-1/2 O2 SENSOR HEATER FAILURE

When Monitored: During vehicle shutdown after the vehicle has been driven for greater than 10 miles with the throttle open for a minimum of 3 minutes. Battery voltage greater than 11.0 volts.

Set Condition: O2 sensor continues to rise, (instead of fall) after the diagnostics has turned the ASD relay back on. Two trip fault.

POSSIBLE CAUSES
O2 SENSOR HEATER OPERATION
O2 HEATER ELEMENT
O2 SENSOR HEATER GROUND CIRCUIT OPEN
ASD RELAY OUTPUT CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip display and equal to zero? Yes → Go To 3 No → Go To 2	All
2	Turn the ignition off. **NOTE: Wait a minimum of 8 minutes to allow the O2 Sensor to cool down before continuing the test. Allow the O2 Sensor voltage to stabilize between 0.4 to 0.6 volts.** Turn the ignition on. With the DRBIII®, actuate the O2 Heater Test. With the DRBIII®, monitor O2 Sensor voltage for at least 2 minutes. Does the voltage stay between 0.4 and 0.6 volts? Yes → Go To 3 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0141-1/2 O2 SENSOR HEATER FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	**NOTE: Allow the O2 sensor to cool down to room temperature.** Turn the ignition off. Disconnect the O2 Sensor harness connector. Measure the resistance across the O2 Sensor Heater element component side. **NOTE: O2 Sensor Heater Resistance Specification: 1/1 and 2/1 O2 Sensor 3.0 to 4.0 ohms 2/1 and 2/2 4.0 to 5.0 ohms.** Is the resistance between 4.0 and 7.0 ohms? Yes → Go To 4 No → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	Turn the ignition off. Disconnect the O2 Sensor harness connector. Measure the resistance of the O2 Sensor Heater ground circuit in the O2 Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the O2 Sensor Heater ground circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	Turn the ignition off. Disconnect the O2 Sensor harness connector. With the DRBIII®, actuate the O2 Heater Test. Measure the voltage of the ASD Relay Output circuit in the O2 Sensor harness connector. Is the voltage above 11.0 volts? Yes → Go To 6 No → Repair the open in the ASD Relay Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0171-1/1 FUEL SYSTEM LEAN

When Monitored and Set Condition:

P0171-1/1 FUEL SYSTEM LEAN

When Monitored: With the engine running in closed loop mode, the ambient/battery temperature above 20 deg. F and altitude below 8000 ft.

Set Condition: If the PCM multiplies short term compensation by long term adaptive and a certain percentage is exceeded for two trips, a freeze frame is stored, the MIL illuminates and a trouble code is stored.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
RESTRICTED FUEL SUPPLY LINE
FUEL PUMP INLET STRAINER PLUGGED
FUEL PUMP MODULE
O2 SENSOR
O2 SENSOR SIGNAL CIRCUIT SHORTED TO GROUND
O2 SENSOR HEATER OPERATION
THROTTLE POSITION SENSOR VOLTAGE GREATER THAN 0.92 VOLTS WITH THROTTLE CLOSED
TP SENSOR SWEEP
MAP SENSOR OPERATION
ECT SENSOR OPERATION
ENGINE MECHANICAL PROBLEM
FUEL FILTER/PRESSURE REGULATOR (HIGH)
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Check for contaminates that may have damaged the O2 Sensor: contaminated fuel, unapproved silicone, oil and coolant.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0171-1/1 FUEL SYSTEM LEAN — Continued

TEST	ACTION	APPLICABILITY
2	**Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install a fuel pressure gauge to the fuel rail. Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Turn the ignition off. Choose a conclusion that best matches your fuel pressure reading. Within Specification Go To 3 Above Specification Replace the fuel filter/pressure regulator. Perform POWERTRAIN VERIFICATION TEST VER - 5. Below Specification Go To 13 **Caution: Stop All Actuations.**	All
3	Turn the ignition on With the DRBIII®, read the O2 Sensor voltage. Is the voltage between 0.4 to 0.6 volts? Yes → Go To 4 No → Go To 10	All
4	Turn the ignition off. **NOTE: Wait a minimum of 10 minutes to allow the O2 Sensor to cool down before continuing the test. Allow the O2 Sensor voltage to stabilize between 0.4 to 0.6 volts.** Turn the ignition on. With the DRBIII®, actuate the O2 Heater Test. With the DRBIII®, monitor O2 Sensor voltage for at least 2 minutes. Does the voltage stay between 0.4 and 0.6 volts. Yes → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition on. With the DRBIII®, read TP Sensor voltage. **NOTE: The throttle must be against the stop.** Is the TP Sensor voltage 0.92 or less with the throttle closed? Yes → Go To 6 No → Check for a binding throttle condition. If OK, replace the TP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0171-1/1 FUEL SYSTEM LEAN — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition on. With the DRBIII®, read the TP Sensor voltage. While monitoring the DRBIII®, slowly open and close the throttle. Does the voltage increase and decease smoothly? Yes → Go To 7 No → Replace the TP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
7	Turn the ignition off. Connect a Vacuum Gauge to a Manifold Vacuum source. Start the engine. Allow the engine to idle. **Note: If engine will not idle, maintain a constant RPM above idle.** With the DRBIII® in Sensors, read the MAP Sensor vacuum value. Is the DRBIII® reading within 1″ of the Vacuum Gauge reading? Yes → Go To 8 No → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
8	**Note: For this test to be valid, the thermostat must be operating correctly.** **Note: This test works best if performed on a cold engine (cold soak)** Turn the ignition on. With the DRBIII®, read the Engine Coolant Temperature (ECT) Sensor value. If the engine was allowed to sit overnight (cold soak), the temperature value should be a sensible value that is somewhere close to the ambient temperature. **Note: If engine coolant temperature is above 82°C (180°F), allow the engine to cool until 65°C (150°F) is reached.** Start the Engine. During engine warm-up, monitor the Engine Coolant Temperature value. The temperature value change should be a smooth transition from start up to normal operating temperature 82°C (180°F). The value should reach at least 82°C (180°F). Did the Engine Coolant Temperature value increase a smooth transition and did it reach at least 82°C Yes → Go To 9 No → Replace the Engine Coolant Temperature Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
9	Check for any of the following conditions/mechanical problems. AIR INDUCTION SYSTEM - must be free from leaks. ENGINE VACUUM - must be at least 13 inches in neutral ENGINE VALVE TIMING - must be within specifications ENGINE COMPRESSION - must be within specifications ENGINE EXHAUST SYSTEM - must be free of any restrictions or leaks. ENGINE PCV SYSTEM - must flow freely TORQUE CONVERTER STALL SPEED - must be within specifications POWER BRAKE BOOSTER - no internal vacuum leaks FUEL - must be free of contamination FUEL INJECTOR - plugged or restricted injector; control wire not connected to correct injector Are there any engine mechanical problems? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Test Complete.	All

P0171-1/1 FUEL SYSTEM LEAN — Continued

TEST	ACTION	APPLICABILITY
10	Turn the ignition on. Disconnect the O2 Sensor harness connector. With the DRBIII®, monitor the O2 Sensor voltage. Is the O2 Sensor voltage between 0.40 to 0.60 volts? Yes → Replace the O2 Sensor Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 11	All
11	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the O2 Sensor Signal circuit in the PCM harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the O2 Sensor Signal for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 12	All
12	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
13	Turn the ignition off. **Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Raise vehicle on hoist, and disconnect the fuel pressure line at the fuel pump module. Install special 5/16 fuel line adapter tool #6539 between disconnected fuel line and the fuel pump module. Attach a fuel pressure test gauge to the T fitting on tool #6539. Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Is the fuel pressure within specification? Yes → Repair or replace fuel supply line as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 14 **Caution: Stop All Actuations.**	All

P0171-1/1 FUEL SYSTEM LEAN — Continued

TEST	ACTION	APPLICABILITY
14	Turn the ignition off. **Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose,fitting or line, the fuel system pressure must be released.** Remove the Fuel Pump Module and inspect the Fuel Inlet Strainer. Is the Fuel Inlet Strainer plugged? Yes → Replace the Fuel Pump Inlet Strainer. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 15	All
15	If there are no possible causes remaining, view repair. Repair Replace the Fuel Pump Module. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0172-1/1 FUEL SYSTEM RICH

When Monitored and Set Condition:

P0172-1/1 FUEL SYSTEM RICH

When Monitored: With the engine running in closed loop mode, the ambient/battery temperature above 20 deg. F and altitude below 8000 ft.

Set Condition: If the PCM multiplies short term compensation by long term adaptive and the result is below a certain value for two trips, a freeze frame is stored, the MIL illuminates and a trouble code is stored.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
O2 SENSOR HEATER OPERATION
O2 SENSOR
EVAP PURGE SOLENOID OPERATION
O2 SENSOR SIGNAL CIRCUIT SHORTED TO VOLTAGE
O2 SENSOR SIGNAL CIRCUIT OPEN
THROTTLE POSITION SENSOR VOLTAGE GREATER THAN 0.92 VOLTS WITH THROTTLE CLOSED
TP SENSOR SWEEP
MAP SENSOR OPERATION
ECT SENSOR OPERATION
ENGINE MECHANICAL PROBLEM
FUEL FILTER/PRESSURE REGULATOR (HIGH)
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Check for contaminates that may have damaged the O2 Sensor: contaminated fuel, unapproved silicone, oil and coolant.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0172-1/1 FUEL SYSTEM RICH — Continued

TEST	ACTION	APPLICABILITY
2	**Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install a fuel pressure gauge to the fuel rail. Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Turn the ignition off. Choose a conclusion that best matches your fuel pressure reading. Within Specification Go To 3 Above Specification Replace the fuel filter/pressure regulator. Perform POWERTRAIN VERIFICATION TEST VER - 5. **Caution: Stop All Actuations.**	All
3	Turn the ignition on With the DRBIII®, read the O2 Sensor voltage. Is the voltage between 0.4 to 0.6 volts? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off. **NOTE: Wait a minimum of 10 minutes to allow the O2 Sensor to cool down before continuing the test. Allow the O2 Sensor voltage to stabilize between 0.4 to 0.6 volts.** Turn the ignition on. With the DRBIII®, actuate the O2 Heater Test. With the DRBIII®, monitor O2 Sensor voltage for at least 2 minutes. Does the voltage stay between 0.4 and 0.6 Yes → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the hoses at the Evap Purge Solenoid. Using a hand vacuum pump, apply 10 inches of vacuum to the Evap Purge Solenoid vacuum source port on the component side. Did the Evap Purge Solenoid hold vacuum? Yes → Go To 6 No → Replace the EVAP Purge Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0172-1/1 FUEL SYSTEM RICH — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition on. With the DRBIII®, read TPS voltage. **NOTE: The throttle must be against the stop.** Is the TPS voltage 0.92 of a volt or less with the throttle closed? Yes → Go To 7 No → Check for a binding throttle condition. If OK, replace the TP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
7	Turn the ignition on. With the DRBIII®, read the TP Sensor voltage. While monitoring the DRBIII®, slowly open and close the throttle. Does the voltage increase and decease smoothly? Yes → Go To 8 No → Replace the TP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
8	Turn the ignition off. Connect a Vacuum Gauge to a Manifold Vacuum source. Start the engine. Allow the engine to idle. **Note: If engine will not idle, maintain a constant RPM above idle.** With the DRBIII® in Sensors, read the MAP Sensor vacuum value. Is the DRB reading within 1″ of the Vacuum Gauge reading? Yes → Go To 9 No → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
9	**Note: For this test to be valid, the thermostat must be operating correctly.** **Note: This test works best if performed on a cold engine (cold soak)** Turn the ignition on. With the DRBIII®, read the Engine Coolant Temperature Sensor value. If the engine was allowed to sit overnight (cold soak), the temperature value should be a sensible value that is somewhere close to the ambient temperature. **Note: If engine coolant temperature is above 82°C (180°F), allow the engine to cool until 65°C (150°F) is reached.** Start the Engine. During engine warm-up, monitor the Engine Coolant Temperature value. The temp value change should be a smooth transition from start up to normal operating temp 82°C (180°F). The value should reach at least 82°C (180°F). Did the Engine Coolant Temperature value increase a smooth transition and did it reach at least 82°C Yes → Go To 10 No → Replace the Engine Coolant Temperature Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0172-1/1 FUEL SYSTEM RICH — Continued

TEST	ACTION	APPLICABILITY
10	Check for any of the following conditions/mechanical problems. AIR INDUCTION SYSTEM - must be free from restrictions. ENGINE VACUUM - must be at least 13 inches in neutral ENGINE VALVE TIMING - must be within specifications ENGINE COMPRESSION - must be within specifications ENGINE EXHAUST SYSTEM - must be free of any restrictions or leaks. ENGINE PCV SYSTEM - must flow freely TORQUE CONVERTER STALL SPEED - must be within specifications POWER BRAKE BOOSTER - no internal vacuum leaks FUEL - must be free of contamination FUEL INJECTOR - plugged or restricted injector; control wire not connected to correct injector Are there any engine mechanical problems? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Test Complete.	All
11	Turn the ignition on. Disconnect the O2 Sensor harness connector. With the DRBIII®, monitor the O2 Sensor voltage. Is the O2 Sensor voltage between 0.4 to 0.6 volts? Yes → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 12	All
12	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the O2 Sensor Signal circuit between the PCM harness connector and the O2 Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Go To 13 No → Check for O2 Sensor Signal circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
13	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Turn the ignition off. Disconnect the O2 Sensor harness connector. Start the engine. Measure the voltage of the O2 Sensor Signal circuit in the O2 Sensor harness connector. Is the voltage above 0.60 volt? Yes → Repair the O2 Sensor Signal for a short to voltage. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 14	All

P0172-1/1 FUEL SYSTEM RICH — Continued

TEST	ACTION	APPLICABILITY
14	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom List:

P0201-INJECTOR #1 CONTROL CIRCUIT
P0202-INJECTOR #2 CONTROL CIRCUIT
P0203-INJECTOR #3 CONTROL CIRCUIT
P0204-INJECTOR #4 CONTROL CIRCUIT
P0205-INJECTOR #5 CONTROL CIRCUIT
P0206-INJECTOR #6 CONTROL CIRCUIT

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0201-INJECTOR #1 CONTROL CIRCUIT.

When Monitored and Set Condition:

P0201-INJECTOR #1 CONTROL CIRCUIT

When Monitored: With battery voltage greater than 10.4 volts. Auto Shutdown Relay energized. Engine speed less than 3000 rpm.

Set Condition: No inductive spike is detected after injector turn off.

P0202-INJECTOR #2 CONTROL CIRCUIT

When Monitored: With battery voltage greater than 10.4 volts. Auto Shutdown Relay energized. Engine speed less than 3000 rpm.

Set Condition: No inductive spike is detected after injector turn off.

P0203-INJECTOR #3 CONTROL CIRCUIT

When Monitored: With battery voltage greater than 10.4 volts. Auto Shutdown Relay energized. Engine speed less than 3000 rpm.

Set Condition: No inductive is detected after injector turn off.

P0204-INJECTOR #4 CONTROL CIRCUIT

When Monitored: With battery voltage greater than 10.4 volts. Auto Shutdown Relay energized. Engine speed less than 3000 rpm.

Set Condition: No inductive spike is detected after injector turn off, and with no other injectors on.

P0205-INJECTOR #5 CONTROL CIRCUIT

When Monitored: With battery voltage greater than 10.4 volts. Auto Shutdown Relay energized. Engine speed less than 3000 rpm.

Set Condition: No inductive spike is detected after injector turn off.

P0201-INJECTOR #1 CONTROL CIRCUIT — Continued

P0206-INJECTOR #6 CONTROL CIRCUIT

When Monitored: With battery voltage greater than 10.4 volts. Auto Shutdown Relay energized. Engine speed less than 3000 rpm.

Set Condition: No inductive spike is detected after injector turn off.

POSSIBLE CAUSES
(K342) ASD RELAY OUTPUT CIRCUIT OPEN
GOOD TRIP EQUAL TO ZERO
FUEL INJECTOR
FUEL INJECTOR DRIVER CIRCUIT OPEN
FUEL INJECTOR DRIVER CIRCUIT SHORTED TO GROUND
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Record the Freeze Frame Information that set along with the DTC.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Disconnect the Fuel Injector harness connector. Measure the resistance of the Fuel Injector, component side. Is the resistance between 10 and 16 ohms? Yes → Go To 3 No → Replace the Fuel Injector. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
3	Turn the ignition off. Disconnect the Fuel Injector harness connector. Remove the ASD Relay from the IPM. Turn the ignition on. Jumper the Fused B+ circuit and the ASD Relay Output circuit in the IPM. Using a 12-volt test light connected to ground, probe the (K342) ASD Relay Output circuit. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the open in the (K342) ASD Relay Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0201-INJECTOR #1 CONTROL CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Fuel Injector harness connector. Disconnect the PCM harness connector. Measure the resistance of the Fuel Injector driver circuit between the Fuel Injector harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the Fuel Injector driver circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	Turn the ignition off. Disconnect the Fuel Injector harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the Fuel Injector driver circuit in the Fuel Injector harness connector. Is the resistance below 100k ohms? Yes → Repair the open in the Fuel Injector driver circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom List:

P0300-MULTIPLE CYLINDER MIS-FIRE
P0301-CYLINDER #1 MISFIRE
P0302-CYLINDER #2 MISFIRE
P0303-CYLINDER #3 MISFIRE
P0304-CYLINDER #4 MISFIRE
P0305-CYLINDER #5 MISFIRE
P0306-CYLINDER #6 MISFIRE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0300-MULTIPLE CYLINDER MIS-FIRE.

When Monitored and Set Condition:

P0300-MULTIPLE CYLINDER MIS-FIRE

When Monitored: Any time the engine is running, and the adaptive numerator has been successfully updated.

Set Condition: When more than a 2% (2.5% LEV) misfire rate is measured during two trips. Above 3000 RPM 1 trip less than 3000 RPM 2 trip.

P0301-CYLINDER #1 MISFIRE

When Monitored: Any time the engine is running, and the adaptive numerator has been successfully updated.

Set Condition: When more than a 2% (2.5% LEV) misfire rate is measured during two trips, or with a 10% to 30% misfire rate during one trip.

P0302-CYLINDER #2 MISFIRE

When Monitored: Any time the engine is running, and the adaptive numerator has been successfully updated.

Set Condition: When more than a 2% (2.5% LEV) misfire rate is measured during two trips, or with a 10% to 30% misfire rate during one trip.

P0303-CYLINDER #3 MISFIRE

When Monitored: Any time the engine is running, and the adaptive numerator has been successfully updated.

Set Condition: When more than a 2% (2.5% LEV) misfire rate is measured during two trips, or with a 10% to 30% misfire rate during one trip.

P0304-CYLINDER #4 MISFIRE

When Monitored: Any time the engine is running, and the adaptive numerator has been successfully updated.

Set Condition: When more than a 2% (2.5% LEV) misfire rate is measured during two trips, or with a 10% to 30% misfire rate during one trip.

P0300-MULTIPLE CYLINDER MIS-FIRE — Continued

P0305-CYLINDER #5 MISFIRE

When Monitored: Any time the engine is running, and the adaptive numerator has been successfully updated.

Set Condition: When more than a 2% (2.5% LEV) misfire rate is measured during two trips, or with a 10% to 30% misfire rate during one trip.

P0306-CYLINDER #6 MISFIRE

When Monitored: Any time the engine is running, and the adaptive numerator has been successfully updated.

Set Condition: When more than a 2% (2.5 LEV) misfire rate is measured during two trips, or with a 10% to 30% misfire rate during one trip.

POSSIBLE CAUSES
INTERMITTENT MISFIRE
VISUAL INSPECTION
IGNITION WIRE
ASD RELAY OUPUT CIRCUIT
ENGINE MECHANICAL PROBLEM
IGNITION COIL
COIL CONTROL CIRCUIT
SPARK PLUG
CHECKING FUEL PRESSURE
FUEL PUMP INLET STRAINER PLUGGED
RESTRICTED FUEL SUPPLY LINE
FUEL PUMP MODULE
CHECKING FUEL LEAK DOWN
FUEL INJECTOR
INJECTOR CONTROL CIRCUIT
PCM

P0300-MULTIPLE CYLINDER MIS-FIRE — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Check for any TSB's that apply to a Misfire condition. Review the vehicle repair history for any misfire condition repairs that have been performed.** Read and record the FREEZE FRAME DATA. Select OBD II MONITORS. Read and record the MIS-FIRE SIMILAR CONDITIONS WINDOW DATA. With these screens, attempt to duplicate the condition(s) that has set this DTC. When the vehicle is operating in the SIMILAR CONDITIONS WINDOW, refer to the WHICH CYLINDER IS MISFIRING screen. Observe the WHICH CYLINDER IS MISFIRING screen for at least one minute. Is there a misfire present? Yes → Go To 2 No → Test Complete.	All
2	**NOTE: Anything that affects the speed of the crankshaft can cause a misfire DTC.** **NOTE: When a Misfire is detected for a particular cylinder, the PCM will shut down that cylinders Injector Control circuit.** - Visually inspect the engine for any of the following conditions. - Worn serpentine belt - Binding Engine-Driven accessories: A/C Compressor, P/S Pump, Water pump. - Misalignment Water pump, P/S Pump and A/C Compressor pulleys - Corroded PCM power and ground circuits. - Improper CKP, CMP, MAP, and TP Sensor mounting - Poor connector/terminal to component connection. i.e., CKP sensor, Fuel Injector, Ign coil, etc. - Vacuum leaks - Restricted Air Induction system or Exhaust system. Were any of the above conditions present? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All
3	Turn the ignition off. Disconnect the Ignition Coil harness connector. Disconnect the Fuel Injector harness connector. Ignition on, engine not running. With the DRBIII®, actuate the ASD Relay. Using a 12-volt test light connected to ground, probe the (A142) ASD Relay Output circuit at the Ignition Coil harness connector and Fuel Injector harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the excessive resistance or short to ground in the (A142) ASD Relay Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0300-MULTIPLE CYLINDER MIS-FIRE — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Ignition wire from the spark plug. Disconnect the Fuel Injector harness connector of the cylinder being tested. **NOTE: Before continuing inspect the ignition wire for damage or carbon tracking. Replace as necessary.** Install a spark tester on the ignition wire. While cranking the engine observe the spark coming from the spark tester. **NOTE: A crisp blue spark that is able to jump the gap of the spark tester should be generated.** Is good spark present? Yes → Go To 5 No → Go To 14	All
5	Turn the ignition off. Remove the Spark Plug. Inspect the Spark Plug for the following conditions. - Cracks - Carbon Tracking - Foreign Material - Gap size out of specifications - Loose or broke electrode **NOTE: Lightly tap the bottom of the spark plug on a solid surface. The electrode in the spark plug should not move.** Were any of the above condition present? Yes → Replace the Spark Plug. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	**Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install a fuel pressure gauge to the fuel rail. Start the engine and observe the fuel pressure reading. **NOTE: Fuel pressure specification is 334 KPa +/- 34 KPa (49 psi +/- 5 psi).** Choose a conclusion that best matches your fuel pressure reading. Within Specification Go To 7 Below Specification Go To 12 Above Specification Replace the fuel filter/pressure regulator. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0300-MULTIPLE CYLINDER MIS-FIRE — Continued

TEST	ACTION	APPLICABILITY
7	**NOTE: Before continuing visually and physically inspect the fuel delivery system for external leaks or damage. Repair /replace as necessary.** Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install special tool #6539 (5/16″) fuel line adapter. Install the fuel pressure gauge. Start the engine and allow the fuel system to reach maximum pressure. Turn the ignition off. **NOTE: Fuel specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Using special tool #C4390, Hose Clamp Pliers, pinch the rubber fuel line between the fuel pressure gauge and the engine. Monitor the fuel pressure gauge for a minimum of 5 minutes. **NOTE: The pressure should not fall below 241 KPa (35 psi)** Does the Upstream gauge fall below the above specification? Yes → Replace the leaking Fuel Injector(s). Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 8	All
8	**Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** **CAUTION: After each Fuel Injector actuation, start the engine to clean the cylinder of fuel. Failure to do so could cause engine damage.** Turn the ignition off. Connect a Fuel Pressure Gauge to the fuel rail. Start the engine and allow the fuel pressure to reach maximum pressure. Ignition on, engine not running. Using the DRBIII®, actuate the Fuel Injector for the cylinder that indicated the misfire. Monitor the fuel pressure gauge. Does the fuel pressure gauge indicate a drop in fuel pressure? Yes → Go To 9 No → Go To 10	All
9	Check for any of the following conditions/mechanical problems. ENGINE VACUUM - must be at least 13 inches in neutral ENGINE VALVE TIMING - must be within specifications ENGINE COMPRESSION - must be within specifications ENGINE EXHAUST SYSTEM - must be free of any restrictions or leaks. ENGINE PCV SYSTEM - must flow freely TORQUE CONVERTER STALL SPEED - must be within specifications POWER BRAKE BOOSTER - no internal vacuum leaks FUEL - must be free of contamination CAM LOBES - must not be worn excessively CYLINDER LEAKAGE TEST - must be within specifications VALVE SPRINGS - cannot be weak or broken Are there any engine mechanical problems? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 17	All

P0300-MULTIPLE CYLINDER MIS-FIRE — Continued

TEST	ACTION	APPLICABILITY
10	Turn the ignition off. Disconnect the Fuel Injector harness connector. Ignition on, engine not running. **NOTE: When a Misfire is detected for a particular cylinder, the PCM will shut down that cylinders Injector Control circuit.** With the DRBIII®, erase DTCs. Using a 12-volt test light connected to 12-volts, probe the Injector Control circuit. With the DRBIII®, actuate the Fuel Injector. Does the test light blink/flicker? Yes → Replace the Fuel Injector. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 11	All
11	Turn the ignition off. Disconnect the Fuel Injector harness connector. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Check the Injector Control circuit for an open, short to ground, and short to voltage. Was a problem found with the Injector Control circuit? Yes → Repair the excessive resistance or short in the Injector Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 17	All
12	Turn the ignition off. **Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Raise vehicle on hoist, and disconnect the fuel pressure line at the fuel pump module. Install special tool #6539 (5/16″) fuel line adapter fuel pressure gauge between the fuel supply line and the fuel pump module. Ignition on, engine not running. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Is the fuel pressure within specification? Yes → Repair or replace fuel supply line as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 13	All
13	Turn the ignition off. **Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose,fitting or line, the fuel system pressure must be released.** Remove the Fuel Pump Module and inspect the Fuel Inlet Strainer. Is the Fuel Inlet Strainer plugged? Yes → Replace the Fuel Pump Inlet Strainer. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Test Complete.	All

P0300-MULTIPLE CYLINDER MIS-FIRE — Continued

TEST	ACTION	APPLICABILITY
14	Turn the ignition off. Remove the ignition wire. Measure the resistance of the ignition wire. Is the resistance below 10K ohms? Yes → Go To 15 No → Replace the Ignition Wire. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
15	Turn the ignition off. Disconnect the Ignition Coil harness connector. Remove the Fuel Pump Relay or ASD Relay. Using a 12-volt test light connected to 12-volts, probe the Ignition Coil Control circuit. Crank the engine for 5 seconds while observing the test light. **NOTE: The primary resistance of the 4.7L Ignition coil is 0.6 to 0.9 of an ohm and the resistance of a 5.7L Ignition coil is 0.558 to 0.682 of an ohm at 77°F (25°C).** Does the test light brightly blink/flicker? Yes → Replace the Ignition Coil. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 16	All
16	Turn the ignition off. Disconnect the Ignition Coil harness connector. Disconnect the PCM harness connectors. Check the Coil Control circuit for an open, short to ground, and short to voltage. Was a problem found with the Coil Control circuit? Yes → Repair the Coil Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 17	All
17	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0320-NO CRANK REFERENCE SIGNAL AT PCM

When Monitored and Set Condition:

P0320-NO CRANK REFERENCE SIGNAL AT PCM

When Monitored: Engine cranking. Battery voltage greater than 10.4 volts.

Set Condition: No CKP signal is present during engine cranking, and at least 8 camshaft position sensor signals have occurred.

POSSIBLE CAUSES
INTERMITTENT CKP SIGNAL
INTERMITTENT CMP SIGNAL
INTERMITTENT WIRING
INTERMITTENT CONDITION
(F888) 8-VOLT SUPPLY CIRCUIT OPEN
(F888) 8-VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(F888) 8-VOLT SUPPLY CIRCUIT SHORTED TO VOLTAGE
(K24) CKP SENSOR SIGNAL CIRCUIT OPEN
(K24) CKP SENSOR SIGNAL CIRCUIT SHORTED TO GROUND
(K24) CKP SENSOR SIGNAL CIRCUIT SHORTED TO VOLTAGE
(K24) CKP SENSOR SIGNAL SHORTED TO (F888) 8-VOLT SUPPLY CIRCUIT
(K900) SENSOR GROUND CIRCUIT OPEN
PCM
CRANKSHAFT POSITION SENSOR

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. With the DRBIII®, read the Current CKP State while cranking the engine. Does the DRBIII® display Current CKP State Present while cranking the engine? Yes → Go To 2 No → Go To 6	All

P0320-NO CRANK REFERENCE SIGNAL AT PCM — Continued

TEST	ACTION	APPLICABILITY
2	**NOTE: The following tests may help in identifying a possible intermittent condition with the Crank Sensor or its related wire harness.** Ignition on, engine not running. With the DRBIII® as a Dual Channel Lab Scope and the Miller special tool #6801, backprobe the (K24) CKP Signal circuit in the Crank Sensor connector and the PCM harness connector. Wiggle the related wire harness and connections. Monitor the lab scope screen. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Lightly tap on the Crank Sensor and wiggle the CKP Sensor connector and the related wire harness. Observe the lab scope screen. Look for any erratic pulses generated by the CKP Sensor. Did the CKP Sensor generate any erratic pulses? Yes → Carefully inspect the wire harness and connections, repair as necessary, if ok, replace the Crank Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All
3	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, back probe the Camshaft Position (CMP) Sensor Signal circuit in the PCM harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Turn the ignition on. (do not start or crank the engine) Observe the lab scope screen. Look for any pulses generated by the CMP Sensor. Did the CMP Sensor generate any pulses? Yes → Replace the Camshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the CKP Signal circuit in the PCM harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Observe the lab scope screen while wiggling the wiring harness and connectors. Were there any irregularities in the lab scope pattern? Yes → Check the harness connectors carefully. If OK, replace the Crankshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All

P0320-NO CRANK REFERENCE SIGNAL AT PCM — Continued

TEST	ACTION	APPLICABILITY
5	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRBIII® parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Review the DRBIII® Freeze Frame information. If possible, try to duplicate the conditions under which the DTC was set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Test Complete.	All
6	Turn the ignition off. Disconnect the CKP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (F888) 8-volt Supply circuit at the CKP Sensor harness connector. Is the voltage between 7.5 and 9.1 volts? Yes → Go To 7 No → Go To 14	All
7	Turn the ignition off. Disconnect the CKP Sensor harness connector. Ignition on, engine not running. Measure the voltage on the (K24) CKP Sensor Signal circuit at the CKP Sensor harness connector. Is the voltage between 4.5 and 5.0 volts? Yes → Go To 8 No → Go To 10	All
8	Turn the ignition off. Disconnect the CKP Sensor harness connector. Disconnect the PCM harness connectors. Measure the resistance of the (K900) Sensor ground circuit from the CKP Sensor harness connector to the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the open in the (K900) Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0320-NO CRANK REFERENCE SIGNAL AT PCM — Continued

TEST	ACTION	APPLICABILITY
9	**NOTE: Inspect the slots on the flywheel for damage. If a problem is found repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace the Crankshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
10	Turn the ignition off. Disconnect the CKP Sensor harness connector. Disconnect the PCM harness connectors. Measure the resistance of the (K24) CKP Sensor Signal circuit from the CKP Sensor harness connector to the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 11 No → Repair the open in the (K24) CKP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
11	Turn the ignition off. Disconnect the CKP Sensor harness connector. Disconnect the PCM harness connectors. Measure the resistance between ground and the (K24) CKP Sensor Signal circuit at the CKP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K24) CKP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 12	All
12	Turn the ignition off. Disconnect the CKP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K24) CKP Sensor Signal circuit at the CKP Sensor harness connector. Is the voltage above 5.3 volts? Yes → Repair the short to voltage in the (K24) CKP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 13	All
13	Turn the ignition off. Disconnect the CKP Sensor harness connector. Disconnect the PCM harness connectors. Measure the resistance between the (K24) CKP Sensor Signal circuit and the (F888) 8-volt Supply circuit at the CKP Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Repair the short between the (F888) 8-volt Supply circuit and the (K24) CKP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 17	All

P0320-NO CRANK REFERENCE SIGNAL AT PCM — Continued

TEST	ACTION	APPLICABILITY
14	Turn the ignition off. Disconnect the CKP Sensor harness connector. Disconnect the PCM harness connectors. Measure the resistance of the (F888) 8-volt Supply circuit from the CKP Sensor harness connector to the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 15 No → Repair the open in the (F888) 8-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
15	Turn the ignition off. Disconnect the PCM harness connectors. Disconnect the CKP Sensor harness connector. Measure the resistance between ground and the (F888) 8-volt Supply circuit at the CKP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (F888) 8-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 16	All
16	Turn the ignition off. Disconnect the CKP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (F888) 8-volt Supply circuit at the CKP Sensor harness connector. Is the voltage above 5.3 volts? Yes → Repair the short to voltage in the (F888) 8-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 17	All
17	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module per Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0340-NO CAM SIGNAL AT PCM

When Monitored and Set Condition:

P0340-NO CAM SIGNAL AT PCM

When Monitored: Engine cranking/running. Battery voltage greater than 10.4 volts.

Set Condition: At least 5 seconds or 2.5 engine revolutions have elapsed with crankshaft position sensor signals present but no camshaft position sensor signal.

POSSIBLE CAUSES
INTERMITTENT CRANKSHAFT POSITION SENSOR SIGNAL
INTERMITTENT CAMSHAFT POSITION SENSOR SIGNAL
INTERMITTENT CONDITION
(F888) 8-VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(F888) 8-VOLT SUPPLY CIRCUIT OPEN
(F888) 8-VOLT SUPPLY CIRCUIT SHORTED TO VOLTAGE
(K44) CMP SENSOR SIGNAL CIRCUIT SHORTED TO GROUND
(K44) CMP SENSOR SIGNAL CIRCUIT OPEN
(K44) CMP SENSOR SIGNAL CIRCUIT SHORTED TO VOLTAGE
(K44) CMP SENSOR SIGNAL SHORTED TO (F888) 8-VOLT SUPPLY CIRCUIT
(K900) SENSOR GROUND CIRCUIT OPEN
PCM
CAMSHAFT POSITION SENSOR

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, read the Current Camshaft Position (CMP) Sensor State while cranking the engine. Does the DRBIII® display Current CMP State Present while cranking the engine. Yes → Go To 2 No → Go To 4	All

P0340-NO CAM SIGNAL AT PCM — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, back probe the Crankshaft Position (CKP) Sensor signal circuit in the PCM harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Turn the ignition on. (do not start or crank the engine) Observe the lab scope screen. Look for any pulses generated by the Crankshaft Position (CKP) Sensor. Did the CKP Sensor generate any pulses? Yes → Replace the Crankshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All
3	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the CMP Signal circuit in the PCM harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Turn the ignition on. (do not start or crank the engine) Observe the lab scope screen. Look for any pulses generated by the CMP Sensor. Did the CMP Sensor generate any pulses? Yes → Replace the Camshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	Turn the ignition off. Disconnect the CMP Sensor harness connector. Turn the ignition on. Measure the voltage of the (F888) 8-volt Supply circuit in the CMP Sensor harness connector. Is the voltage between 7.5 and 9.1 volts? Yes → Go To 5 No → Go To 12	All
5	Turn the ignition off. Disconnect the CMP Sensor harness connector. Turn the ignition on. Measure the voltage of the (K44) CMP Sensor Signal circuit in the CMP Sensor harness connector. Is the voltage between 4.5 and 5.0 volts? Yes → Go To 6 No → Go To 8	All

P0340-NO CAM SIGNAL AT PCM — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the CMP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K900) Sensor Ground circuit between the CMP Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the open in the (K900) Sensor Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
7	**NOTE: Inspect the Camshaft sprocket or Magnet Target for damage per the Service Information. If a problem is found repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace the Camshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
8	Turn the ignition off. Disconnect the CMP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K44) CMP Sensor Signal circuit in the CMP Sensor harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K44) CMP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 9	All
9	Turn the ignition off. Disconnect the CMP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K44) CMP Sensor Signal circuit between the CMP Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the open in the (K44) CMP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
10	Turn the ignition off. Disconnect the CMP Sensor harness connector. Turn the ignition on. Measure the voltage of the (K44) CMP Sensor Signal circuit in the CMP Sensor harness connector. Is the voltage above 5.0 volts? Yes → Repair the short to voltage in the (K44) CMP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 11	All

P0340-NO CAM SIGNAL AT PCM — Continued

TEST	ACTION	APPLICABILITY
11	Turn the ignition off. Disconnect the CMP Sensor harness connector. Measure the resistance between the (K44) CMP Sensor Signal circuit and the (F888) 8-volt Supply circuit in the CMP Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Repair the short to the (F888) 8-volt Supply circuit in the (K44) CMP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 15	All
12	Turn the ignition off. Disconnect the CMP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F888) 8-volt Supply circuit in the CMP Sensor harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (F888) 8-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 13	All
13	Turn the ignition off. Disconnect the CMP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F888) 8-volt Supply circuit between the CMP Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 14 No → Repair the open in the (F888) 8-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
14	Turn the ignition off. Disconnect the CMP Sensor harness connector. Turn the ignition on. Measure the voltage of the (F888) 8-volt Supply circuit in the CMP Sensor harness connector. Is the voltage above 9.1 volts Yes → Repair the short to voltage in the (F888) 8-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 15	All
15	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom List:

P0351-IGNITION COIL #1 PRIMARY CIRCUIT
P0352-IGNITION COIL #2 PRIMARY CIRCUIT
P0353-IGNITION COIL #3 PRIMARY CIRCUIT

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0351-IGNITION COIL #1 PRIMARY CIRCUIT.

When Monitored and Set Condition:

P0351-IGNITION COIL #1 PRIMARY CIRCUIT

When Monitored: With battery voltage greater than 8 volts during engine cranking or greater than 13 volts with engine running. Engine RPM less than 3000. No coil in dwell during test.

Set Condition: Peak current is not achieved with battery based dwell plus 1.5 msec of diagnostic offset. It takes less than 3 seconds during cranking or up to 6 seconds while running to set.

P0352-IGNITION COIL #2 PRIMARY CIRCUIT

When Monitored: With battery voltage greater than 8 volts during engine cranking or greater than 13 volts with engine running. Engine RPM less than 3000. No coil in dwell during test.

Set Condition: Peak current is not achieved with battery based dwell plus 1.5 msec of diagnostic offset. It takes less than 3 seconds during cranking or up to 6 seconds while running to set.

P0353-IGNITION COIL #3 PRIMARY CIRCUIT

When Monitored: With battery voltage greater than 8 volts during engine cranking or greater than 13 volts with engine running. Engine RPM less than 3000. No coil in dwell during test.

Set Condition: Peak current is not achieved with battery based dwell plus 1.5 msec of diagnostic offset. It takes less than 3 seconds during cranking or up to 6 seconds while running to set.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
IGNITION COIL
CHECKING THE BCM FOR DTC(S)
(K342) ASD RELAY OUTPUT CIRCUIT
IGNITION COIL DRIVER CIRCUIT OPEN
IGNITION COIL DRIVER CIRCUIT SHORTED TO GROUND

P0351-IGNITION COIL #1 PRIMARY CIRCUIT — Continued

POSSIBLE CAUSES
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Record the Freeze Frame Information that set along with the DTC.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	**NOTE: Ensure the DRB is able to establish communication with the BCM. If communication can not be established, refer to the Body Communication Category and perform the appropriate test.** Turn the ignition on. With the DRBIII®, check for DTC(s) in the BCM. Are any Ignition MUX circuit faults present? Yes → Refer to the Body Communication Category and perform the appropriate symptom(s). Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All
3	Turn the ignition off. Disconnect the Ignition Coil harness connector. Turn the ignition on. With the DRBIII®, actuate the ASD Relay. Using a 12-volt test light connected to ground, probe the (K342) ASD Relay Output circuit in the Ignition Coil harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the (K342) ASD Relay Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	Turn the ignition off. Disconnect the Ignition Coil harness connector. Using a 12-volt test light connected to 12-volts, probe the Ignition Coil Driver circuit. Crank the engine for 5 second while observing the test light. Does the test light blink/flicker? Yes → Replace the Ignition Coil. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All

P0351-IGNITION COIL #1 PRIMARY CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect the Ignition Coil harness connector. Disconnect the PCM harness connector. Measure the resistance of the Ignition Coil driver circuit between the Ignition Coil harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Ignition Coil driver circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	Turn the ignition off. Disconnect the Ignition Coil harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the Ignition Coil driver circuit in the Ignition Coil harness connector. Is the resistance below 100k ohms? Yes → Repair the Ignition Coil driver circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 7	All
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0401 - EGR SYSTEM FAILURE

When Monitored and Set Condition:

P0401 - EGR SYSTEM FAILURE

When Monitored: With the ignition on and the battery voltage greater than 10.4 volts.

Set Condition: Conditions are met, the EGR is turned off and on momentarily. The oxygen sensor signal is monitor for changes in its output signal during this test. If no significant change or too much change is seen, a flag is set.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
EGR SOLENOID VACUUM SUPPLY
EGR VALVE OPERATION (CLOSED)
(F202) FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
EGR VALVE OPERATION (OPEN)
(K35) EGR SOLENOID CONTROL CIRCUIT SHORTED TO VOLTAGE
(K35) EGR SOLENOID CONTROL CIRCUIT OPEN
EGR SOLENOID (CLOSED)
(K35) EGR SOLENOID CONTROL CIRCUIT SHORT TO GND
EGR SOLENOID (OPEN)
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Start the engine. Allow the engine to reach operating temperature. Does the engine run rough or stall at idle? Yes → Go To 3 No → Go To 6	All

P0401 - EGR SYSTEM FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the vacuum hose from the EGR Valve. Start the engine and allow it to idle. Does the engine run rough or stall at idle? Yes → Remove the EGR Valve and inspect the valve for an obstruction that would keep the valve open. If OK, replace the EGR Valve. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the EGR Solenoid harness connector. Measure the resistance of the (K35) EGR Solenoid Control circuit in the EGR Solenoid harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the (K35) EGR Solenoid Control circuirt for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the EGR Solenoid harness connector. Using a 12-volt test light connected to 12-volts, probe the (K35) EGR Solenoid Control circuit. Turn the ignition on. With the DRBIII®, actuate the EGR Solenoid. Observe the test light. Does the test light flash on and off? Yes → Replace the EGR Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	Turn the ignition off. Disconnect the EGR Solenoid vacuum supply at the EGR Solenoid. Connect a vacuum gauge to the EGR Solenoid vacuum supply. Start the engine. Observe the vacuum gauge. Does the vacuum gauge read above 10″? Yes → Go To 7 No → Repair the EGR Solenoid vacuum supply. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0401 - EGR SYSTEM FAILURE — Continued

TEST	ACTION	APPLICABILITY
7	Disconnect the vacuum hose from the EGR Valve. Inspect the vacuum hose for any obstructions. Connect a Vacuum Pump to the EGR Valve. Start the engine. Using the Vacuum Pump, apply vacuum to the EGR Valve. Does the engine run rough or stall at idle? Yes → Go To 8 No → Remove the EGR Valve and inspect the valve for an obstruction that would keep the valve form opening. If OK, replace the EGR Valve. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
8	Turn the igntion off. Disconnect the EGR Solenoid harness connector. Turn the ignition on. Using a 12-volt Test Light connected to ground, probe the (F202) Fused Ignition Switch Output circuit in the EGR Solenoid harness connector. Does the 12-volt test light illuminate? Yes → Go To 9 No → Repair the (F202) Fused Ignition Switch Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
9	Turn the ignition off. Disconnect the EGR Solenoid harness connector. Turn the ignition on. Measure the voltage of the (K35) EGR Solenoid Control circuit in the EGR Solenoid connector. Is the voltage above 1.0 volts? Yes → Repair the (K35) EGR Solenoid Control circuit for a short to voltage. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 10	All
10	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the EGR Solenoid harness connector. Measure the resistance of the (K35) EGR Solenoid Control circuit between the PCM harness connector and the EGR Solenoid harness connector. Is the resistance below 5.0 ohms? Yes → Go To 11 No → Repair the (K35) EGR solenoid control circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0401 - EGR SYSTEM FAILURE — Continued

TEST	ACTION	APPLICABILITY
11	Turn the ignition off. Disconnect the EGR Solenoid harness connector. Using a 12-volt test light connected to 12-volts, probe the (K35) EGR Solenoid Control circuit in the EGR Solenoid harness connector. Turn the ignition on. With the DRBIII®, actuate the EGR Solenoid. Observe the test light. Does the test light flash on and off. Yes → Inspect the EGR Solenoid Back Pressure hose and tube for obstructions or damage. If OK, replace the EGR Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 12	All
12	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0403 - EGR SOLENOID CIRCUIT

When Monitored and Set Condition:

P0403 - EGR SOLENOID CIRCUIT

When Monitored: Engine running. Battery voltage greater than 10.4 volts.

Set Condition: The EGR solenoid control circuit is not in the expected state when requested to operate by the PCM for 86.4 seconds.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
EGR SOLENOID
(F202) FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
(K35) EGR SOLENOID CONTROL CIRCUIT SHORTED TO VOLTAGE
(K35) EGR SOLENOID CONTROL CIRCUIT SHORTED TO GROUND
(K35) EGR SOLENOID CONTROL CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Disconnect the EGR Solenoid harness connector. Turn the ignition on. Turn all accessories off. Using a 12-volt Test Light connected to the (F202) Fused Ignition Switch Output circuit, probe the EGR Solenoid Control circuit. With the DRBIII®, actuate the EGR solenoid. Does the 12-volt test light flash on and off? Yes → Inspect the EGR Valve Back Pressure hose and tube for obstructions or damage. If OK, replace the EGR Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All

P0403 - EGR SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the EGR Solenoid harness connector. Turn the ignition on. Using a 12-volt Test Light connected to ground, probe the (F202) Fused Ignition Switch Output circuit in the EGR Solenoid harness connector. Does the 12-volt test light illuminate? Yes → Go To 4 No → Repair the open in the (F202) Fused Ignition Switch Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the EGR Solenoid harness connector. Measure the resistance of the (K35) EGR Solenoid Control circuit to ground. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (K35) EGR Solenoid Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the EGR Solenoid harness connector. Turn the ignition on. Measure the voltage on the (K35) EGR Solenoid Control circuit in the EGR Solenoid connector. Is the voltage above 1.0 volt? Yes → Repair the short to voltage in the (K35) EGR Solenoid Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the EGR Solenoid harness connector. Measure the resistance of the (K35) EGR Solenoid Control circuit between the PCM harness connector and the EGR Solenoid harness connector. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the open in the (K35) EGR Solenoid Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:
P0420-1/1 CATALYTIC CONVERTER EFFICIENCY

When Monitored and Set Condition:

P0420-1/1 CATALYTIC CONVERTER EFFICIENCY

When Monitored: After engine warm up to 70°C (158°F), 180 seconds of open throttle operation, at a speed greater than 18 mph and less than 55 mph, with the engine at 1200-1700 rpm and MAP vacuum between 15.0 and 21.0 inches of mercury (Hg).

Set Condition: As catalyst efficiency deteriorates, the switch rate of the downstream O2 sensor approaches that of the upstream O2 sensor. If at any point during the test the switch ratio reaches a predetermined value a counter is incremented by one.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
VISUALLY INSPECT CATALYTIC CONVERTER
EXHAUST LEAK
ENGINE MECHANICAL CONDITION
AGING O2 SENSOR
CATALYTIC CONVERTER

TEST	ACTION	APPLICABILITY
1	**NOTE: If a O2 Sensor DTC(s) set along with the Catalytic Converter Efficiency DTC diagnose the O2 Sensor DTC(s) before continuing.** **NOTE: Check for contaminates that may have damaged the O2 Sensor and Catalytic Converter: contaminated fuel, unapproved silicone, oil and coolant, repair necessary.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Inspect the Catalytic Converter for the following damage. Damage Catalytic Converter, dent and holes. Severe discoloration caused by overheating the Catalytic Converter. Catalytic Converter broke internally. Leaking Catalytic Converter. Were any problems found? Yes → Replace the Catalytic Converter. Repair the condition that may have caused the failure. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All

P0420-1/1 CATALYTIC CONVERTER EFFICIENCY — Continued

TEST	ACTION	APPLICABILITY
3	Start the engine. Inspect the exhaust for leak between the engine and the O2 sensor. Inspect the exhaust for leaks between the engine and the appropriate rear O2 Sensor. Are there any exhaust leaks? Yes → Repair or replace the leaking exhaust parts as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Check the exhaust for excessive smoke caused by an internal problem in the engine. Is a engine mechanical condition present? Yes → Repair the engine mechanical condition as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	A new rear O2 Sensor along with an aging front O2 Sensor may cause the DTC to set. Review the vehicles repair history. Has the rear O2 Sensor been replace without replacing the front O2 Sensor? Yes → Replace the Front O2 Sensor as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	If there are no possible cause remaining, view repair. Repair Replace the Catalytic Converter. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0441-EVAP PURGE FLOW MONITOR

When Monitored and Set Condition:

P0441-EVAP PURGE FLOW MONITOR

When Monitored: With engine temperature greater than 71°C (160°F), fuel control in closed loop, engine idling for 200 seconds, no low fuel, MAP less than 23.6 inches mercury and barometric altitude less than 8,000 feet.

Set Condition: After having passed the Leak Detection Pump (LDP) test, no air flow through the evaporative system is detected by the evap monitor.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
EVAP PURGE SOLENOID LEAKS/STUCK OPEN
EVAP PURGE SOLENOID STUCK CLOSED
EVAP PURGE SOLENOID VACUUM SUPPLY
EVAP PURGE HOSE SOLENOID TO CANISTER
EVAP PURGE HOSE CANISTER TO FUEL TANK
EVAP CANISTER

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	**NOTE: After disconnecting the Evap Purge Solenoid vacuum connections, inspect the lines and solenoid for any signs of contamination from the EVAP Canister. This may indicate a faulty rollover valve. Replace/repair as necessary.** Turn the ignition off. Disconnect the vacuum hoses at the Evap Purge Solenoid. Using a hand vacuum pump, apply 10 inches of vacuum to the Evap Purge Solenoid vacuum source port on the component side. Does the Evap Purge Solenoid hold vacuum? Yes → Go To 3 No → Replace the Evap Purge Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0441-EVAP PURGE FLOW MONITOR — Continued

TEST	ACTION	APPLICABILITY
3	Using a hand vacuum pump, apply 10 inches of vacuum to the Evap Purge Solenoid vacuum source port on the component side. Turn the ignition on. Observe the vacuum gauge. With the DRBIII®, actuate the EVAP Purge Solenoid . Does the vacuum drop when the solenoid is actuated? Yes → Go To 4 No → Replace the Evap Purge Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	Turn the ignition off. Carefully inspect the Evap Purge Solenoid vacuum supply hose for proper routing. Check for a pinched or plugged hose from the throttle body to the Purge Solenoid. Inspect the vacuum port at the throttle body for any damage or plugging. Were any problems found? Yes → Repair the vacuum supply hose/tube as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Visually inspect the Evap Purge hose from the Evap Purge Solenoid to the Evap Canister. Look for any physical damage such as a pinched, plugged, ripped or dry rotted hose. Were any problems found? Yes → Repair or replace hose as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	Visually inspect the Evap Purge hose from between the Evap Canister and the Fuel Tank. Check for any physical damage such as a pinched, plugged, ripped or dry rotted hose. Were any problems found? Yes → Repair or replace hose as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 7	All
7	Visually inspect the Evap Canister for the following. Check for physical damage or signs of fuel that has entered the canister. Check for signs of fuel, this may indicate a bad rollover valve. Were any problems found? Yes → Repair or Replace as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Test Complete.	All

Symptom List:

P0442-EVAP LEAK MONITOR .040 LEAK DETECTED
P0455-EVAP LEAK MONITOR LARGE LEAK DETECTED
P0456 - EVAP LEAK MONITOR .020 LEAK DETECTED

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0442-EVAP LEAK MONITOR .040 LEAK DETECTED.

When Monitored and Set Condition:

P0442-EVAP LEAK MONITOR .040 LEAK DETECTED

When Monitored: Immediately after a cold start, with battery/ambient temperature between 4°C (40°F) and 32°C (90°F) and coolant temperature within -12°C (20°F) of battery/ambient.

Set Condition: If there is a leak larger than 0.040″ and smaller than 0.080″ in the evaporative system.

P0455-EVAP LEAK MONITOR LARGE LEAK DETECTED

When Monitored: Immediately after a cold start, with battery/ambient temperature between 4°C (40°F) and 32°C (90°F) and coolant temperature within -12°C (10°F) of battery/ambient.

Set Condition: There is a leak larger than 0.080″ in the evaporative system.

P0456 - EVAP LEAK MONITOR .020 LEAK DETECTED

When Monitored: Immediately after a cold start, with battery/ambient temperature between 4°C (40°F) and 30°C (86°F) and coolant temperature within -12°C (10°F) of battery/ambient.

Set Condition: If there is a leak larger than 0.020″ and smaller than 0.040″ in the evaporative system.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
VERIFY EVAPORATIVE EMISSION SYSTEM LEAK
EVAPORATIVE EMISSION LEAK DETECTION
EVAP PURGE SOLENOID LEAKS/STUCK OPEN
INTERMITTENT LDP MONITOR FAILURE

P0442-EVAP LEAK MONITOR .040 LEAK DETECTED — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Since a hot vehicle can conceal a leak, it is best to perform this test at room temperature.** **NOTE: A loose gas cap could have caused this DTC to set. Make sure gas cap is tight and in good condition. Ensure the gas cap meets OEM specifications.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All
2	To continue testing you will need Miller Tool #8404 Evaporative Emission Leak Detector (EELD). **WARNING: Keep lit cigarettes, sparks, flames, and other ignition sources away from the test area to prevent the ignition of explosive gases. Keep the test area well ventilated.** **NOTE: The fuel tank should have between 20% and 80% of fuel tank capacity to properly test the Evap system.** Connect and apply a continuous vacuum supply (i.e. 20″Hg) to the Leak Detection Pump. A vacuum pump such as an A/C recovery unit works well. Using the DRBIII®, select Engine/System Tests and actuate the Leak Detect Pump Test (Option 3/Hold PSI). **NOTE: The above energizes the LDP solenoid and allows the constant vacuum source to apply vacuum to the LDP pump diaphragm. This lifts the diaphragm up and seals the atmospheric canister vent valve at the bottom of the Leak Detection Pump.** Connect the red power lead of Miller Tool #8404 to the battery positive terminal and the black ground lead to battery negative terminal. **NOTE: See Charts and Graph support material EELD Calibration Setup for an example.** Connect shop air to the #8404 EELD. Set the smoke/air control switch to AIR. Insert the tester's AIR supply tip (clear hose) into the appropriate calibration orifice on the tester's control panel (based on DTC leak size). Press the remote smoke/air start button. Position the red flag on the air flow meter so it is aligned with the indicator ball. When the calibration is complete, release the remote button. The EELD is now calibrated the flow meter in liters per minute to the size leak indicated by the DTC set in the PCM. Install the service port adapter #8404-14 on the vehicle's service port. Connect the Air supply hose from the EELD to the service port. Press the remote button to activate AIR flow. **NOTE: Larger volume fuel tanks, and/or those with less fuel, may require 4 to 5 minutes to fill.** Compare the flow meter indicator ball reading to the red flag. ABOVE the red flag indicates a leak present. BELOW the red flag indicates a sealed system. Is the indicator ball above the red flag? Yes → Go To 3 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All

P0442-EVAP LEAK MONITOR .040 LEAK DETECTED — Continued

TEST	ACTION	APPLICABILITY
3	**NOTE: A thorough visual inspection of the Evap system hoses, tubes, and connections may save time in your diagnosis. Look for any physical damage or signs of wetness at connections. The strong smell of fuel vapors may aid diagnosis also.** To continue testing, you will need Miller Tool #8404 Evaporative Emissions Leak Detector (EELD). Remove the Air supply hose from the service port. Connect the SMOKE supply tip (black hose) to the service port. Set the smoke/air control switch to SMOKE. **NOTE: The flow meter indicator ball will not move at this point.** Press the remote smoke/air start button. **NOTE: Ensure that smoke has filled the EVAP system by continuing to press the remote smoke/air start button, remove the vehicle fuel cap, and wait for the smoke to exit. Once smoke is indicated reinstall the fuel cap.** **NOTE: For optimal performance, introduce smoke into the system for an additional 60 seconds; continue introducing smoke at 15 second intervals, as necessary.** While still holding the remote smoke/air start button, use the white light (#8404-CLL) to follow the EVAP system path, and look for the source of the leak indicated by exiting smoke. If a leak is concealed from view (i.e., top of fuel tank), release the remote smoke/air start button, and use the ultraviolet (UV) black light #8404-UVL and the yellow goggles 8404-20 to look for residual traces of dye that is left behind by the smoke. The exiting smoke deposits a residual fluid that is either bright green or bright yellow in color when viewed with a UV light. **NOTE: Hoses** Was a leak found? Yes → Repair or replace the leaking component as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 6. No → Go To 4	All
4	**NOTE: After disconnecting the Evap Purge Solenoid vacuum connections, inspect the lines and solenoid for any signs of contamination from the EVAP Canister. This may indicate a faulty rollover valve. Replace/repair as necessary.** Turn the ignition off. Disconnect the vacuum hoses at the Evap Purge Solenoid. Using a hand vacuum pump, apply 10 inches of vacuum to the Evap Purge Solenoid vacuum source port on the component side. **NOTE: Monitor the vacuum gauge for at least 15 seconds.** Does the Evap Purge Solenoid hold vacuum? Yes → Go To 5 No → Replace the Evap Purge Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All

P0442-EVAP LEAK MONITOR .040 LEAK DETECTED — Continued

TEST	ACTION	APPLICABILITY
5	At this time, the conditions required to set the DTC are not present. **NOTE: Use the Freeze Frame Data to help you duplicate the conditions that set the DTC. Pay particular attention to the DTC set conditions, such as, VSS, MAP, ECT, and Load.** **NOTE: A thorough visual inspection of the Evap system hoses, tubes, and connections may save time in your diagnosis. Look for any physical damage or signs of wetness at connections. The strong smell of fuel vapors may aid diagnosis also.** **NOTE: Refer to any Technical Service Bulletins (TSB's) that may apply.** With the DRBIII® in System Tests, perform the LDP Monitor Test. This will force the PCM to run the LDP Monitor. If the monitor fails, further diagnosis is required to find faulty component. If the monitor passes, the condition is not present at this time. Were any problems found? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 6. No → Test Complete.	All

Symptom:

P0443-EVAP PURGE SOLENOID CIRCUIT

When Monitored and Set Condition:

P0443-EVAP PURGE SOLENOID CIRCUIT

When Monitored: The ignition on or engine running. Battery voltage greater than 10 volts.

Set Condition: The PCM will set a trouble code if the actual state of the solenoid does not match the intended state within 0.5 seconds.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
(K52) EVAP PURGE SOLENOID CONTROL CIRCUIT OPEN
(K52) EVAP PURGE SOLENOID CONTROL CIRCUIT SHORTED TO GROUND
(K70) EVAP PURGE SOLENOID SENSE CIRCUIT OPEN
(K70) EVAP PURGE SOLENOID SENSE CIRCUIT SHORTED TO GROUND
EVAP PURGE SOLENOID
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Disconnect the Evap Purge Solenoid harness connector. Measure the resistance between the terminals of the Evap Purge Solenoid. Is the resistance between 10.0 and 15.0 ohms? No → Replace the Evap Purge Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 5. Yes → Go To 3	All

P0443-EVAP PURGE SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Evap Purge Solenoid harness connector. Disconnect the Powertrain Control Module harness connectors. Measure the resistance of the (K52) Evap Purge Solenoid Control circuit from the PCM harness connector to the Evap Purge Solenoid harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the open in the (K52) Evap Purge Solenoid Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	Turn the ignition off. Disconnect the Evap Purge Solenoid harness connector. Disconnect the Powertrain Control Module harness connectors. Measure the resistance of the (K52) Evap Purge Solenoid Control circuit in the Evap Purge Solenoid harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (K52) Evap Purge Solenoid Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the Evap Purge Solenoid harness connector. Disconnect the Powertrain Control Module harness connectors. Measure the resistance of the (K70) Evap Purge Solenoid Sense circuit from the PCM harness connector to the Evap Purge Solenoid harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K70) Evap Purge Solenoid Sense circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	Turn the ignition off. Disconnect the Evap Purge Solenoid harness connector. Disconnect the Powertrain Control Module harness connectors. Measure the resistance between ground and the (K70) Evap Purge Solenoid Sense circuit at the Evap Purge Solenoid harness connector. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (K70) Evap Purge Solenoid Sense circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 7	All
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0460-FUEL LEVEL UNIT NO CHANGE OVER MILES

When Monitored and Set Condition:

P0460-FUEL LEVEL UNIT NO CHANGE OVER MILES

When Monitored: TEST #1: With the ignition on, the fuel level is compared to the previuos key down after a 20 second delay. TEST #2: The PCM monitor the fuel level at ignition on.

Set Condition: TEST #1: If the PCM does not see a difference in fuel level of greater than 0.1 volt the test will fail. TEST #2: If the PCM does not see a change in the fuel level of .1765 over a set amount of miles the test will fail. See Charts and Graphs (Fuel Level Voltage Change Over Miles Chart) for an example.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
VISUALLY INSPECT FUEL TANK
(N4) FUEL LEVEL SENSOR SIGNAL CIRCUIT SHORTED TO GROUND
(N4) FUEL LEVEL SENSOR SIGNAL CIRCUIT OPEN
(Z201) GROUND CIRCUIT OPEN
INTERNAL INSPECTION OF THE FUEL TANK
FUEL LEVEL SENSOR

TEST	ACTION	APPLICABILITY
1	**NOTE: Diagnose P0462 or P0463 first, if set along with P0460.** **NOTE: Inspect the Fuel Pump Module harness connector for any corrosion or damage.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Visually inspect the Fuel Tank for damage that may restrict the Fuel Sending Unit float from moving. Is the Fuel Tank OK? Yes → Go To 3 No → Replace the Fuel Tank as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0460-FUEL LEVEL UNIT NO CHANGE OVER MILES — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Fuel Pump Module harness connector. Disconnect the BCM harness connector. Measure the resistance of the (N4) Fuel Level Sensor Signal circuit between the Fuel Pump Module harness connector and the BCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the open in the (N4) Fuel Level Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	Turn the ignition off. Disconnect the Fuel Pump Module harness connector. Measure the resistance of the (N4) Fuel Level Sensor Signal circuit in the Fuel Pump Module harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (N4) Fuel Level Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the Fuel Pump Module harness connector. Using a 12-volt test light connected to battery voltage, probe the (Z201) Ground circuit in the Fuel Pump Module harness connector. Does the test light illuminate brightly? Yes → Go To 6 No → Repair the open in the (Z201) Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	**WARNING: The fuel system is under a constant pressure even with the engine off. Before opening the fuel system the fuel pressure must be release. Relieve the fuel pressure in accordance with the service information.** Remove the Fuel Tank in accordance with the Service Information. Remove the Fuel Pump Module. Visually inspect the inside of the Fuel Tank for any obstructions or deformities. Inspect the Fuel Pump Module Float arm for damage. Were any problems found? Yes → Repair or replace as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Fuel Level Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom List:

P0462-FUEL LEVEL SENDING UNIT VOLTS TOO LOW
P0463-FUEL LEVEL SENDING UNIT VOLTS TOO HIGH

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0462-FUEL LEVEL SENDING UNIT VOLTS TOO LOW.

When Monitored and Set Condition:

P0462-FUEL LEVEL SENDING UNIT VOLTS TOO LOW

When Monitored: Ignition on and battery voltage above 10.4 volts.

Set Condition: The fuel level sensor signal voltage goes below 0.4 volts for more than 90 seconds.

P0463-FUEL LEVEL SENDING UNIT VOLTS TOO HIGH

When Monitored: Ignition on and battery voltage above 10.4 volts.

Set Condition: The fuel level sensor signal voltage at the PCM goes above 9.9 volts for more than 90 seconds.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
INTERMITTENT CONDITION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Refer to the Instrument Cluster Category and perform the appropriate symptoms. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0500-NO VEHICLE SPEED SIGNAL (3SP AUTO AND MANUAL TRANSMISSIONS)

When Monitored and Set Condition:

P0500-NO VEHICLE SPEED SIGNAL (3SP AUTO AND MANUAL TRANSMISSIONS)

When Monitored: With the engine running, transmission not in park or neutral, brakes not applied, and engine rpm greater than 1800.

Set Condition: This code will set if no vehicle speed signal is received from the Vehicle Speed Sensor for more than 7.2 seconds for 2 consecutive trips.

POSSIBLE CAUSES
VEHICLE SPEED SENSOR OPERATION
(F888) 8-VOLT SUPPLY CIRCUIT OPEN
(N7) VSS SIGNAL CIRCUIT SHORTED TO GROUND
(N7) VSS SIGNAL CIRCUIT OPEN
PCM
(K900) SENSOR GROUND CIRCUIT OPEN
VEHICLE SPEED SENSOR

TEST	ACTION	APPLICABILITY
1	Raise the drive wheels off the ground. **WARNING: BE SURE TO KEEP HANDS AND FEET CLEAR OF ROTATING WHEELS.** Start the engine. With the DRBIII®, monitor the Vehicle Speed Sensor Place the transmission in any forward gear. Allow the wheels to rotate. Does the DRBIII® display vehicle speed above 0 MPH/Kph? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 2	All
2	Turn the ignition off. Disconnect the Vehicle Speed Sensor harness connector. Turn the ignition on. Measure the voltage of the (F888) 8-Volt Supply circuit in the VSS harness connector. Is the voltage above 7.0 volts? Yes → Go To 3 No → Repair the open in the (F888) 8-Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0500-NO VEHICLE SPEED SIGNAL (3SP AUTO AND MANUAL TRANSMISSIONS) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Vehicle Speed Sensor harness connector. Turn the ignition on. Measure the voltage of the (N7) Vehicle Speed Sensor Signal circuit in the VSS harness connector. Is the voltage between 4.5 to 5.0 volts? Yes → Go To 4 No → Go To 5	All
4	Turn the ignition off. Disconnect the Vehicle Speed Sensor harness connector. Measure the resistance of the (K900) Sensor Ground circuit between the VSS harness connector and ground. Is the resistance below 5.0 ohms? Yes → Remove and inspect the Pinion Gear. If OK, replace the Vehicle Speed Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Repair the open in the (K900) Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	Turn the ignition off. Disconnect the Vehicle Speed Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (N7) VSS Signal circuit between the VSS harness connector and the PCM harness connector. Is the resistance below 5 ohms? Yes → Go To 6 No → Repair the open in the (N7) VSS Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	Turn the ignition off. Disconnect the Vehicle Speed Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (N7) VSS Signal circuit in the VSS harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (N7) VSS Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 7	All
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair, Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0500-NO VEHICLE SPEED SIGNAL (4SP AUTO TRANS)

When Monitored and Set Condition:

P0500-NO VEHICLE SPEED SIGNAL (4SP AUTO TRANS)

When Monitored: With the engine running, transmission not in park or neutral, brakes not applied, and engine rpm greater than 1800.

Set Condition: This code will set if no vehicle speed signal is received from the TCM (transmission control module) for more than 7.2 seconds for 2 consecutive trips.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
(N7) VSS SIGNAL SHORTED TO VOLTAGE
VSS SIGNAL FROM TCM
(N7) VEHICLE SPEED SENSOR SIGNAL SHORTED TO GROUND

TEST	ACTION	APPLICABILITY
1	**NOTE: Before continuing this test use the DRB and check Pinion Factor. If not correct, reset and retest vehicle.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Disconnect the TCM harness connector. Turn the ignition on. Measure the voltage of the (N7) VSS Signal circuit in the TCM harness connector. Is the voltage above 6.0 volts? Yes → Repair the short to voltage in the (N7) VSS Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All

P0500-NO VEHICLE SPEED SIGNAL (4SP AUTO TRANS) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the TCM harness connector. Turn the ignition on. Connect a jumper wire to the (N7) VSS Signal circuit in the TCM harness connector. With the DRBIII®, monitor the Vehicle Speed Signal display. Tap the other end of the jumper wire rapidly to ground. Does the Vehicle Speed Signal display the MPH/kmh above 0? Yes → Go To 4 No → Replace the Transmission Comtrol Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the TCM harness connector. Measure the resistance of the (N7) Vehicle Speed Sensor Signal circuit in the PCM harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the (N7) Vehicle Speed Sensor Signal circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the TCM harness connector. Measure the resistance of the (N7) Vehicle Speed Sensor Signal circuit between the PCM harness connector and the TCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the (N7) Vehicle Speed Sensor Signal circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connector. Pay particular attention to all Power and Ground circuits. If there is no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0508 - IAC MOTOR SENSE CIRCUIT LOW

When Monitored and Set Condition:

P0508 - IAC MOTOR SENSE CIRCUIT LOW

When Monitored: Engine running. The batterty voltage greater than 10 volts.

Set Condition: IAC Valve Sense current is less than 146.33 mA for 500 milli seconds.

POSSIBLE CAUSES
INTERMITTENT CONDITION
IAC MOTOR
IAC MOTOR DRIVER CIRCUIT SHORTED TO GROUND
IAC MOTOR SENSE CIRCUIT OPEN
IAC MOTOR SENSE CIRCUIT SHORTED TO GROUND
IAC MOTOR DRIVER CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: If the engine will not idle, maintain an engine speed between 800 and 1500 RPM.** Start the engine. Allow the engine to idle. With the DRBIII®, read the IAC Current. Is the IAC Current below 146 mA? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Disconnect the IAC Motor harness connector. Remove the IAC Motor. **NOTE: Inspect the IAC air passages for restriction and damage to the IAC valve.** Measure the resistance across the IAC Motor pin terminals (component). Is the resistance 9.7 +/- 1.0 ohms? Yes → Go To 3 No → Replace the IAC Motor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0508 - IAC MOTOR SENSE CIRCUIT LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the IAC Motor harness connector. Disconnect the Powertrain Control Module harness connectors. Measure the resistance of the IAC Motor Sense circuit from the PCM harness connector to the IAC Motor harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the open in the IAC Sense circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	Turn the ignition off. Disconnect the IAC Motor harness connector. Disconnect the PCM harness connectors. Measure the resistance of the IAC Motor Sense in the IAC Motor harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the IAC Motor Sense circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the IAC Motor harness connector. Disconnect the Powertrain Control Module harness connectors. Measure the resistance of the IAC Motor Driver circuit from the PCM harness connector to the IAC Motor harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the IAC Motor Driver circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	Turn the ignition off. Disconnect the IAC Motor harness connector. Disconnect the PCM harness connectors. Measure the resistance of the IAC Motor Driver circuit in the IAC Motor harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the IAC Motor Driver circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 7	All
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0509 - IAC MOTOR SENSE CIRCUIT HIGH

When Monitored and Set Condition:

P0509 - IAC MOTOR SENSE CIRCUIT HIGH

When Monitored: Engine running. The batterty voltage greater than 10 volts.

Set Condition: IAC Valve Sense current is greater than 999.9 mA for 500 milli seconds.

POSSIBLE CAUSES
INTERMITTENT CONDITION
IAC MOTOR
IAC MOTOR SENSE CIRCUIT SHORTED TO VOLTAGE
IAC MOTOR DRIVER CIRCUIT SHORTED TO VOLTAGE
IAC MOTOR SENSE CIRCUIT SHORTED TO IAC MOTOR DRIVER CIRCUIT
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: If the engine will not idle, maintain an engine speed between 800 and 1500 RPM.** Start the engine. Allow the engine to idle. With the DRBIII®, read the IAC Current. Is the IAC Current above 999 mA? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Disconnect the IAC Motor harness connector. With the DRBIII®, monitor the IAC Current. Turn the ignition on. Does the DRBIII® display IAC Current at 0mA? Yes → Replace the IAC Motor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All

P0509 - IAC MOTOR SENSE CIRCUIT HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the IAC Motor harness connector. Turn the ignition on. With the DRBIII®, actuate the ASD Relay. Measure the voltage of the IAC Motor Sense circuit in the IAC Motor harness connector. Is the voltage above 0.5 of a volt? Yes → Repair the short to voltage in the IAC Motor Sense circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Disconnect the IAC Motor harness connector. Turn the ignition on. With the DRBIII®, actuate the ASD Relay. Measure the voltage of the IAC Motor Driver circuit in the IAC Motor harness connector. Is the voltage above 0.5 of a volt? Yes → Repair the short to voltage in the IAC Motor Driver circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the IAC Motor harness connector. Measure the resistance across the IAC Motor harness connector. Is the resistance below 5.0 ohms? Yes → Repair the shorted to the IAC Motor Driver circuit IAC Motor Sense circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom List:

P0600-PCM FAILURE SPI COMMUNICATIONS
P0601-PCM INTERNAL CONTROLLER FAILURE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0600-PCM FAILURE SPI COMMUNICATIONS.

When Monitored and Set Condition:

P0600-PCM FAILURE SPI COMMUNICATIONS

When Monitored: Ignition key on.

Set Condition: Internal Bus communication failure between processors.

P0601-PCM INTERNAL CONTROLLER FAILURE

When Monitored: Ignition key on.

Set Condition: Internal checksum for software failed, does not match calculated value.

POSSIBLE CAUSES
PCM INTERNAL OR SPI

TEST	ACTION	APPLICABILITY
1	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. The Powertrain Control Module is reporting internal errors, view repair to continue. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0622-GENERATOR FIELD NOT SWITCHING PROPERLY

When Monitored and Set Condition:

P0622-GENERATOR FIELD NOT SWITCHING PROPERLY

When Monitored: With the ignition on. Engine running.

Set Condition: When the PCM tries to regulate the generator field with no result during monitoring.

POSSIBLE CAUSES
GENERATOR OPERATION
(K342) ASD RELAY OUTPUT CIRCUIT OPEN
(K20) GENERATOR FIELD DRIVER CIRCUIT SHORTED TO GROUND
(K20) GENERATOR FIELD DRIVER CIRCUIT OPEN
GENERATOR FIELD COIL OPEN
GENERATOR FIELD COIL SHORTED
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Record all DTCs and the related Freeze Frame data. Using a 12-volt test light connected to ground, backprobe the (K20) Generator Field Driver circuit in the back of the Generator. With the DRBIII®, actuate the Generator Field Driver circuit. Does the test light illuminate brightly and flash? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 3. No → Go To 2	All
2	**NOTE: Carefully inspect all Connectors for corrosion or spread Terminals before continuing.** Disconnect the Generator Field harness connector. Turn the ignition on. With the DRBIII® actuate the Generator Field Driver circuit. Using a 12-volt test light connected to ground, probe the (K342) ASD Relay Output circuit. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the (K342) ASD Relay Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 3.	All

P0622-GENERATOR FIELD NOT SWITCHING PROPERLY — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the Generator Field harness connector. Measure the resistance of the (K20) Generator Field Driver circuit from PCM harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the (K20) Generator Field Driver circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 3. No → Go To 4	All
4	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the Generator Field harness connector. Measure the resistance of the (K20) Generator Field Driver circuit from the PCM harness connector to the Generator Field harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the (K20) Generator Field Driver circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 3.	All
5	Turn the ignition off. Disconnect the Generator Field harness connector. Measure the resistance across the Generator Field Terminals at the Generator. Is the resistance above 15.0 ohms? Yes → Replace the Generator. Perform POWERTRAIN VERIFICATION TEST VER - 3. No → Go To 6	All
6	Turn the ignition off. Disconnect the Generator Field harness connector. Measure the resistance across the Generator Field Terminals at the Generator. Is the resistance below 0.5 ohms? Yes → Replace the Generator. Perform POWERTRAIN VERIFICATION TEST VER - 3. No → Go To 7	All
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there is no more possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 3.	All

Symptom:

P0645-A/C CLUTCH RELAY CKT

When Monitored and Set Condition:

P0645-A/C CLUTCH RELAY CKT

When Monitored: With the ignition on. Battery voltage greater than 10.4 volts. A/C Switch on.

Set Condition: An open or shorted condition is detected in the A/C clutch relay control circuit.

POSSIBLE CAUSES
A/C CLUTCH RELAY OPERATION
FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
INTELLIGENT POWER MODULE
A/C CLUTCH RELAY
IPM FUSE & RELAY CENTER
(C13) A/C CLUTCH RELAY CONTROL CKT OPEN
(C13) A/C CLUTCH RELAY CONTROL CIRCUIT SHORT TO GROUND
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, actuate the A/C Clutch Relay. Is the A/C Clutch Relay operating? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 2	All
2	Turn the ignition off. Remove the A/C Clutch Relay from the IPM. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch circuit in the IPM. Does the test light illuminate? Yes → Go To 3 No → Go To 8	All

P0645-A/C CLUTCH RELAY CKT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Remove the A/C Clutch Relay from the IPM. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the A/C Clutch Relay Control circuit in the IPM. With the DRBIII®, actuate the A/C Clutch Relay. Does the test light flash on and off? Yes → Replace the A/C Clutch Relay. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Disconnect the Intelligent Power Module C3 harness connector. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the A/C Clutch Relay Control circuit in the IPM harness connector. With the DRBIII®, actuate the A/C Clutch Relay. Does the test light flash on and off? Yes → Replace the IPM Fused & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the Intelligent Power Module C3 harness connector. Disconnect the PCM harness connector. Measure the resistance of the (C13) A/C Clutch Relay Control circuit between the Intelligent Power Module C3 harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the (C13) A/C Clutch Relay Control circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	Turn the ignition off. Disconnect the Intelligent Power Module C3 harness connector. Disconnect the PCM harness connector. Measure the resistance of the (C13) A/C Clutch Relay Control circuit in the Intelligent Power Module C3 harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the (C13) A/C Clutch Relay Control circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 7	All
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0645-A/C CLUTCH RELAY CKT — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the Intelligent Power Module C3 harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch circuit in the IPM harness connector. Does the test light illuminate? Yes → Replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Repair the Fused Ignition Switch Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0700-EATX CONTROLLER DTC PRESENT

TEST	ACTION	APPLICABILITY
1	This is an informational DTC letting you know that a DTC(s) is stored in the Transmission Control Module. Erase this DTC from the PCM after all Transmission DTC(s) have been repaired. Using the DRBIII®, read the Transmission Controller DTC and refer to the Transmission Category and perform the appropriate symptom. PCM Diagnostic Information complete. Continue Test Complete.	All

Symptom:

P0703-BRAKE SWITCH SENSE CIRCUIT

When Monitored and Set Condition:

P0703-BRAKE SWITCH SENSE CIRCUIT

When Monitored: TEST #1: Vehicle speed greater than 17 MPH to enable. TEST #2: Speed must be 0 and brake switch indicates on.

Set Condition: TEST #1: If vehicle speed goes to 0 MPH without brake input. Condition must be repeated 9 times to set fault. Two trip fault. TEST #2: If vehicle speed go above 17 MPH for more than 6.4 seconds without a change with the brake depressed. Condition must be repeat 9 times to set fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
FUSED B+ CIRCUIT
BRAKE SWITCH SENSE CIRCUIT SHORTED TO VOLTAGE
BRAKE SWITCH SENSE SHORTED TO GROUND
BRAKE SWITCH SENSE CIRCUIT OPEN
GROUND CIRCUIT OPEN
BRAKE LAMP SWITCH OPERATION
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the Brake Switch is adjusted properly before continuing.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All
2	Turn the ignition off. Disconnect the Brake Lamp Switch harness connector. Using a 12-volt test light connected to ground, check the Fused B+ circuit in the Brake Lamp Switch harness connector. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Fuse B+ circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All

P0703-BRAKE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Brake Lamp Switch harness connector. Disconnect the PCM harness connector. Remove the ASD Relay from the PDC. Using a jumper wire, jumper between the Fused B+ circuit and ASD Relay Output circuit in the PDC. Turn the ignition on. Measure the voltage of the Brake Switch Sense circuit in the Brake Lamp Switch harness connector. Is the voltage above 1.0 volts? Yes → Repair the Brake Switch Sense circuit shorted to voltage. Perform POWERTRAIN VERIFICATION TEST VER - 4. No → Go To 4	All
4	Turn the ignition off. Disconnect the Brake Lamp Switch harness connector. Disconnect the PCM harness connector. Measure the resistance of the Brake Switch Sense circuit in the Brake Lamp Switch harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the Brake Switch Sense circuit shorted to ground. Perform POWERTRAIN VERIFICATION TEST VER - 4. No → Go To 5	All
5	Turn the ignition off. Disconnect the Brake Lamp Switch harness connector. Disconnect the PCM harness connector. Measure the resistance of the Brake Switch Sense circuit between the Brake Lamp Switch harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Brake Switch Sense circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All
6	Turn the ignition off. Disconnect the Brake Lamp Switch harness connector. Measure the resistance of the Ground circuit in the Brake Lamp Switch harness connector to ground. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the Ground circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All
7	Turn the ignition off. Disconnect the Brake Lamp Switch harness connector. Measure the resistance between the Ground circuit terminal and the Brake Switch Sense terminal in the Brake Lamp Switch. Monitor Brake Switch Sense with the DRBIII®. Does the resistance change from below 5.0 ohms to open circuit? Yes → Go To 8 No → Replace the Brake Lamp Switch. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All

P0703-BRAKE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
8	If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All

Symptom:

P1192-INLET AIR TEMP SENSOR VOLTAGE LOW

When Monitored and Set Condition:

P1192-INLET AIR TEMP SENSOR VOLTAGE LOW

When Monitored: With the ignition on and battery voltage greater than 10.4 volts.

Set Condition: The Inlet Air Temperature (IAT) sensor circuit voltage at the PCM goes below 0.098 volt for 5 seconds.

POSSIBLE CAUSES
IAT SENSOR VOLTAGE BELOW 1.0 VOLT
IAT SENSOR INTERNAL FAILURE
(K21) IAT SENSOR SIGNAL SHORTED TO GROUND
(K21) IAT SENSOR SIGNAL SHORTED TO (K900) SENSOR GROUND CIRCUIT
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read the IAT voltage. Is the voltage below 1.0 volt? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Disconnect the IAT harness connector. Turn the ignition on. With the DRBIII®, read IAT voltage. Is the voltage above 1.0 volt? Yes → Replace the IAT Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All
3	Turn the ignition off. Disconnect the IAT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K21) IAT Sensor Signal circuit between the IAT Sensor harness connector and ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K21) IAT Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All

P1192-INLET AIR TEMP SENSOR VOLTAGE LOW — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the IAT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K21) IAT Sensor Signal circuit and the (K900) Sensor ground circuit in the IAT Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short between the (K900) Sensor ground circuit and the (K21) IAT Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P1193-INLET AIR TEMP SENSOR VOLTAGE HIGH

When Monitored and Set Condition:

P1193-INLET AIR TEMP SENSOR VOLTAGE HIGH

When Monitored: With the ignition on and battery voltage greater than 10.4 volts.

Set Condition: The inlet air temperature (IAT) sensor circuit voltage at the PCM goes above 4.9 volts for 5 seconds.

POSSIBLE CAUSES
IAT SENSOR VOLTAGE ABOVE 4.6 VOLTS
(K21) IAT SENSOR SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
IAT SENSOR INTERNAL FAILURE
(K21) IAT SENSOR SIGNAL CIRCUIT OPEN
(K900) SENSOR GROUND CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read the IAT voltage. Is the voltage above 4.6 volts? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Disconnect the IAT Sensor harness connector. Turn the ignition on. Measure the voltage of the (K21) IAT Sensor Signal circuit in the IAT Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to voltage in the (K21) IAT Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All

P1193-INLET AIR TEMP SENSOR VOLTAGE HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the IAT harness connector. Connect a jumper wire between the (K21) IAT Sensor Signal circuit and the (K900) Sensor Ground circuit in the IAT harness connector. Turn the ignition on. With the DRBIII®, read IAT voltage. Is the voltage below 1.0 volt? Yes → Replace the IAT Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Disconnect the IAT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K21) IAT Sensor Signal circuit between the IAT Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the (K21) IAT Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	Turn the ignition off. Disconnect the IAT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K900) Sensor Ground circuit between the IAT Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K900) Sensor Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P1195-1/1 O2 SENSOR SLOW DURING CATALYST MONITOR

When Monitored and Set Condition:

P1195-1/1 O2 SENSOR SLOW DURING CATALYST MONITOR

When Monitored: With the engine running, coolant greater than 70°C (158°F), open throttle, steady to slightly increasing vehicle speed greater than 18 mph but less than 55 mph, with a light load on the engine, for a period no less than 5 minutes.

Set Condition: The oxygen sensor signal voltage is switching from below 0.39 volt to above 0.6 volts and back fewer times than required.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
EXHAUST LEAK
O2 SENSOR SIGNAL CIRCUIT VOLTAGE DROP
O2 SENSOR GROUND CIRCUIT VOLTAGE DROP
O2 SENSOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Start the engine. Inspect the exhaust for leak between the engine and the O2 sensor. Inspect the exhaust for leaks between the engine and the appropriate rear O2 Sensor. Are there any exhaust leaks? Yes → Repair or replace the leaking exhaust parts as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All

P1195-1/1 O2 SENSOR SLOW DURING CATALYST MONITOR — Continued

TEST	ACTION	APPLICABILITY
3	**NOTE: Ensure the voltmeter leads meet the terminals in the connector and that there is good terminal to wire connection.** **NOTE: Ensure the voltmeter leads are connected for positive polarity** Back probe the O2 Sensor Signal circuit at the O2 Sensor harness connector and PCM harness connector. Start the engine. Allow the engine to idle. Is the voltage below 0.10 volt? Yes → Go To 4 No → Repair the high resistance on the O2 Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	**NOTE: Ensure the voltmeter leads meet the terminals in the connector and that there is good terminal to wire connection.** **NOTE: Ensure the voltmeter leads are connected for positive polarity** Back probe the O2 Sensor ground circuit at the O2 Sensor harness connector and PCM harness connector. Start the engine. Allow the engine to idle. Is the voltage below 0.10 volt? Yes → Go To 5 No → Repair the high resistance on the O2 Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	If there are no possible causes remaining, view repair. Repair Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P1281-ENGINE IS COLD TOO LONG

When Monitored and Set Condition:

P1281-ENGINE IS COLD TOO LONG

When Monitored: The ignition key on, engine running.

Set Condition: The engine does not warm to 71°C (160°F) while driving (throttle off idle) greater than 20 MPH for 27 minutes after start.

POSSIBLE CAUSES
COOLING SYSTEM PROBLEM

TEST	ACTION	APPLICABILITY
1	**NOTE: The best way to diagnose this DTC is to allow the vehicle to remain outside overnight in order to have a completely cold soaked engine.** **NOTE: Extremely cold outside ambient temperatures may cause this DTC to set.** Verify that the coolant level is correct. If not, repair as necessary **NOTE: Ensure the ECT Sensor is operating correctly.** With the DRBIII®, monitor the Engine Coolant Temperature value during the warm up cycle. Make sure the transition of the temperature change is smooth. Did the engine temperature reach a minimum of 71°C (160°F)? Yes → Test Complete. No → Refer to the Service Information for cooling system performance diagnosis. The most probable cause is a Thermostat problem. Also, refer to any related TSBs. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P1282-FUEL PUMP RELAY CONTROL CIRCUIT

When Monitored and Set Condition:

P1282-FUEL PUMP RELAY CONTROL CIRCUIT

When Monitored: With the ignition on. Battery voltage greater than 10.4 volts.

Set Condition: An open or shorted condition is detected in the fuel pump relay control circuit.

POSSIBLE CAUSES
FUEL PUMP RELAY OPERATION
FUEL PUMP RELAY
(K31) FUEL PUMP RELAY CONTROL CIRCUIT OPEN
(K31) FUEL PUMP RELAY CONTROL CIRCUIT SHORTED TO GROUND
(Y135) FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. With the DRBIII®, actuate the Fuel Pump Relay. Is the Fuel Pump Relay clicking? Yes → Refer to the INTERMITTENT CONDITION Symptom (Diagnostic Procedure). Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Go To 2	All
2	Turn the ignition off. Remove the Fuel Pump Relay. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between terminals 1 (85) and 2 (86) of the Fuel Pump Relay. Is the resistance between 50 and 90 ohms? Yes → Go To 3 No → Replace the Fuel Pump Relay. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All

P1282-FUEL PUMP RELAY CONTROL CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Remove the Fuel Pump Relay from the IPM. Disconnect the PCM harness connectors. Measure the resistance of the (K31) Fuel Pump Relay Control circuit from the Fuel Pump Relay connector to the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the open in the (K31) Fuel Pump Relay Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All
4	Turn the ignition off. Remove the Fuel Pump Relay from the IPM. Disconnect the PCM harness connectors. Measure the resistance between ground and the (K31) Fuel Pump Relay Control circuit. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K31) Fuel Pump Relay Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Go To 5	All
5	Turn the ignition off. Remove the Fuel Pump Relay from the IPM. Ignition on, engine not running. Using a 12-volt test light connected to ground, probe the (Y135) Fused Ignition Switch output circuit in the Fuel Pump Relay connector. Does the test light illuminate brightly? Yes → Go To 6 No → Repair the open in the (Y135) Fused Ignition Switch Output circuit. Inspect the related fuse and repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module per Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All

Symptom:
P1294-TARGET IDLE NOT REACHED

When Monitored and Set Condition:

P1294-TARGET IDLE NOT REACHED

When Monitored: With the engine idling and the transmission in drive, if automatic. There must not be a MAP sensor trouble code or a Throttle Position Sensor trouble code.

Set Condition: The engine idle is not within 200 rpm above or 100 rpm below the target idle for 40 seconds. One trip fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
IAC MOTOR PASSAGES
VACUUM LEAKS
AIR INDUCTION SYSTEM
THROTTLE BODY AND THROTTLE LINKAGE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	ENGINE - 3.3L V6 SMPI or ENGINE - 3.8L V6 SMPI
2	Turn the ignition off. Remove the IAC Motor. Inspect the IAC Motor and passages way for any obstructions or damage to motor. Were any problems found? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	ENGINE - 3.3L V6 SMPI or ENGINE - 3.8L V6 SMPI
3	Start the engine. Inspect the vehicle for external vacuum leaks. Inspect the engine for internal vacuum leaks. Were any vacuum leaks found? Yes → Repair the vacuum leak as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	ENGINE - 3.3L V6 SMPI or ENGINE - 3.8L V6 SMPI

P1294-TARGET IDLE NOT REACHED — Continued

TEST	ACTION	APPLICABILITY
4	Inspect the Air Induction System for the following problems. Restrictions: Dirty Air Cleaner, Foreign material trapped in the air intake tube, etc. Leaks: Air Intake tube connection, Air Cleaner housing, etc. Were any problems found? Yes → Repair or replace as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	ENGINE - 3.3L V6 SMPI or ENGINE - 3.8L V6 SMPI
5	Inspect the throttle body plate carbon build up or other restrictions. Inspect the throttle linkage for binding and smooth operation. Ensure the throttle plate is resting on the stop at idle. Were any problems found? Yes → Repair or replace as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Test Complete.	ENGINE - 3.3L V6 SMPI or ENGINE - 3.8L V6 SMPI

Symptom:

P1297-NO CHANGE IN MAP FROM START TO RUN

When Monitored and Set Condition:

P1297-NO CHANGE IN MAP FROM START TO RUN

When Monitored: With engine RPM +/- 64 of target idle and the throttle blade at closed throttle.

Set Condition: Too small of a difference is seen between barometric pressure with ignition on (engine not running) and manifold vacuum for 8.80 seconds (engine running).

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
MAP SENSOR VOLTAGE BELOW 3.19 VOLTS
(F855) 5-VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(F855) 5-VOLT SUPPLY CIRCUIT OPEN
MAP SENSOR
(K1) MAP SENSOR SIGNAL CIRCUIT SHORTED TO GROUND
(K1) MAP SENSOR SIGNAL CIRCUIT SHORTED TO (K900) SENSOR GROUND CIRCUIT
MAP SENSOR VACUUM PORT
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: If a MAP high or Low DTC set along with P1297, diagnose the High or Low DTC first before continuing.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Turn the ignition off. Remove the MAP Sensor. Inspect the vacuum port, check for restrictions or any foreign materials. Were any restrictions found? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All

P1297-NO CHANGE IN MAP FROM START TO RUN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition on. With the DRBIII®, read the MAP Sensor voltage. Is the voltage below 3.19 volts? Yes → Go To 4 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	Turn the ignition off. Disconnect the MAP Sensor harness connector. Turn the ignition on. Measure the voltage of the (F855) 5-volt Supply circuit in the MAP Sensor harness connector. Is the voltage between 4.5 to 5.2 volts? Yes → Go To 5 No → Go To 8	All
5	Turn the ignition off. Disconnect the MAP Sensor harness connector. With the DRBIII®, monitor the MAP Sensor voltage. Turn the ignition on. Is the voltage above 1.2 volts? Yes → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K1) MAP Sensor Signal circuit in the MAP Sensor harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K1) MAP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 7	All
7	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K1) MAP Sensor Signal circuit and the (K900) Sensor Ground circuit in the MAP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to the (K900) Sensor ground circuit in the (K1) MAP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 10	All

P1297-NO CHANGE IN MAP FROM START TO RUN — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F855) 5-Volt Supply circuit in the MAP Sensor harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 9	All
9	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F855) 5-volt Supply circuit between the MAP Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the open in the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
10	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P1299-VACUUM LEAK FOUND (IAC FULLY SEATED)

When Monitored and Set Condition:

P1299-VACUUM LEAK FOUND (IAC FULLY SEATED)

When Monitored: With the engine running.

Set Condition: The MAP sensor signal does not correlate to the TPS signal.

POSSIBLE CAUSES
VACUUM LEAK
THROTTLE POSITION SENSOR SWEEP
MAP SENSOR OPERATION
TP SENSOR FULLY SEATED
INTERMITTENT CONDITION

TEST	ACTION	APPLICABILITY
1	**NOTE: A large vacuum leak is likely the cause of this DTC.** Inspect the Intake manifold for vacuum leaks. Inspect the Power Brake Booster for any vacuum leaks. Inspect the PCV system for proper operation or any vacuum leaks. Were any vacuum leaks found? Yes → Repair vacuum leak as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 2	All
2	**NOTE: The throttle must be fully seated and rest on the throttle stop.** Turn the ignition on. With the DRBIII®, read the TP Sensor voltage. Is the voltage below 1.5 volts? Yes → Go To 3 No → Replace the TP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
3	Turn the ignition on. With the DRBIII®, monitor the TP Sensor voltage. Slowly open the throttle from the idle position to the wide open throttle position. Does voltage start at approximately 0.8 volts and go above 3.5 volts with a smooth voltage change? Yes → Go To 4 No → Replace the Throttle Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P1299-VACUUM LEAK FOUND (IAC FULLY SEATED) — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Connect a vacuum gauge to manifold vacuum. Start the engine and allow it to reach operating temperature. **NOTE: If the engine will not idle, maintain a constant RPM above idle.** With the DRBIII®, read the MAP Sensor vacuum value. Is the DRB reading within 1″ of the vacuum gauge? Yes → Refer to the INTERMITTENT CONDITION symptom in the DRIVEABILITY category. No → Replace the MAP Sensor Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P1388-AUTO SHUTDOWN RELAY CONTROL CIRCUIT

When Monitored and Set Condition:

P1388-AUTO SHUTDOWN RELAY CONTROL CIRCUIT

When Monitored: With ignition on. Battery voltage above 10.4 volts.

Set Condition: An open or shorted condition is detected in the ASD relay control circuit.

POSSIBLE CAUSES
ASD RELAY OPERATION
FUSED B+ OUTPUT CIRCUIT
ASD RELAY
IPM FUSE & RELAY CENTER
(K51) ASD RELAY CONTROL CIRCUIT OPEN
(K51) ASD RELAY CONTROL CIRCUIT SHORT TO GROUND
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, actuate the ASD Relay. Is the ASD Relay operating? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 2	All
2	**NOTE: Inspect the ASD Relay fuse located in the IPM. If the ASD Relay fuse is open, repair the cause of the open first before continuing. Inspect the ASD Relay Output circuit for a short to ground for the cause of the open fuse.** Turn the ignition off. Remove the ASD Relay from the IPM. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused B+ circuit in the IPM. Does the test light illuminate? Yes → Go To 3 No → Replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P1388-AUTO SHUTDOWN RELAY CONTROL CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Remove the ASD Relay from the IPM. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the ASD Relay Control circuit in the IPM. With the DRBIII®, actuate the ASD Relay. Does the test light flash on and off? Yes → Replace the ASD Relay. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Disconnect the Intelligent Power Module C3 harness connector. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the ASD Relay Control circuit in the IPM harness connector. With the DRBIII®, actuate the ASD Relay. Does the test light flash on and off? Yes → Replace the IPM Fused & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the Intelligent Power Module C3 harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K51) ASD Relay Control circuit between the Intelligent Power Module C3 harness connector and the PCM harness connector. Is the resistance below 5.0 ohms. Yes → Go To 6 No → Repair the open in the (K51) ASD Relay Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	Turn the ignition off. Disconnect the Intelligent Power Module C3 harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K51) ASD Relay Control circuit in the Intelligent Power Module C3 harness connector to ground. Is the resistance below 5.0 ohms. Yes → Repair the short to ground in the (K51) ASD Relay Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 7	All
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P1389-NO ASD RELAY OUTPUT VOLTAGE AT PCM

When Monitored and Set Condition:

P1389-NO ASD RELAY OUTPUT VOLTAGE AT PCM

When Monitored: With ignition key on. Battery voltage greater than 10.4 volts.

Set Condition: No voltage sensed at the PCM when the ASD relay is energized.

POSSIBLE CAUSES
INTERMITTENT CONDITION
ASD RELAY
ASD RELAY
FUSED B+ CIRCUIT
FUSED B+ CIRCUIT
(K342) ASD RELAY OUTPUT CIRCUIT OPEN (NO START)
ASD RELAY OUTPUT CIRCUIT OPEN (NO START)
IPM FUSE & RELAY CENTER
IPM FUSE & RELAY CENTER
(K342) ASD RELAY OUTPUT CIRCUIT OPEN
ASD RELAY OUTPUT CIRCUIT OPEN
PCM START
PCM START
PCM
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Inspect the ASD Relay fuse located in the IPM. If the ASD Relay fuse is open, repair the cause of the open first before continuing. Inspect the ASD Relay Output circuit for a short to ground for the cause of the open fuse.** **NOTE: Diagnose P1388 - Auto Shutdown Relay Control Circuit first if set along with this DTC.** With the DRBIII®, erase the DTC. Attempt to start the engine. If the engine will not start, crank the engine for at least 15 seconds. It may be necessary to repeat several times. Does the DTC reset. Yes → Go To 2 No → Go To 9	All

P1389-NO ASD RELAY OUTPUT VOLTAGE AT PCM — Continued

TEST	ACTION	APPLICABILITY
2	Attempt to start the engine. Does the engine start. Yes → Go To 3 No → Go To 5	All
3	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the IPM C4 harness connector Measure the resistance of the (K342) ASD Output circuit between the IPM harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the (K342) ASD Relay Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	Turn the ignition off. Install a substitute relay in place of the ASD Relay. With the DRBIII®, erase DTCs. Attempt to start the engine. With the DRBIII®, read DTCs. Does the DTC reset? Yes → Go To 6 No → Replace the ASD Relay. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	Turn the ignition off. Remove the ASD Relay from the IPM. Using a 12-volt test light connected to ground, probe the Fused B+ circuit in the IPM. Does the test light illuminate? Yes → Go To 7 No → Replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P1389-NO ASD RELAY OUTPUT VOLTAGE AT PCM — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Remove the ASD Relay from the IPM. Disconnect the PCM harness connector. Disconnect the IPM C4 harness connector. Measure the resistance of the (K342) ASD Relay Output circuit between the IPM harness connector and the PCM harness connector. Is the resistance below 5.0 ohms. Yes → Go To 8 No → Repair the (K342) ASD Relay Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
8	**NOTE: Ensure the IPM C4 harness connector is connected to the IPM.** Turn the ignition off. Disconnect the PCM harness connector. Measure the resistance of the ASD Relay Output circuit between the IPM and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
9	**NOTE: Inspect the ASD Relay fuse located in the IPM. If the ASD Relay fuse is open, repair the cause of the open first before continuing. Inspect the ASD Relay Output circuit for a short to ground for the cause of the open fuse.** **NOTE: Diagnose P685 - Auto Shutdown Relay Control Circuit first if set along with this DTC.** With the DRBIII®, erase the DTC. Attempt to start the engine. If the engine will not start, crank the engine for at least 15 seconds. It may be necessary to repeat several times. Does the DTC reset. Yes → Go To 10 No → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
10	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRBIII® parameters related to the DTC while wiggling the wiring harness. Check for the engine stumble, stall or quite running. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 11	All

P1389-NO ASD RELAY OUTPUT VOLTAGE AT PCM — Continued

TEST	ACTION	APPLICABILITY
11	Attempt to start the engine. Does the engine start. Yes → Go To 12 No → Go To 14	All
12	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the IPM C4 harness connector Measure the resistance of the ASD Output circuit between the IPM harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 13 No → Repair the ASD Relay Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
13	If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
14	Turn the ignition off. Install a substitute relay in place of the ASD Relay. With the DRBIII®, erase DTCs. Attempt to start the engine. With the DRBIII®, read DTCs. Does the DTC reset? Yes → Go To 15 No → Replace the ASD Relay. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
15	Turn the ignition off. Remove the ASD Relay from the IPM. Using a 12-volt test light connected to ground, probe the Fused B+ circuit in the IPM. Does the test light illuminate? Yes → Go To 16 No → Replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
16	Turn the ignition off. Remove the ASD Relay from the IPM. Disconnect the PCM harness connector. Disconnect the IPM C4 harness connector. Measure the resistance of the ASD Relay Output circuit between the IPM harness connector and the PCM harness connector. Is the resistance below 5.0 ohms. Yes → Go To 17 No → Repair the ASD Relay Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P1389-NO ASD RELAY OUTPUT VOLTAGE AT PCM — Continued

TEST	ACTION	APPLICABILITY
17	**NOTE: Ensure the IPM C4 harness connector is connected to the IPM.** Turn the ignition off. Disconnect the PCM harness connector. Measure the resistance of the ASD Relay Output circuit between the IPM and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P1391-INTERMITTENT LOSS OF CMP OR CKP

When Monitored and Set Condition:

P1391-INTERMITTENT LOSS OF CMP OR CKP

When Monitored: Engine running or cranking.

Set Condition: When the failure counter reaches 20 for 2 consecutive trips.

POSSIBLE CAUSES
WIRING HARNESS INSPECTION
TONE WHEEL/PULSE RING INSPECTION
WIRING HARNESS INSPECTION
TONE WHEEL/PULSE RING INSPECTION
CHECKING INTERMITTENT CRANKSHAFT POSITION SENSOR SIGNAL WITH LAB
CHECKING INTERMITTENT CAMSHAFT POSITION SENSOR SIGNAL WITH LAB
CHECKING INTERMITTENT CKP WIRING WITH LAB SCOPE
CHECKING INTERMITTENT CMP WIRING WITH LAB SCOPE
INTERMITTENT CONDITION
CAMSHAFT POSITION SENSOR
CRANKSHAFT POSITION SENSOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Go To 10	All
2	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the (K44) CMP Signal circuit in the CMP harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Observe the lab scope screen. Are there any irregular or missing signals? Yes → Go To 3 No → Go To 6	All

P1391-INTERMITTENT LOSS OF CMP OR CKP — Continued

TEST	ACTION	APPLICABILITY
3	Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Ensure the Crankshaft Position Sensor and the Camshaft Position Sensor are properly installed and the mounting bolt(s) tight. Refer to any TSB that may apply. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Remove the Camshaft Position Sensor. Inspect the Tone Wheel/Pulse Ring or Cam Magnet Target for damage, foreign material, or excessive movement. Were any problems found? Yes → Repair or replace the Tone Wheel/Pulse Ring as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	If there are no possible causes remaining, view repair. Repair Replace the Camshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the (K24) CKP Signal circuit in the CKP harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Observe the lab scope screen. Are there any irregular or missing signals? Yes → Go To 7 No → Go To 10	All
7	Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Ensure the Crankshaft Position Sensor and the Camshaft Position Sensor are properly installed and the mounting bolt(s) are tight. Refer to any TSB that may apply. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 8	All

P1391-INTERMITTENT LOSS OF CMP OR CKP — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Remove the Crankshaft Position Sensor. Inspect the Tone Wheel/Flex Plate slots for damage, foreign material, or excessive movement. Were any problems found? Yes → Repair or replace the Tone Wheel/Flex Plate as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 9	All
9	If there are no possible causes remaining, view repair. Repair Replace the Crankshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
10	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the (K24) CKP Signal circuit in the PCM harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Turn the ignition on. (do not start the engine) Observe the lab scope screen. Look for any pulses generated by the CKP Sensor. Did the CKP Sensor generate any pulses? Yes → Replace the Crankshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 11	All
11	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the (K44) CMP Signal circuit in the PCM harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Turn the ignition on. (do not start the engine) Observe the lab scope screen. Look for any pulses generated by the CMP Sensor. Did the CMP Sensor generate any pulses? Yes → Replace the Camshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 12	All

P1391-INTERMITTENT LOSS OF CMP OR CKP — Continued

TEST	ACTION	APPLICABILITY
12	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the CKP Signal circuit in the PCM harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Observe the lab scope screen while wiggling the wiring harness and connectors. Were there any irregularities in the lab scope pattern? Yes → Check the harness connectors carefully. If OK, replace the Crankshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 13	All
13	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the CMP Signal circuit in the PCM harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Observe the lab scope screen while wiggling the wiring harness and connectors. Were there any irregularities in the lab scope pattern? Yes → Check the harness connectors carefully. If OK, replace the Camshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 14	All
14	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRBIII® parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Review the DRBIII® Freeze Frame information. If possible, try to duplicate the conditions under which the DTC was set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Test Complete.	All

Symptom:

P1398-MIS-FIRE ADAPTIVE NUMERATOR AT LIMIT

When Monitored and Set Condition:

P1398-MIS-FIRE ADAPTIVE NUMERATOR AT LIMIT

When Monitored: Under closed throttle decel with A/C off, ECT above 75, and more than 50 seconds after engine start.

Set Condition: One of the CKP sensor target windows has more than 2.86% variance from the reference window.

POSSIBLE CAUSES
ADAPTIVE NUMERATOR WILL NOT RELEARN
TONE WHEEL/PULSE RING INSPECTION
WIRING HARNESS INSPECTION
CRANKSHAFT POSITION SENSOR

TEST	ACTION	APPLICABILITY
1	**Note: Check for any TSB's that may apply to this symptom.** Turn the ignition on. With the DRBIII® in the miscellaneous menu, choose Clear PCM battery disconnect to reset the PCM. With the DRBIII®, choose the Misfire Pretest Road test the vehicle and relearn the adaptive numerator. The adaptive numerator is learned when the Adaptive Numerator Done Learning line on the Misfire screen changes to Yes. Did the adaptive numerator relearn? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 2	All
2	Visually inspect the CKP wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the CKP wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Ensure the Crankshaft Position Sensor properly installed and the mounting bolt(s) tight. Refer to any TSB that may apply. Were any of the above conditions present? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	All

P1398-MIS-FIRE ADAPTIVE NUMERATOR AT LIMIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Remove the Crankshaft Position Sensor. Inspect the Tone Wheel/Flex Plate slots for damage, foreign material, or excessive movement. Were any problems found? Yes → Repair or replace the Tone Wheel/Flex Plate as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	If there are no possible causes remaining, view repair. Repair Replace the Crankshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P1478-BATTERY TEMP SENSOR VOLTS OUT OF LIMIT

When Monitored and Set Condition:

P1478-BATTERY TEMP SENSOR VOLTS OUT OF LIMIT

When Monitored: Ignition on.

Set Condition: The Battery Temperature Sensor, internal to the PCM, goes above 4.9 volts or below 0.1 volt for more than 3.2 seconds.

POSSIBLE CAUSES
PCM

TEST	ACTION	APPLICABILITY
1	The PCM has detected a fault with the Battery Temperature Sensor which is internal to the Powertrain Control Module. If there are no possible causes remaining, view repair. Review Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P1486-EVAP LEAK MONITOR PINCHED HOSE FOUND

When Monitored and Set Condition:

P1486-EVAP LEAK MONITOR PINCHED HOSE FOUND

When Monitored: Immediately after a cold start, with battery/ambient temperature between 4°C (40°F) and 32°C (90°F) and coolant temperature within -12°C (10°F) of battery/ambient.

Set Condition: LDP Switch does not reach at least 3 closures with 10 seconds. LDP must initial in normal conditions to mature failure.

POSSIBLE CAUSES
INTERMITTENT LDP MONITOR FAILURE
EVAP CANISTER OBSTRUCTED
PRESSURIZING EVAP EMISSION SYSTEM
OBSTRUCTION IN HOSE/TUBE BETWEEN EVAP CANISTER AND PURGE SOLENOID
LDP PRESSURE HOSE OBSTRUCTED
LEAK DETECTION PUMP

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Go To 6	All

P1486-EVAP LEAK MONITOR PINCHED HOSE FOUND — Continued

TEST	ACTION	APPLICABILITY
2	To continue testing you will need Miller Tool #8404 Evaporative Emission Leak Detector (EELD). **WARNING: Keep lighted cigarettes, sparks, flames, and other ignition sources away from the test area to prevent the ignition of explosive gases. Keep the test area well ventilated.** **NOTE: The fuel tank should have between 20% and 80% of fuel tank capacity to properly test the Evap system.** Disconnect the vacuum supply hose at the Leak Detection Pump. Connect and apply a continuous vacuum supply (i.e. 20″Hg) to the Leak Detection Pump. A vacuum pump such as an A/C recovery unit works well. Using the DRBIII®, select Engine/System Tests and actuate the Leak Detect Pump Test (Option 3/Hold PSI). **NOTE: The above energizes the LDP solenoid and allows the constant vacuum source to apply vacuum to the LDP pump diaphragm. This lifts the diaphragm up and seals the atmospheric canister vent valve at the bottom of the Leak Detection Pump.** Connect the red power lead of Miller Tool #8404 to the battery positive terminal and the black ground lead to battery negative terminal. **NOTE: See Charts and Graph support material EELD Calibration Setup for an example.** Connect shop air to the #8404 EELD. Set the smoke/air control switch to AIR. Insert the tester's AIR supply tip (clear hose) into the appropriate calibration orifice on the tester's control panel (based on DTC leak size). Press the remote smoke/air start button. Position the red flag on the flow meter so it is aligned with the indicator ball. When the calibration is complete, release the remote button. The EELD is now calibrated the flow meter in liters per minute to the size leak indicated by the DTC set in the PCM. Install the service port adapter #8404-14 on the vehicle's service port. Connect the Air supply hose from the EELD to the service port. Press the remote button to activate AIR flow. **NOTE: Larger volume fuel tanks, and/or those with less fuel, may require 4 to 5 minutes to fill.** The flow meter gauge on the EELD will read zero LPM when the EVAP system is completely pressurized. Disconnect the hose at the EVAP Canister that goes to the Fuel Tank. Did the pressure drop when the hose was disconnected? Yes → Go To 3 No → Repair the obstruction in the EVAP system between the EVAP Canister and the Fuel Tank. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All
3	**Note: All previously disconnected hose(s) reconnected.** Re-pressurize the EVAP System. Using Miller Tool #8404, hold down the Remote Smoke/Air Start Button and monitor the gauge. The flow meter gauge on the EELD reads 0 LPM the EVAP system completely pressurized. Disconnect the LDP Pressure hose at the EVAP Canister. The LDP Pressure hose is the hose that connects the Evap Canister to the Leak Detection Pump. Did the pressure drop when the hose was disconnected? Yes → Go To 4 No → Replace the EVAP Canister. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All

P1486-EVAP LEAK MONITOR PINCHED HOSE FOUND — Continued

TEST	ACTION	APPLICABILITY
4	**Note: All previously disconnected hose(s) reconnected.** Re-pressurize the EVAP System. On Miller Tool #8404, set the Pressure/Hold switch to Open and set the Vent switch to Closed. Turn the pump timer On and watch the gauge. The flow meter gauge on the EELD reads 0 LPM the EVAP system completely pressurized. Disconnect the EVAP hoses at the Purge Solenoid. Did the pressure drop when the hose was disconnected? Yes → Go To 5 No → Repair or replace hose/tube as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All
5	Disconnect and remove the LDP pressure hose. The LDP pressure hose is the hose that connects the EVAP Canister to the Leak Detection Pump. Inspect the LDP pressure hose for any obstructions or physical damage. Is the LDP pressure hose free from defects? Yes → Replace the Leak Detection Pump. Perform POWERTRAIN VERIFICATION TEST VER - 6. No → Repair/replace hose as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All
6	At this time, the conditions required to set the DTC are not present. **Note: Use the Freeze Frame Data to help you duplicate the conditions that set the DTC. Pay particular attention to the DTC set conditions, such as, VSS, MAP, ECT, and Load.** **Note: A thorough visual inspection of the Evap system hoses, tubes, and connections may save time in your diagnosis. Look for any physical damage or signs of wetness at connections. The strong smell of fuel vapors may aid diagnosis also.** **Note: Refer to any Technical Service Bulletins (TSB's) that may apply.** With the DRBIII® in System Tests, perform the LDP Monitor Test. This will force the PCM to run the LDP Monitor. If the monitor fails, further diagnosis is required to find faulty component. If the monitor passes, the condition is not present at this time. Were any problems found? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 6. No → Test Complete.	All

Symptom:

P1491-RAD FAN CONTROL RELAY CIRCUIT

When Monitored and Set Condition:

P1491-RAD FAN CONTROL RELAY CIRCUIT

When Monitored: With the ignition on. Battery voltage greater than 10.4 volts.

Set Condition: An open or shorted circuit is detected in the radiator fan relay control circuit.

POSSIBLE CAUSES
RADIATOR FAN RELAY OPERATION
GROUND CIRCUIT
RADIATOR FAN RELAY
(N173) RADIATOR FAN RELAY CONTROL CIRCUIT OPEN (IPM)
(K173) RADIATOR FAN RELAY CONTROL CIRCUIT OPEN (PCM)
(N173) RADIATOR FAN RELAY CONTROL CIRCUIT SHORTED TO GROUND (IPM)
(K173) RADIATOR FAN RELAY CONTROL CIRCUIT SHORT TO GROUND (PCM)
INTELLIGENT POWER MODULE (SHORTED)
INTELLIGENT POWER MODULE (OPEN)
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, actuate the Radiator Fan Relay. Do the fans operate? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 2	All
2	Turn the ignition off. Disconnect the Radiator Fan Relay harness connector. Using a 12-volt test light connected to 12-volts, probe the Ground circuit in the Radiator Fan Relay harness connector. Does the test light illuminate? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P1491-RAD FAN CONTROL RELAY CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Remove the Radiator Fan Relay from the Radiator Fan Relay connector. Connect a jumper wire between cavity 3 and cavity 4. Turn the ignition on. With the DRBIII®, actuate the Radiator Fan Relay. Do the Radiator Fans operate? Yes → Replace the Radiator Fan Relay. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Disconnect the Radiator Fan Relay harness connector. Disconnect the PCM harness connector. Measure the resistance of the Radiator Fan Relay Control circuit between the Radiator Fan Relay harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Go To 8	All
5	Turn the ignition off. Disconnect the Radiator Fan Relay harness connector. Disconnect the IPM C2 harness connector. Measure the resistance of the (N173) Radiator Fan Relay Control circuit in the Radiator Fan Relay harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (N173) Radiator Fan Relay Control circuit, between the Radiator Fan Relay harness connector and the IPM harness connector. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the IPM C3 harness connector. Measure the resistance of the (K173) Radiator Fan Relay Control circuit in the PCM harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (K173) Radiator Fan Relay Control circuit, between PCM harness connector and the IPM harness connector. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 7	All
7	Turn the ignition off. Disconnect IPM C2 harness connector and IPM C3 harness connector. Measure the resistance between ground and the IPM C2 connector terminal 1of the IPM. Is the resistance below 5.0 ohms? Yes → Replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 11	All

P1491-RAD FAN CONTROL RELAY CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the Radiator Fan Relay harness connector. Disconnect the IPM C2 harness connector. Measure the resistance of the (N173) Radiator Fan Relay Control circuit between the IPM harness connector and the Radiator Fan Relay harness connector. Is the resistance below 5.0 ohms. Yes → Go To 9 No → Repair the open in the (N173) Radiator Fan Relay Control circuit, between the Radiator Fan Relay harness connector and the IPM harness connector. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
9	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the IPM C3 harness connector. Measure the resistance of the (K173) Radiator Fan Relay Control circuit between the IPM harness connector and the PCM harness connector. Is the resistance below 5.0 ohms. Yes → Go To 10 No → Repair the open in the (K173) Radiator Fan Relay Control circuit, between PCM harness connector and the IPM harness connector. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
10	Turn the ignition off. Disconnect IPM C2 harness connector and IPM C3 harness connector. Measure the resistance of the IPM circuit between the IPM C2 connector terminal 1 and the IPM C3 connector terminal 18. Is the resistance above 5.0 ohms? Yes → Replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 11	All
11	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P1494-LEAK DETECT PUMP SW OR MECHANICAL FAULT

When Monitored and Set Condition:

P1494-LEAK DETECT PUMP SW OR MECHANICAL FAULT

When Monitored: Immediately after a cold start, with battery/ambient temperature between 4°C (40°F) and 32°C (90°F) and coolant temperature within -12°C (10°F) of battery/ambient.

Set Condition: The state of the switch does not change when the solenoid is energized.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
LDP VACUUM SUPPLY
LEAK DETECTION PUMP
(K107) LDP SWITCH SENSE CIRCUIT SHORTED TO GROUND
(K107) LDP SWITCH SENSE CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All
2	Turn the ignition off. Disconnect the vacuum supply hose at the Leak Detection Pump. Connect a vacuum gauge to the disconnected vacuum supply hose at the Leak Detection Pump. Start the engine and read the vacuum gauge. Does the vacuum gauge read at least 13 in/Hg? Yes → Go To 3 No → Repair leak or obstruction in vacuum hose as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All

P1494-LEAK DETECT PUMP SW OR MECHANICAL FAULT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Leak Detection Pump harness connector. Turn the ignition on. With the DRBIII® in Inputs/Outputs, read the Leak Detect Pump Sw state. While observing the Leak Detect Pump Switch state, connect a jumper wire between a 12-volt source and the (K107) LDP Switch Sense circuit. Did the Leak Detect Pump Sw state change when the jumper was connected? Yes → Replace the Leak Detection Pump. Perform POWERTRAIN VERIFICATION TEST VER - 6. No → Go To 4	All
4	Turn the ignition off. Disconnect the Leak Detection Pump harness connector. Disconnect the Powertrain Control Module harness connectors. Measure the resistance of the (K107) LDP Switch Sense circuit in the LDP harness connector to ground. Is the resistance below 5.0 Ohms? Yes → Repair the short to ground in the (K107) LDP Switch Sense Circuit. Perform POWERTRAIN VERIFICATION TEST VER - 6. No → Go To 5	All
5	Turn the ignition off. Disconnect the Leak Detection Pump harness connector. Disconnect the Powertrain Control Module harness connectors. Measure the resistance of the (K107) LDP Switch Sense circuit between the LDP harness connector and the PCM harness connector. Is the resistance below 5.0 Ohms? Yes → Go To 6 No → Repair the open in the (K107) LDP Switch Sense Circuit. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All

Symptom:

P1495-LEAK DETECTION PUMP SOLENOID CIRCUIT

When Monitored and Set Condition:

P1495-LEAK DETECTION PUMP SOLENOID CIRCUIT

When Monitored: Immediately after a cold start, with battery/ambient temperature between 4.4°C (40°F). F and 32°C (90°F). Coolant temperature within -12°C (10°F) of battery/ambient.

Set Condition: The state of the solenoid circuit does not match the PCM's desired state.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
LEAK DETECTION PUMP
(F202) FUSED IGNITION SWITCH OUTPUT
(K106) LDP SOLENOID CONTROL CIRCUIT SHORTED TO GROUND
(K106) LDP SOLENOID CONTROL CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All
2	Turn the ignition off. Disconnect the Leak Detection Pump harness connector. Using a 12-volt test light, connect one end to the Fused Ignition Switch Output circuit and the other end to the LDP Solenoid Control circuit. Turn the ignition on. With the DRBIII®, actuate the Leak Detection Pump. Does the test light flash on and off? Yes → Replace the Leak Detection Pump. Perform POWERTRAIN VERIFICATION TEST VER - 6. No → Go To 3	All

P1495-LEAK DETECTION PUMP SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Leak Detection Pump harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the (F202) Ignition Switch Output circuit in the LDP harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the (F202) Fused Ignition Switch Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All
4	Turn the ignition off. Disconnect the Leak Detection Pump harness connector. Disconnect the Powertrain Control Module harness connector. Measure the resistance of the (K106) LDP Solenoid Control circuit in the LDP harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (K106) LDP Solenoid Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 6. No → Go To 5	All
5	Turn the ignition off. Disconnect the Leak Detection Pump harness connector. Disconnect the Powertrain Control Module harness connector. Measure the resistance of the (K106) LDP Solenoid Control circuit between the LDP Solenoid harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the (K106) LDP Solenoid Control circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 6.	All

Symptom:

P1496-5 VOLT SUPPLY, OUTPUT TOO LOW

When Monitored and Set Condition:

P1496-5 VOLT SUPPLY, OUTPUT TOO LOW

When Monitored: With the ignition on.

Set Condition: The 5-volt supply to the sensors is below 3.5 volts for 4 seconds.

POSSIBLE CAUSES
INTERMITTENT CONDITION
THROTTLE POSITION SENSOR
MAP SENSOR
A/C PRESSURE SENSOR
EGR SOLENOID
(F855) 5-VOLT SUPPLY SHORTED TO GROUND
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read the DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Go To 9	All
2	Turn the ignition off. Disconnect the TP Sensor harness connector. Turn the ignition on. Measure the (F855) 5-volt Supply circuit at the TP Sensor harness connector. Is the Voltage below 4.5 Volts? Yes → Go To 3 No → Go To 8	All

P1496-5 VOLT SUPPLY, OUTPUT TOO LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the TP Sensor harness connector. Turn the ignition on. Connect a voltmeter to the (F855) 5-volt Supply circuit at the TP Sensor harness connector. Monitor the voltage display. Turn the ignition off. Disconnect the MAP Sensor harness connector. Turn the ignition on. Did the (F855) 5-volt Supply go from below 4.5 volts to above 4.5 volts when MAP Sensor was disconne Yes → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 4	All
4	Turn the ignition off. Disconnect the TP Sensor harness connector. Turn the ignition on. Connect a voltmeter to the (F855) 5-volt Supply circuit at the Throttle Position Sensor harness connector. Monitor the voltage display. Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Turn the ignition on. Did the (F855) 5-volt Supply go from below 4.5 volts to above 4.5 volts when the A/C sensor was disc Yes → Replace the A/C Pressure Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the TP Sensor harness connector. Turn the ignition on. Connect a voltmeter to the (F855) 5-volt Supply circuit at the TP Sensor harness connector. Monitor the voltage display. Turn the ignition off. Disconnect the EGR Solenoid harness connector. Turn the ignition on. Did the 5-volt Supply go from below 4.5 volts to above 4.5 volts when the EGR was disconnected? Yes → Replace the EGR Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All

P1496-5 VOLT SUPPLY, OUTPUT TOO LOW — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the MAP Sensor harness connector. Disconnect the A/C Pressure Sensor harness connector. Disconnect the EGR Solenoid harness connector. Disconnect the PCM harness connectors. Measure the resistance of the (F855) 5-volt Supply circuit in the TP Sensor harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (F855) 5-Volt Supply Circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 7	All
7	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** **NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
8	**NOTE: The TP Sensor harness connector must be connected during this test.** Disconnect the MAP Sensor harness connector. Turn the ignition on. Measure the (F855) 5-volt Supply circuit in the MAP Sensor harness connector. Is the Voltage below 4.5 Volts? Yes → Replace the TP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 9	All

P1496-5 VOLT SUPPLY, OUTPUT TOO LOW — Continued

TEST	ACTION	APPLICABILITY
9	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRBIII® parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Review the DRBIII® Freeze Frame information. If possible, try to duplicate the conditions under which the DTC was set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Test Complete.	All

Symptom:
P1594-CHARGING SYSTEM VOLTAGE TOO HIGH

When Monitored and Set Condition:

P1594-CHARGING SYSTEM VOLTAGE TOO HIGH

When Monitored: The engine running. The engine speed greater than 380 RPM.

Set Condition: Battery voltage is 1 volt greater than desired system voltage.

POSSIBLE CAUSES
TARGET VOLTAGE DIFFERS FROM BATTERY VOLTAGE
INTERMITTENT CONDITION
(K20) GENERATOR FIELD DRIVER CIRCUIT SHORTED TO GROUND
GENERATOR FIELD
PCM

TEST	ACTION	APPLICABILITY
1	**Note: Battery must be fully charged.** **Note: Generator Belt tension and condition must be checked before continuing.** Turn the ignition on. With DRBIII®, actuate the Generator Field Driver. With a 12-volt test light connected to ground, backprobe the (K20) Generator Field Driver circuit in the back of Generator harness connector. Does the test light illuminate brightly and flash? Yes → Go To 2 No → Go To 5	All
2	With DRBIII®, stop all actuation. Turn the ignition on. With DRBIII®, read the Target Charging voltage. Is the Target Charging voltage above 13 volts? Yes → Go To 3 No → Go To 4	All
3	Start the engine. With the DRBIII®, manually set the engine speed to 1600 RPM. With DRBIII®, read both the Battery voltage and the Target Charging voltage. Compare the Target Charging Voltage to the Battery Voltage reading. Monitor voltage for 5 minutes, if necessary. Look for a 1.0 volt difference or more. Was there more than a 1.0 volt difference? Yes → Replace the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 3. No → Go To 4	All

P1594-CHARGING SYSTEM VOLTAGE TOO HIGH — Continued

TEST	ACTION	APPLICABILITY
4	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRBIII® parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Review the DRBIII® Freeze Frame information. If possible, try to duplicate the conditions under which the DTC was set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 3. No → Test Complete.	All
5	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the Generator Field harness connector. Measure the resistance of the (K20) Generator Field Driver circuit from the PCM harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (K20) Generator Field Driver circuit. Perform POWERTRAIN VERIFICATION TEST VER - 3. No → Go To 6	All
6	Turn the ignition off. Disconnect the Generator Field harness connector. Measure resistance of the Generator Field Driver terminal pin of the Generator to ground. Is the resistance below 5.0 ohms? Yes → Repair or replace the shorted Generator as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 3. No → Go To 7	All
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 3.	All

Symptom List:

P1595-SPEED CONTROL SOLENOID CIRCUITS
P1683-SPD CTRL PWR RELAY; OR S/C 12V DRIVER CKT

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P1595-SPEED CONTROL SOLENOID CIRCUITS.

When Monitored and Set Condition:

P1595-SPEED CONTROL SOLENOID CIRCUITS

When Monitored: With the ignition on. Battery voltage greater than 10.4 volts. Speed Control Switched on.

Set Condition: The Powertrain Control Module actuates the vacuum and vent solenoids but they do not respond.

P1683-SPD CTRL PWR RELAY; OR S/C 12V DRIVER CKT

When Monitored: With the ignition key on. The speed control switched on.

Set Condition: The speed control power supply circuit is either open or shorted to ground.

POSSIBLE CAUSES
GROUND CIRCUIT OPEN
S/C SERVO
INTERMITTENT CONDITION
(V30) S/C BRAKE SWITCH OUTPUT CIRCUIT
(V30) SPEED CONTROL BRAKE SWITCH OUTPUT OPEN
BRAKE LAMP SWITCH
SPEED CONTROL POWER SUPPLY CIRCUIT
PCM (S/C POWER SUPPLY)
SPEED CONTROL VACUUM SOLENOID
(V36) SPEED CONTROL VACUUM SOLENOID CONTROL CIRCUIT OPEN
(V36) SPEED CONTROL VACUUM SOLENOID CONTROL CIRCUIT SHORTED TO GROUND
PCM (VACUUM SOLENOID)
SPEED CONTROL VENT SOLENOID
(V35) SPEED CONTROL VENT SOLENOID CONTROL CIRCUIT OPEN
(V35) SPEED CONTROL VENT SOLENOID CONTROL CIRCUIT SHORTED TO GROUND
PCM (VENT SOLENOID)

P1595-SPEED CONTROL SOLENOID CIRCUITS — Continued

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Go To 17	All
2	Turn the ignition on. **NOTE: In the below step you will need to actuate both S/C solenoids separately. Note the operation of the each solenoid when actuated.** With the DRBIII®, actuate the Speed Control Vacuum Solenoid and note operation. With the DRBIII®, actuate the Speed Control Vent Solenoid and note operation. Choose the conclusion that best matches the solenoids operation? Vacuum Solenoid not operating Go To 3 Vent Solenoid not operating Go To 7 Both S/C Solenoids not operating Go To 11 Both S/C Solenoids operating Go To 16	All
3	Turn the ignition off. Disconnect the Speed Control Servo harness connector. Turn the ignition on. With the DRBIII®, actuate the Speed Control Vacuum Solenoid. Using a 12-volt test light connected to 12-volts, probe the (V36) Speed Control Vacuum Solenoid Control circuit. Does the test light illuminate brightly and flash? Yes → Replace the Speed Control Servo. Perform POWERTRAIN VERIFICATION TEST VER - 4. No → Go To 4	All
4	Turn the ignition off. Disconnect the S/C Servo harness connector. Disconnect the PCM harness connector. Measure the resistance of the (V36) Speed Control Vacuum Solenoid Control circuit between the PCM harness connector and Speed Control Servo harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the (V36) Speed Control Vacuum Solenoid Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All

P1595-SPEED CONTROL SOLENOID CIRCUITS — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect the S/C Servo harness connector. Disconnect the PCM harness connector. Measure the resistance of the (V36) Speed Control Vacuum Solenoid Control circuit in the PCM harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (V36) Speed Control Vacuum Solenoid Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4. No → Go To 6	All
6	If the there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All
7	Turn the ignition off. Disconnect the Speed Control Servo harness connector. Turn the ignition on. With the DRBIII®, actuate the Speed Control Vent Solenoid. Using a 12-volt test light connected to 12-volts, probe the (V35) Speed Control Vent Solenoid Control circuit in the Speed Control Servo harness connector. Does the test light illuminate brightly and flash? Yes → Replace the Speed Control Servo. Perform POWERTRAIN VERIFICATION TEST VER - 4. No → Go To 8	All
8	Turn the ignition off. Disconnect the S/C Servo harness connector. Disconnect the PCM harness connector. Measure the resistance of the (V35) Speed Control Vent Solenoid Control circuit between the PCM harness connector and Speed Control Servo harness connector. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the open in the (V35) Speed Control Vacuum Solenoid Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All
9	Turn the ignition off. Disconnect the S/C Servo harness connector. Disconnect the PCM harness connector. Measure the resistance of the (V35) Speed Control Vent Solenoid Control circuit in the PCM harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (V35) Speed Control Vacuum Solenoid Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4. No → Go To 10	All

P1595-SPEED CONTROL SOLENOID CIRCUITS — Continued

TEST	ACTION	APPLICABILITY
10	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If the there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All
11	Turn the ignition off. Disconnect the S/C Servo harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the S/C Brake Switch Output circuit in the S/C Servo harness connector. Does the test light illuminate brightly? Yes → Replace the Speed Control Servo. Perform POWERTRAIN VERIFICATION TEST VER - 4. No → Go To 12	All
12	Turn the ignition off. Disconnect the Speed Control Servo harness connector. Disconnect the Brake Lamp Switch harness connector. Measure the resistance of the (V30) Speed Control Brake Switch Output circuit between the Speed Control Servo harness connector and Brake Lamp Switch harness connector. Is the resistance below 5.0 ohms? Yes → Go To 13 No → Repair the open in the (V30) Speed Control Brake Switch Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All
13	Disconnect the Brake Lamp Switch harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Speed Control Power Supply circuit in the Brake Lamp Switch harness connector. Does the test light illuminate brightly? Yes → Replace the Brake Lamp Switch. Perform POWERTRAIN VERIFICATION TEST VER - 4. No → Go To 14	All
14	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the Brake Lamp Switch harness connector. Measure the resistance of the (V32) Speed Control Power Supply circuit between the PCM harness connector and the Brake Lamp Switch harness connector. Is the resistance below 5.0 ohms? Yes → Go To 15 No → Repair the open in the Speed Control Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All

P1595-SPEED CONTROL SOLENOID CIRCUITS — Continued

TEST	ACTION	APPLICABILITY
15	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All
16	**NOTE: The Vacuum Reservoir and vacuum circuit must be operating correctly. Inspect the Vacuum Reservoir and vacuum circuit for any damage or disconnected hoses. Repair and retest as necessary.** Start the engine and allow it to reach operating temperature. This will allow the Vacuum Reservoir to build up vacuum. Turn the engine off (ignition on). Using the DRBIII®, actuate the S/C Servo. Monitor the S/C Servo to throttle operation. **NOTE: The throttle should move until all the vacuum has been released from the Vacuum Reservoir.** Does the S/C Servo open and close the throttle plate? Yes → Go To 17 No → Replace the S/C Servo. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All
17	Turn the ignition off. Disconnect the S/C Servo harness connector. Using a 12-volt test light connected to 12-volts, probe the ground circuit in the S/C Servo harness connector. Does the test light illuminate brightly? Yes → Go To 18 No → Repair the open in the ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4.	All
18	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRBIII® parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Review the DRBIII® Freeze Frame information. If possible, try to duplicate the conditions under which the DTC was set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 4. No → Test Complete.	All

Symptom:

P1598-A/C PRESSURE SENSOR VOLTS TOO HIGH

When Monitored and Set Condition:

P1598-A/C PRESSURE SENSOR VOLTS TOO HIGH

When Monitored: Engine running. The A/C relay energized.

Set Condition: The A/C pressure sensor signal at the PCM goes above 4.92 volts.

POSSIBLE CAUSES
INTERMITTENT CONDITION
(C18) A/C PRESSURE SENSOR SIGNAL CIRCUIT SHORTED TO (F855) 5-VOLT SUPPLY CIRCUIT
(C18) A/C PRESSURE SENSOR SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
A/C PRESSURE SENSOR INTERNAL FAILURE
(C18) A/C PRESSURE SENSOR SIGNAL CIRCUIT OPEN
(K900) SENSOR GROUND CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the A/C refrigerant System is properly charged per the Service Information.** Start the engine. With the DRBIII®, read the A/C Pressure Sensor voltage. Is the voltage above 4.6 volts? Yes → Go To 2 No → Go To 8	All
2	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (C18) A/C Pressure Sensor Signal circuit and the (F855) 5-volt Supply circuit in the A/C Pressure Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Repair the (C18) A/C Pressure Sensor Signal circuit for a short to the (F855) 5-volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Go To 3	All

P1598-A/C PRESSURE SENSOR VOLTS TOO HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Turn the ignition on. Measure the voltage on the (C18) A/C Pressure Sensor Signal circuit at the A/C Pressure Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the (C18) A/C Pressure Sensor Signal circuit for a short to battery voltage. Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Go To 4	All
4	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Connect a jumper wire between the (C18) A/C Pressure Sensor Signal circuit and the (F855) Sensor ground circuit. With the DRBIII®, monitor the A/C Pressure Sensor voltage. Turn the ignition on. Is the voltage below 1.0 volt? Yes → Replace the A/C Pressure Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Go To 5	All
5	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (C18) A/C Pressure Sensor Signal circuit between the PCM harness connector and the A/C Pressure Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the (C18) A/C Pressure Sensor Signal circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All
6	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Measure the resistance between ground and the (K900) Sensor ground circuit at the A/C Pressure Sensor harness connector. Is the resistance below 30 ohms? Yes → Go To 7 No → Repair the (K900) Sensor ground circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All

P1598-A/C PRESSURE SENSOR VOLTS TOO HIGH — Continued

TEST	ACTION	APPLICABILITY
8	**NOTE: Ensure the A/C refrigerant System is properly charged per the Service Information.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** With the engine running at normal operating temperature, monitor the DRBIII® parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Review the DRBIII® Freeze Frame information. If possible, try to duplicate the conditions under which the DTC was set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Test Complete.	All

Symptom:

P1599-A/C PRESSURE SENSOR VOLTS TOO LOW

When Monitored and Set Condition:

P1599-A/C PRESSURE SENSOR VOLTS TOO LOW

When Monitored: Engine running. The A/C relay energized.

Set Condition: The A/C pressure sensor signal voltage at the PCM goes below 0.58 volts for 2.6 seconds.

POSSIBLE CAUSES
INTERMITTENT CONDITION
(F855) 5-VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(F855) 5-VOLT SUPPLY CIRCUIT OPEN
A/C PRESSURE SENSOR INTERNAL FAILURE
(C18) A/C PRESSURE SENSOR SIGNAL CIRCUIT SHORTED TO GROUND
(C18) A/C PRESSURE SENSOR SIGNAL CIRCUIT SHORTED TO (K900) SENSOR GROUND CIRCUIT
PCM (F855) 5-VOLT SUPPLY CIRCUIT
PCM (C18) A/C PRESSURE SENSOR SIGNAL

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the A/C refrigerant System is properly charged per the Service Information.** Start the engine. With the DRBIII®, read the A/C Pressure Sensor voltage. Is the voltage below 0.6 of a volt? Yes → Go To 2 No → Go To 10	All
2	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Turn the ignition on. Measure the voltage of the (F855) 5-volt Supply circuit in the A/C Pressure Sensor harness connector. Is the voltage between 4.5 to 5.2 volts? Yes → Go To 3 No → Go To 7	All

P1599-A/C PRESSURE SENSOR VOLTS TOO LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. With the DRBIII®, monitor the A/C Pressure Sensor voltage. Turn the ignition on. Is the voltage above 0.6 of a volt? Yes → Replace the A/C Pressure Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Go To 4	All
4	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (C18) A/C Pressure Sensor Signal circuit in the A/C Pressure Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the (C18) A/C Pressure Sensor Signal circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Go To 5	All
5	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (C18) A/C Pressure Sensor Signal circuit and the (K900) Sensor ground circuit in the A/C Pressure Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the (C18) A/C Pressure Sensor Signal circuit for a short to the (K900) Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Go To 6	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All
7	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (F855) 5-volt Supply circuit in the A/C Pressure Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the (F855) 5-volt Supply circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Go To 8	All

P1599-A/C PRESSURE SENSOR VOLTS TOO LOW — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (F855) 5-Volt Supply circuit between the A/C Pressure Sensor harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the (F855) 5-volt Supply circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All
9	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All
10	**NOTE: Ensure the A/C refrigerant System is properly charges per the Service Information.** **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRBIII® parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Review the DRBIII® Freeze Frame information. If possible, try to duplicate the conditions under which the DTC was set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Test Complete.	All

Symptom:
P1682-CHARGING SYSTEM VOLTAGE TOO LOW

When Monitored and Set Condition:

P1682-CHARGING SYSTEM VOLTAGE TOO LOW

When Monitored: With the ignition on. Engine RPM greater than 1152 RPM. With no other charging system codes set.

Set Condition: The battery sense voltage is 1 volt below the charging goal for 13.47 seconds. The PCM senses the battery voltage turns off the field driver and senses the battery voltage again. If the voltages are the same, the code is set.

POSSIBLE CAUSES
B+ CIRCUIT HIGH RESISTANCE
GENERATOR GROUND HIGH RESISTANCE
INTERMITTENT CONDITION
(K20) GENERATOR FIELD DRIVER CIRCUIT OPEN
(K342) ASD RELAY OUTPUT CIRCUIT OPEN
GENERATOR

TEST	ACTION	APPLICABILITY
1	**NOTE: Inspect the vehicle for aftermarket accessories that may exceed the Generator System output.** Turn the ignition off. **NOTE: The battery must be fully charged and be able to pass a load test.** **NOTE: The Generator belt tension and condition must be checked before continuing.** Start the engine. Allow the idle to stabilize. With the DRBIII®, read the Target Charging Voltage. Is the Target Charging Voltage above 15.1 volts? Yes → Go To 8 No → Go To 2	All
2	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Turn the ignition on. **NOTE: Ensure all wires are clear of the engine's moving parts.** Measure the voltage between the Generator B+ Terminal and the Battery+ Post. Start the engine. Is the voltage above 0.4 of a volt? Yes → Repair the B+ circuit for high resistance between the Generator and Battery. Perform POWERTRAIN VERIFICATION TEST VER - 3. No → Go To 3	All

P1682-CHARGING SYSTEM VOLTAGE TOO LOW — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Warm the engine to operating temperature. **NOTE: Ensure all wires are clear of the engine's moving parts.** Measure the voltage between the Generator case and Battery ground post. Is the voltage above 0.1 of a volt? Yes → Repair Generator Case Ground for high resistance between the Generator Case and Battery ground terminal. Perform POWERTRAIN VERIFICATION TEST VER - 3. No → Go To 4	All
4	Start the engine. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Turn on all accessories, manually set engine speed to 1600 RPM. With DRBIII®, read Target Charging and Charging voltage. Compare the two readings. Is there more than a 1.0 volt difference? Yes → Go To 5 No → Go To 8	All
5	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the Generator Field harness connector. Measure the resistance of the (K20) Generator Field Driver circuit from the PCM harness connector to Generator harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K20) Generator Field Driver circuit. Perform POWERTRAIN VERIFICATION TEST VER - 3.	All
6	Disconnect the Generator Field harness connector. Turn the ignition on. With the DRBIII® actuate the Generator Field Driver. Using a 12-volt test light connected to ground, probe the ASD Relay Output circuit in the Generator harness connector. Does the test light illuminate brightly? Yes → Go To 7 No → Repair the (K342) ASD Relay Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 3.	All
7	If there is no possible causes remaining, view repair. Yes → Repair or replace the Generator as necessary.. Perform POWERTRAIN VERIFICATION TEST VER - 3.	All

P1682-CHARGING SYSTEM VOLTAGE TOO LOW — Continued

TEST	ACTION	APPLICABILITY
8	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRBIII® parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Review the DRBIII® Freeze Frame information. If possible, try to duplicate the conditions under which the DTC was set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 3. No → Test Complete.	All

Symptom:

P1685-WRONG OR INVALID KEY MSG RECEIVED FROM SKIM

When Monitored and Set Condition:

P1685-WRONG OR INVALID KEY MSG RECEIVED FROM SKIM

When Monitored: With the ignition on.

Set Condition: The PCM does not receive a Valid Key message from the SKIM.

POSSIBLE CAUSES
INCORRECT VIN IN PCM
INVALID SKIM KEY NOT PRESENT
NO COMMUNICATION WITH SKIM
NO VIN PROGRAMMED IN THE PCM
PCM
SKIM TROUBLE CODES SET

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read the PCM DTCs. Look for P1685. Is the Starts Since Set counter for DTC P1685 displayed and equal to 0? Yes → Go To 2 No → Go To 7	All
2	With the DRBIII®, attempt to communicate with the SKIM. Turn the ignition on. Can the DRBIII® communicate with the SKIM? Yes → Go To 3 No → Refer to symptom BUS +/- SIGNAL OPEN FROM SKIM in the COMMUNICATION category. Perform SKIS VERIFICATION.	All
3	Turn the ignition on. With the DRBIII®, check for SKIM DTCs. Are any DTCs present in the SKIM? Yes → Repair all SKIM DTCs. Perform SKIS VERIFICATION. No → Go To 4	All
4	Turn the ignition on. With the DRBIII®, display the VIN that is programmed in the PCM. Has a VIN been programmed into the PCM? Yes → Go To 5 No → Program the correct VIN into the PCM and retest. Perform SKIS VERIFICATION.	All

P1685-WRONG OR INVALID KEY MSG RECEIVED FROM SKIM — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition on. With the DRBIII®, display the VIN that is programmed in the PCM. Was the correct VIN programmed into the PCM? Yes → Go To 6 No → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform SKIS VERIFICATION.	All
6	Turn the ignition off. Replace and program the Sentry Key Immobilizer Module in accordance with the Service Information. Turn the ignition on. With the DRBIII®, erase all SKIM and PCM DTCs. **NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** Attempt to start and idle the engine. With the DRB III, read the PCM DTCs. Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. Does the DRB III display this code? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform SKIS VERIFICATION. No → Test Complete.	All
7	**NOTE: This DTC could have been set if the SKIM harness connector was disconnected, or if the SKIM was replaced recently.** **NOTE: All keys that the customer uses for this vehicle must be tested to verify they are operating properly.** **NOTE: Ensure the customer is not attempting to use a non-SKIM duplicate key.** Turn the ignition on. Verify the correct VIN is programmed into the PCM and SKIM. Turn the ignition off. With the next customer key turn the ignition key on and crank the engine to start. With the DRBIII®, read the PCM DTCs. Look for P1685 Is the Starts Since Set counter for DTC P1685 displayed and equal to 0? Yes → Replace the Ignition Key. Perform SKIS VERIFICATION. No → Test Complete. **NOTE: If this DTC cannot be reset, it could have been an actual theft attempt.**	All

Symptom:

P1686-NO SKIM BUS MESSAGE RECEIVED

When Monitored and Set Condition:

P1686-NO SKIM BUS MESSAGE RECEIVED

When Monitored: With the ignition on.

Set Condition: The PCM does not receive a Bus message from the SKIM when expected.

POSSIBLE CAUSES
SKIM/PCM
INTERMITTENT CONDITION
LOSS OF SKIM COMMUNICATION
PCI BUS CIRCUIT OPEN FROM PCM TO SKIM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read the PCM DTCs. Look for P1686. Is the Starts Since Set counter on the DTC screen for P1686 equal to Zero? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition on. With the DRBIII®, attempt to communicate with the SKIM. **NOTE: This test will indicate if the Bus is operational from the DLC to the SKIM.** Was the DRBIII® able to communicate with the SKIM? Yes → Go To 3 No → Refer to symptom BUS +/- SIGNAL OPEN FROM SKIM in the COMMUNICATION category. Perform SKIS VERIFICATION.	All
3	Turn the ignition off. Disconnect the PCM harness connectors. Disconnect the SKIM harness connector. Measure the resistance of the PCI Bus circuit between the PCM harness connector and the SKIM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the PCI Bus circuit between the PCM and the SKIM for an open. Perform SKIS VERIFICATION.	All

P1686-NO SKIM BUS MESSAGE RECEIVED — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Replace the Sentry Key Immobilizer Module in accordance with the Service Information. Turn the ignition on. Display and erase all PCM and SKIM DTCs. Perform 5 ignition key cycles leaving the ignition key on for 90 seconds per cycle. With the DRBIII®, display PCM DTCs. Does the DRBIII® display the same DTC? Yes → Replace and program the PCM in accordance with the Service Information. Perform SKIS VERIFICATION. No → Test Complete.	All
5	**WARNING: KEEP CLEAR OF THE ENGINE'S MOVING PARTS.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running and at normal operating temperature, monitor the DRBIII® parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Review the DTC When Monitored and Set Conditions. If possible, try to duplicate the conditions under which the DTC was set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform SKIS VERIFICATION. No → Test Complete.	All

Symptom:

P1695-NO CCD/J1850 MESSAGE FROM BODY CONTROL MODULE

When Monitored and Set Condition:

P1695-NO CCD/J1850 MESSAGE FROM BODY CONTROL MODULE

When Monitored: With the ignition on. Battery voltage greater than 10.4 volts.

Set Condition: No BUS messages recieved from the BCM for 20 seconds.

POSSIBLE CAUSES
INTERMITTENT CONDITION
COMMUNICATE WITH BCM
PCI BUS CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase DTCs. Cycle the ignition key on and off several times. Leaving the ignition on for at least 20 seconds. With the DRBIII®, read DTC's. Does the DTC reset? Yes → Go To 2 No → Go To 4	All
2	Turn the ignition on. With the DRBIII®, attempt to communicate with the BCM. Can communication be established with the BCM? Yes → Go To 3 No → Refer to the Communication Category and perform the appropriate symptom related to no communication with BCM. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
3	Turn the ignition off. Disconnect the PCM harness connector Disconnect the BCM harness connector. **NOTE: Inspect the PCI Bus terminal at both the PCM connectors and the BCM connectors. Check for corrosion, damage or terminal push out.** Measure the resistance of the PCI BUS circuit between the PCM harness connector and the BCM harness connector. Is the resistance below 5.0 ohms? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Repair the PCI BUS circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

P1695-NO CCD/J1850 MESSAGE FROM BODY CONTROL MODULE — Continued

TEST	ACTION	APPLICABILITY
4	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRBIII® parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Review the DRBIII® Freeze Frame information. If possible, try to duplicate the conditions under which the DTC was set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Test Complete.	All

Symptom List:

P1696-PCM FAILURE EEPROM WRITE DENIED
P1697-PCM FAILURE SRI MILE NOT STORED

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P1696-PCM FAILURE EEPROM WRITE DENIED.

When Monitored and Set Condition:

P1696-PCM FAILURE EEPROM WRITE DENIED

When Monitored: Ignition key on, Continuous.

Set Condition: An attempt to program/write to the internal EEPROM failed, Also checks at powerdown.

P1697-PCM FAILURE SRI MILE NOT STORED

When Monitored: Ignition key on, Continuous.

Set Condition: An attempt to program/write to the internal EEPROM failed, Also checks at powerdown.

POSSIBLE CAUSES
DRB DISPLAYS WRITE FAILURE
DRB DISPLAYS WRITE REFUSED 2ND TIME
DRB DISPLAYS SRI MILEAGE INVALID
COMPARE SRI MILEAGE WITH ODOMETER

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, perform the SRI Memory Test. Does the DRBIII® display Write Failure? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 2	All
2	With the DRBIII®, perform the SRI Memory Test. Does the DRBIII® display Write Refused? Yes → Go To 3 No → Go To 4	All

P1696-PCM FAILURE EEPROM WRITE DENIED — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII®, perform the SRI Memory Test a second time. **NOTE: Retest the SRI Memory two more times.** Does the DRBIII® display Write Refused again? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Test Complete.	All
4	With the DRBIII®, perform the SRI Memory Test. Does the DRBIII® display SRI Mileage Invalid? Yes → Update the mileage and retest the SRI Memory. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 5	All
5	Compare the SRI Mileage stored with the Instrument Panel Odometer. Is the mileage within the specified range displayed on the DRBIII®? Yes → Test Complete. No → Update the mileage and retest the SRI Memory. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

Symptom:

P1698-NO BUS MESSAGE FROM TRANS CONTROL MODULE

When Monitored and Set Condition:

P1698-NO BUS MESSAGE FROM TRANS CONTROL MODULE

When Monitored: Equipped with a 4 speed automatic transmission. The ignition on. Battery voltage greater than 10.4 volts.

Set Condition: No bus messages from the TCM for 20 seconds, two trips required.

POSSIBLE CAUSES
INTERMITTENT CONDITION
COMMUNICATE WITH TCM
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase DTCs. Cycle the ignition key on and off several times. Leaving the ignition on for at least 20 seconds. With the DRBIII®, read DTC's. Does the DTC reset? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition on. With the DRBIII®, attempt to communicate with the TCM. Can communication be established with the TCM? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Refer to the Communication Category and perform the appropriate symptom related to no communication with TCM. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

P1698-NO BUS MESSAGE FROM TRANS CONTROL MODULE — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRBIII® parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Review the DRBIII® Freeze Frame information. If possible, try to duplicate the conditions under which the DTC was set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Test Complete.	All

Symptom:

P1899-P/N SWITCH STUCK IN PARK OR IN GEAR (4SP AUTO TRNAS)

When Monitored and Set Condition:

P1899-P/N SWITCH STUCK IN PARK OR IN GEAR (4SP AUTO TRNAS)

When Monitored: Continuously with the transmission in Park, Neutral, or Drive and NOT in Limp-in mode.

Set Condition: This code will set if the PCM detects an incorrect Park/Neutral switch state for a given mode of vehicle operation. Two trip fault.

POSSIBLE CAUSES
INTERMITTENT PARK/NEUTRAL SWITCH
(T41) P/N POSITION SWITCH SENSE CIRCUIT SHORTED TO GROUND
(T41) P/N POSITION SWITCH SENSE CIRCUIT OPEN
TRANSMISSION RANGE SENSOR
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read PCM DTCs. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Go To 7	All
2	Turn the ignition on. With the DRBIII®, read the Park/Neutral Position Switch input state. While moving the gear selector through all gear positions (Park to 1 and back to Park), monitor the DRB display. Did the DRBIII® display show P/N and D/R in the correct gear positions? Yes → Go To 7 No → Go To 3	All
3	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the Transmission Range Sensor harness connector. Measure the resistance between ground and the (T41) P/N Position Switch Sense circuit. Is the resistance above 100k ohms? Yes → Go To 4 No → Repair the short to ground in the (T41) P/N Position Switch Sense circuit. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1..	All

P1899-P/N SWITCH STUCK IN PARK OR IN GEAR (4SP AUTO TRNAS) — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the Transmission Range Sensor harness connector. Measure the resistance of the (T41) P/N Position Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair theopen in the (T41) P/N Position Switch Sense circuit. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1..	All
5	Turn the ignition off. Disconnect the PCM harness connector. Move the Gear selector through all gear positions, from Park to 1st and back. While moving the gear selector through each gear, measure the resistance between ground and the (T41) P/N Position Switch Sense circuit. Did the resistance change from below 10.0 ohms to above 10.0 ohms? Yes → Go To 6 No → Replace the Transmission Range Sensor. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1..	All
6	**NOTE: Before Continuing: Disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Module in accordance with the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1..	All
7	At this time, the conditions required to set the DTC are not present. **NOTE: Use the Freeze Frame Data to help duplicate the conditions that set the DTC. Pay particular attention to the DTC set conditions, such as, VSS, MAP, ECT, and Load.** **NOTE: Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **NOTE: Refer to any technical service bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.. No → Test Complete.	All

Symptom:

***CHECKING PCM POWER AND GROUND CIRCUITS**

POSSIBLE CAUSES
PCM FUSED B+ CIRCUIT
PCM FUSED IGNITION SWITCH OUTPUT CIRCUIT
PCM GROUND CIRCUITS

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the PCM harness connector. Using a 12-volt test light connected to ground, probe the PCM Fused B+ circuit in the PCM harness connector. Does the test light illuminate brightly? Yes → Go To 2 No → Repair the Fused B+ circuit. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
2	Turn the ignition off. Disconnect the PCM harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the PCM Fused Ignition Switch Output circuit in the PCM harness connector. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ignition Switch Output circuit Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
3	Turn the ignition off. Disconnect the PCM harness connector. Using a 12-volt test light connected to battery voltage, probe the PCM ground circuits in the PCM harness connector. Does the test light illuminate brightly? Yes → Test Complete. No → Repair the PCM ground circuits. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

Symptom:

*CHECKING RADIATOR FAN RELAY OUTPUT

POSSIBLE CAUSES
RADIATOR FAN RELAY OPERATION
GROUND CIRCUIT OPEN
RADIATOR FAN RELAY OUTPUT CIRCUIT
RADIATOR FAN ASSEMBLY

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Radiator Fan Relay harness connector. Using a jumper wire, momentarily jumper the Fuse B+ circuit and Radiator Fan Relay Output circuit in the Radiator Fan Relay harness connector. Are both Fans operating? Yes → The Radiator Fan System operating properly at this time. Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Go To 2	All
2	Turn the ignition off. Disconnect the Radiator Fan harness connector. Measure both Ground circuit in the Radiator Fan Motor harness connectors to ground. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Repair the open in the Ground circuit(s). Perform POWERTRAIN VERIFICATION TEST VER - 2.	All
3	Turn the ignition off. Disconnect the Radiator Fan Relay harness connector. Disconnect both Radiator Fan Motor harness connectors. Measure the voltage in both Radiator Fan Motor harness connectors. Is the voltage above 10 volts? Yes → Replace the Radiator Fan Assembly. Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Repair the open in the Radiator Fan Relay Output circuit(s). Perform POWERTRAIN VERIFICATION TEST VER - 2.	All

Symptom:

***CHECKING THE A/C RELAY OUTPUT**

POSSIBLE CAUSES
A/C CLUTCH RELAY OPERATION
GROUND CIRCUIT OPEN
A/C CLUTCH
FUSED B+ CIRCUIT
A/C CLUTCH OUTPUT CIRCUIT
IPM FUSE & RELAY CENTER
A/C CLUTCH RELAY

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure that the refrigerant system is properly charged. Refer to the appropriate Service Information.** Turn the ignition on. With the DRBIII®, actuate the A/C Clutch Relay. Is the A/C Clutch actuating? Yes → The A/C Clutch System operating properly at this time. Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Go To 2	All
2	Turn the ignition off. Disconnect the A/C Clutch harness connector. Measure the Ground circuit in the A/C Clutch harness connector to ground. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Repair the open in the Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All
3	Disconnect the A/C Clutch harness connector. Turn the ignition on. With the DRBIII®, actuate the A/C Clutch Relay. Measure the voltage of the (C3) A/C Clutch Relay Output circuit in the A/C Clutch harness connector. Is the voltage above 11.0 volts? Yes → Replace the A/C Clutch. Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Go To 4	All

*CHECKING THE A/C RELAY OUTPUT — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Remove the A/C Clutch Relay from the IPM. Using a 12-volt test light connected to ground, probe the Fused B+ circuit in the IPM. Does the test light illuminate brightly? Yes → Go To 5 No → Check for an open A/C Clutch fuse, repair the cause of the open fuse. If OK, replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All
5	Turn the ignition off. Disconnect the IPM C3 harness connector. Disconnect the A/C Clutch harness connector. Measure the resistance of the (C3) A/C Clutch Relay Output circuit between the IPM harness connector and the A/C Clutch harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (C3) A/C Clutch Relay Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All
6	**NOTE: Ensure all IPM harness connectors are connected.** Turn the ignition off. Disconnect the A/C Clutch harness connector. Remove the A/C Clutch Relay from the IPM. Measure the resistance of the (C3) A/C Clutch Relay Output circuit between the IPM and the A/C Clutch harness connector. Is the resistance below 5.0 ohms? Yes → Replace the A/C Clutch Relay. Perform POWERTRAIN VERIFICATION TEST VER - 2. No → Replace the IPM Fused & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All

Symptom:
INTERMITTENT CONDITION

POSSIBLE CAUSES
INTERMITTENT CONDITION

TEST	ACTION	APPLICABILITY
1	**NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Refer to any Technical Service Bulletins (TSBs) that may apply. Review the DRB Freeze Frame information. If possible, try to duplicate the conditions under which the DTC set. With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wire harness. Look for parameter values to change and/or a DTC to set. Visually inspect the related wire harness. Look for any chafed, pierced, pinched, partially broken wires and broken, bent, pushed out, or corroded terminals. **CAUTION: NEVER PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Inspect and clean all PCM, engine, and chassis grounds. If numerous trouble codes were set, use a wire schematic to help you find any common ground or supply circuits. For any Relay DTCs, actuate the Relay with the DRBIII® and wiggle the related wire harness to try to interrupt the actuation. For intermittent Evaporative Emission trouble codes perform a visual and physical inspection of the related parts including hoses and the Fuel cap. A co-pilot, data recording, and/or lab scope should be used to help diagnose intermittent conditions. Use the DRBIII® to perform a System Test if one applies to failing component. Were any problems found during the above inspections? Yes → Repair as necessary No → Test Complete.	All

Symptom:

P0016-CRANKSHAFT/CAMSHAFT TIMING MISALIGNMENT

When Monitored and Set Condition:

P0016-CRANKSHAFT/CAMSHAFT TIMING MISALIGNMENT

When Monitored: Engine cranking and Engine running

Set Condition: Powertrain Control Module detects an error when the camshaft position is out of phase with the crankshaft position.

POSSIBLE CAUSES
INTERMITTENT CONDITION
CHECKING INTERMITTENT CMP SIGNAL WITH LAB
CMP WIRE HARNESS INSPECTION
TONE WHEEL/PULSE RING INSPECTION
CKP WIRE HARNESS INSPECTION
TONE WHEEL/PULSE RING INSPECTION
INTERMITTENT CKP SIGNAL
CAMSHAFT POSITION SENSOR
CRANKSHAFT POSITION SENSOR

TEST	ACTION	APPLICABILITY
1	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. With the DRBIII®, erase DTCs. Start the engine and run until operating temp is reached. (Closed Loop) If the DTC does not reset it may be necessary to take the vehicle on a test drive. Does the DTC reset? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0016-CRANKSHAFT/CAMSHAFT TIMING MISALIGNMENT — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the (K44) CMP Signal circuit at the CMP harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Observe the lab scope screen. Are there any irregular or missing signals? Yes → Go To 3 No → Go To 6	All
3	Visually inspect the related wire harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals. Ensure the Crankshaft Position Sensor and the Camshaft Position Sensor are properly installed and the mounting bolt(s) tight. Refer to any TSBs that may apply. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Remove the Camshaft Position Sensor. Inspect the Tone Wheel/Pulse Ring for damage, foreign material, or excessive movement. Were any problems found? Yes → Repair or replace the Tone Wheel/Pulse Ring as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	If there are no possible causes remaining, view repair. Repair Replace the Camshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Gently tap on the Cam Position Sensor and wiggle the Sensor. Ignition on, engine not running. Inspect the Sensor harness connector, PCM harness connector, Sensor connector, and PCM connector for loose, bent, corroded, or pushed out pins/terminals. Inspect the related wire harness and the splices in the (K44) CMP circuits. Did the DTC reset? Yes → Repair the wiring/connector concerns as needed or replace the Camshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 7	All

P0016-CRANKSHAFT/CAMSHAFT TIMING MISALIGNMENT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the (K24) CKP Signal circuit at the CKP harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Observe the lab scope screen. Are there any irregular or missing signals? Yes → Go To 8 No → Go To 11	All
8	Visually inspect the related wire harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals. Ensure the Crankshaft Position Sensor and the Camshaft Position Sensor are properly installed and the mounting bolt(s) tight. Refer to any TSBs that may apply. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 9	All
9	Turn the ignition off. Remove the Crankshaft Position Sensor. Inspect the Tone Wheel/Flex Plate slots for damage, foreign material, or excessive movement. Were any problems found? Yes → Repair or replace the Tone Wheel/Flex Plate as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 10	All
10	If there are no possible causes remaining, view repair. Repair Replace the Crankshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0016-CRANKSHAFT/CAMSHAFT TIMING MISALIGNMENT — Continued

TEST	ACTION	APPLICABILITY
11	**NOTE: The conditions that set this DTC are not present at this time. The following test may help in identifying the intermittent condition.** **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Gently tap on the Crank Position Sensor and wiggle the CKP Sensor. Turn the ignition off. Inspect the Sensor harness connector, PCM harness connector, Sensor connector, and PCM connector for loose, bent, corroded, or pushed out pins/terminals. Inspect the related wire harness and the splices in the (K24) CKP circuits. Were any problems found? Yes → Repair the wiring/connector concerns as needed or replace the Crankshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Test Complete.	All

Symptom List:

P0031-O2 SENSOR 1/1 HEATER CIRCUIT LOW
P0037-O2 SENSOR 1/2 HEATER CIRCUIT LOW

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0031-O2 SENSOR 1/1 HEATER CIRCUIT LOW.

When Monitored and Set Condition:

P0031-O2 SENSOR 1/1 HEATER CIRCUIT LOW

When Monitored: Battery voltage above 10.6 volts, ASD is powered up, and O2 heater is on.

Set Condition: Desired state does not match Actual state.

P0037-O2 SENSOR 1/2 HEATER CIRCUIT LOW

When Monitored: Battery voltage above 10.6 volts, ASD is powered up, and O2 heater is on.

Set Condition: Desired state does not match Actual state.

POSSIBLE CAUSES
O2 SENSOR HEATER OPERATION
O2 HEATER ELEMENT
O2 HEATER CONTROL CIRCUIT
O2 HEATER CONTROL SHORTED TO GROUND
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 3 No → Go To 2	All

P0031-O2 SENSOR 1/1 HEATER CIRCUIT LOW — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. **NOTE: Allow the O2 Sensor to cool down before continuing the test. The O2 Sensor voltage should stabilize at 5.0 volts. Raising the hood may help in reducing under hood temps quicker.** Ignition on, engine not running. With the DRBIII®, actuate the O2 Heater Test. With the DRBIII®, monitor O2 Sensor voltage for at least 2 minutes. Does the O2 Sensor voltage stay above 4.5 volts? Yes → Go To 3 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
3	Turn the ignition off. **NOTE: Allow the O2 sensor to cool down to room temperature.** Disconnect the O2 Sensor harness connector. Measure the resistance across the O2 Sensor Heater element component side. **NOTE: Heater Resistance Specification: 1/1 and 2/1 = 3.0 to 4.0 ohms or 1/2 and 2/2 = 4.0 to 5.0 ohms.** Is the O2 Sensor Heater element within specification? Yes → Go To 4 No → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
4	Turn the ignition off. Disconnect the O2 Sensor harness connector. Ignition on, engine not running. With the DRBIII®, actuate the O2 Heater Test. Using a 12-volt test light connected to ground, probe the O2 Heater Control circuit in the O2 Sensor harness connector. Does the test illuminate brightly and flash on and off? Yes → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the O2 Heater Control circuit in the O2 Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the O2 Sensor Heater Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0032-O2 SENSOR 1/1 HEATER CIRCUIT HIGH
P0038-O2 SENSOR 1/2 HEATER CIRCUIT HIGH

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0032-O2 SENSOR 1/1 HEATER CIRCUIT HIGH.

When Monitored and Set Condition:

P0032-O2 SENSOR 1/1 HEATER CIRCUIT HIGH

When Monitored: Battery voltage above 10.6 volts, ASD is powered up, and O2 heater is off.

Set Condition: Desired state does not equal Actual state.

P0038-O2 SENSOR 1/2 HEATER CIRCUIT HIGH

When Monitored: Battery voltage above 10.6 volts, ASD is powered up, and O2 heater is off.

Set Condition: Desired state does not equal Actual state.

POSSIBLE CAUSES
O2 SENSOR HEATER OPERATION
O2 HEATER ELEMENT
O2 HEATER GROUND CIRCUIT OPEN
O2 SENSOR
O2 HEATER CONTROL SHORTED TO VOLTAGE
O2 HEATER CONTROL CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 3 No → Go To 2	All

P0032-O2 SENSOR 1/1 HEATER CIRCUIT HIGH — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. **NOTE: Allow the O2 Sensor to cool down before continuing the test. The O2 Sensor voltage should stabilize at 5.0 volts. Raising the hood may help in reducing under hood temps quicker.** Ignition on, engine not running. With the DRBIII®, actuate the O2 Heater Test. With the DRBIII®, monitor O2 Sensor voltage for at least 2 minutes. Does the O2 Sensor voltage stay above 4.5 volts? Yes → Go To 3 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
3	Turn the ignition off. **NOTE: Allow the O2 sensor to cool down to room temperature.** Disconnect the O2 Sensor harness connector. Measure the resistance across the O2 Sensor Heater element component side. **NOTE: Heater Resistance Specification: 1/1 and 2/1 = 3.0 to 4.0 ohms or 1/2 and 2/2 = 4.0 to 5.0 ohms.** Is the O2 Sensor Heater element within specification? Yes → Go To 4 No → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
4	Turn the ignition off. Disconnect the O2 Sensor harness connector. Ignition on, engine not running. With the DRBIII®, actuate the O2 Heater Test. Using a 12-volt test light connected to ground, probe the O2 Heater Control circuit in the O2 Sensor harness connector. Does the test illuminate brightly and flash on and off? Yes → Go To 5 No → Go To 6	All
5	Turn the ignition off. Disconnect the O2 Sensor harness connector. Measure the resistance between engine ground and the O2 Heater ground circuit in the O2 Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Repair the open in the O2 Heater ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0032-O2 SENSOR 1/1 HEATER CIRCUIT HIGH — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. Ignition on, engine not running. Measure the voltage on the O2 Heater Control circuit at the O2 Sensor harness connector. Does the voltmeter indicate any voltage present? Yes → Repair the short to voltage in the O2 Heater Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 7	All
7	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the O2 Heater Control circuit from the O2 Sensor harness connector to the appropriate terminal of special tool #8815 Is the resistance below 5.0 ohms? Yes → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Repair the open in the O2 Heater Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0068-MANIFOLD PRESSURE/THROTTLE POSITION CORRELATION - HIGH FLOW/VACUUM LEAK

When Monitored and Set Condition:

P0068-MANIFOLD PRESSURE/THROTTLE POSITION CORRELATION - HIGH FLOW/VACUUM LEAK

When Monitored: Engine Running, during all drive modes.

Set Condition: If vacuum drops below 1.5 Hg with engine RPM greater than 2000 RPM at closed throttle.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
VACUUM LEAK
HIGH RESISTANCE IN MAP (K6) 5 VOLT SUPPLY CIRCUIT
RESISTANCE TO GROUND IN MAP (K6) 5 VOLT SUPPLY CIRCUIT
MAP SENSOR
HIGH RESISTANCE IN (K1) MAP SIGNAL CIRCUIT
RESISTANCE TO GROUND IN (K1) MAP SIGNAL CIRCUIT
HIGH RESISTANCE IN (K4) MAP GROUND CIRCUIT
PCM
TP SENSOR OPERATION
HIGH RESISTANCE IN TP SENSOR (K6) 5 VOLT SUPPLY CIRCUIT
RESISTANCE TO GROUND IN TP SENSOR (K6) 5 VOLT SUPPLY CIRCUIT
TP SENSOR
HIGH RESISTANCE IN (K22) TP SIGNAL CIRCUIT
RESISTANCE TO GROUND IN (K22) TP SENSOR SIGNAL CIRCUIT
HIGH RESISTANCE IN TP (K4) SENSOR GROUND CIRCUIT
PCM

P0068-MANIFOLD PRESSURE/THROTTLE POSITION CORRELATION - HIGH FLOW/VACUUM LEAK — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Diagnose any TP Sensor or MAP Sensor component DTCs before continuing.** **NOTE: If the P0501 - No Vehicle Speed Signal is set along with this DTC, refer to the P0501 diagnostics before continuing.** **NOTE: The throttle plate and linkage must be free from binding and carbon build up.** **NOTE: Ensure the throttle plate is at the idle position.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	**NOTE: This code is enabled on engines with a plastic intake manifold and is intended to shut down the engine if a large crack occurs.** **NOTE: A large vacuum leak is most likely the cause of this DTC.** Inspect the Intake Manifold for leaks and cracks. Inspect the Power Brake Booster for any vacuum leaks. Inspect the PCV system for proper operation or any vacuum leaks. Were any vacuum leaks found? Yes → Repair the vacuum leak as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Start the engine. With the DRBIII®, monitor the MAP Sensor voltage. Snap the throttle. Does the MAP Sensor voltage vary from below 2.0 volts at idle to above 3.5 volts at WOT? Yes → Go To 4 No → Go To 12	All
4	Ignition on, engine not running. With the DRBIII®, monitor the TP Sensor voltage while slowly depressing the throttle pedal from the idle position to the wide open throttle position. Does the voltage start approximately at 0.8 volts and go above 3.5 volts with a smooth transition? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All

P0068-MANIFOLD PRESSURE/THROTTLE POSITION CORRELATION - HIGH FLOW/VACUUM LEAK — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K6) 5 Volt Supply circuit from the TP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the TP Sensor (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K6) 5 Volt Supply circuit at the TP Sensor harness connector. Is the resistance above 100k ohms? Yes → Go To 7 No → Repair the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
7	Turn the ignition off. Disconnect the TP Sensor harness connector. With the DRBIII®, monitor the TP Sensor voltage. Ignition on, engine not running. Connect a jumper wire between the (K22) TP Signal circuit and the (K4) Sensor ground circuit . Does the TP Sensor voltage change from approximately 4.9 volts to below 0.5 of a volt? Yes → Replace the Throttle Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 8	All
8	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K22) TP Signal circuit from the TP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the (K22) TP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0068-MANIFOLD PRESSURE/THROTTLE POSITION CORRELATION - HIGH FLOW/VACUUM LEAK — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K22) TP Signal circuit in the TP Sensor harness connector. Is the resistance above 100k ohms? Yes → Go To 10 No → Repair the (K22) TP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
10	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor ground circuit from the TP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 11 No → Repair the (K4) Sensor Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
11	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
12	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K6) 5 Volt Supply circuit from the MAP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 13 No → Repair the MAP (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0068-MANIFOLD PRESSURE/THROTTLE POSITION CORRELATION - HIGH FLOW/VACUUM LEAK — Continued

TEST	ACTION	APPLICABILITY
13	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K6) 5 Volt Supply circuit at the MAP Sensor harness connector. Is the resistance above 100k ohms? Yes → Go To 14 No → Repair the short to ground in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
14	Turn the ignition off. Disconnect the MAP Sensor harness connector. With the DRBIII®, monitor the MAP Sensor voltage. Ignition on, engine not running. Connect a jumper wire between the (K1) MAP Sensor Signal circuit and the (K4) Sensor ground circuit . Cycle the ignition switch from off to on. With the DRBIII®, monitor the MAP Sensor voltage. Does the DRBIII® display MAP voltage from approximately 4.9 volts to below 0.5 volt? Yes → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 15	All
15	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K1) MAP Signal circuit from the MAP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 16 No → Repair the (K1) MAP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
16	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K1) MAP Signal circuit at the MAP Sensor harness connector. Is the resistance above 100k ohms? Yes → Go To 17 No → Repair the (K1) MAP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0068-MANIFOLD PRESSURE/THROTTLE POSITION CORRELATION - HIGH FLOW/VACUUM LEAK — Continued

TEST	ACTION	APPLICABILITY
17	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor ground circuit from the MAP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 18 No → Repair the (K4) Sensor Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
18	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0070-AMBIENT TEMP SENSOR STUCK
P0071-AMBIENT TEMP SENSOR PERFORMANCE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0070-AMBIENT TEMP SENSOR STUCK.

When Monitored and Set Condition:

P0070-AMBIENT TEMP SENSOR STUCK

When Monitored: Engine Running.

Set Condition: After 4 warm-up cycles, the PCM did not see a 2°C (35°F) change in the Ambient Temperature Sensor voltage within 200 miles . Two Trip Fault

P0071-AMBIENT TEMP SENSOR PERFORMANCE

When Monitored: Engine off time is greater than 480 minutes. Ambient temperature is greater than 4°C (39°F).

Set Condition: After a calibrated amount of cool down time, the PCM compares the ECT Sensor, IAT Sensor and the Ambient Air Temperature Sensor values. If the Ambient Air Temperature Sensor value is not within 10°C (53°F) of the other two temperartue sensors an error is detected. Two Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
(K25) AAT SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
AMBIENT AIR TEMPERATURE SENSOR VOLTAGE BELOW 1.0 VOLT
(K25) AAT SIGNAL CIRCUIT OPEN
(K4) SENSOR GROUND CIRCUIT OPEN
(K25) AAT SIGNAL CIRCUIT SHORTED TO GROUND
(K25) AAT SIGNAL CIRCUIT SHORTED TO (K4) SENSOR GROUND
PCM LOW
PCM HIGH

P0070-AMBIENT TEMP SENSOR STUCK — Continued

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	**NOTE: Visually inspect both the component and the PCM connectors. Look for damage, partially broken wires and backed out or corroded terminals** Turn the ignition off. Disconnect the Ambient Air Temp Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K25) AAT Signal circuit in the Ambient Air Temperature Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to battery voltage in the (K25) AAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Turn the ignition off. Disconnect the Ambient Air Temperature Sensor harness connector. Ignition on, engine not running. With the DRBIII®, read the Ambient Air Temperature Sensor voltage. Is the voltage above 4.9 volts? Yes → Go To 4 No → Go To 7	All
4	Turn the ignition off. Disconnect the Ambient Air Temperature Sensor harness connector. Using a jumper wire, jumper across the Ambient Air Temperature Sensor harness connector. Ignition on, engine not running. With the DRBIII®, read the Ambient Air Temperature voltage. Is the voltage below 1.0 volt? Yes → Replace the Ambient Air Temperature Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All

P0070-AMBIENT TEMP SENSOR STUCK — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect the Ambient Air Temperature Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K25) AAT Signal circuit from the Ambient Air Temperature Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K25) AAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	Turn the ignition off. Disconnect the Ambient Air Temperature Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K167) Sensor ground circuit from the Ambient Air Temperature Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Contorl Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Repair the open in the (K4) Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
7	Turn the ignition off. Disconnect the Ambient Air Temperature Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K25) AAT Signal circuit. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K25) AAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 8	All

P0070-AMBIENT TEMP SENSOR STUCK — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the Ambient Air Temperature Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K25) AAT Signal circuit and the (K4) Sensor ground circuit in the Ambient Air Temperature Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the Sensor ground shorted to the (K25) AAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0072-AMBIENT TEMP SENSOR LOW

When Monitored and Set Condition:

P0072-AMBIENT TEMP SENSOR LOW

When Monitored: The ignition key on.

Set Condition: Ambient Temperture Sensor is less than .0392 of a volt at the PCM. One Trip Fault.

POSSIBLE CAUSES
AMBIENT AIR TEMPERATURE SENSOR VOLTAGE BELOW 0.3 VOLTS
AMBIENT AIR TEMPERATURE SENSOR INTERNAL FAILURE
(K25) AAT SIGNAL CIRCUIT SHORTED TO GROUND
(K25) AAT SIGNAL CIRCUIT SHORTED TO (K4) SENSOR GROUND CIRCUIT
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read the Ambient Air Temperature Sensor voltage. Is the voltage below 0.3 of a volt? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the Ambient Air Temperature Sensor harness connector. Ignition on, engine not running. With the DRBIII®, read Ambient Air Temperature Sensor voltage. Is the voltage above 1.0 volt? Yes → Replace the Ambient Air Temperature Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Turn the ignition off. Disconnect the Ambient Air Temperature Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K25) AAT Signal circuit in the Ambient Air Temperature Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K25) AAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All

P0072-AMBIENT TEMP SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Ambient Air Temperature Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K25) AAT Signal circuit and the (K4) Sensor ground circuit in the Ambient Air Temperature Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the (K4) Sensor ground shorted to the (K25) AAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0073-AMBIENT TEMP SENSOR HIGH

When Monitored and Set Condition:

P0073-AMBIENT TEMP SENSOR HIGH

When Monitored: The ignition key on.

Set Condition: The Ambient Temperature Sensor voltage is greater than 4.94 volts. One Trip Fault.

POSSIBLE CAUSES
AMBIENT AIR TEMPERATURE SENSOR VOLTAGE ABOVE 4.8 VOLTS
(K25) AAT SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
AMBIENT AIR TEMPERATURE SENSOR INTERNAL FAILURE
(K25) AAT SIGNAL CIRCUIT OPEN
(K4) SENSOR GROUND CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read the Ambient Air Temperature Sensor voltage. Is the voltage above 4.8 volts? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the Ambient Air Temperature Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K25) AAT Signal circuit in the Ambient Air Temperature Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to battery voltage in the (K25) AAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All

P0073-AMBIENT TEMP SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Ambient Air Temperature Sensor harness connector. Connect a jumper wire between the (K145) AAT Signal circuit and the (K167) Sensor ground circuit in the Ambient Air Temperature Sensor harness connector. Ignition on, engine not running. With the DRBIII®, read Ambient Air Temperature Sensor voltage. Is the voltage below 1.0 volt? Yes → Replace the Ambient Air Temperature Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the Ambient Air Temperature Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K25) AAT Signal circuit from the Ambient Air Temperature Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the (K25) AAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Disconnect the Ambient Air Temperature Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor ground circuit from the Ambient Air Temperature Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K4) Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0106-MAP SENSOR PERFORMANCE

When Monitored and Set Condition:

P0106-MAP SENSOR PERFORMANCE

When Monitored: With engine greater than 64 RPM and the throttle blade at closed throttle.

Set Condition: Too small of a difference is seen between barometric pressure with ignition on (engine running) and manifold vacuum for 2.80 seconds.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
(K6) 5 VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(K6) 5 VOLT SUPPLY CIRCUIT OPEN
MAP SENSOR INTERNAL FAILURE
(K1) MAP SIGNAL CIRCUIT SHORTED TO GROUND
(K1) MAP SIGNAL CIRCUIT SHORTED TO (K4) SENSOR GROUND CIRCUIT
MAP (K6) 5 VOLT SUPPLY CIRCUIT OPEN
MAP SENSOR VACUUM PORT
MAP SENSOR
PCM (K6) 5 VOLT SUPPLY CIRCUIT
PCM (K1) MAP SENSOR SIGNAL

TEST	ACTION	APPLICABILITY
1	**NOTE: If a MAP high or Low DTC set along with P0106, diagnose the High or Low DTC first before continuing.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Ignition on, engine not running. With the DRBIII®, read the MAP Sensor voltage. Is the voltage below 3.19 volts? Yes → Go To 3 No → Go To 11	All

P0106-MAP SENSOR PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the MAP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K6) 5 Volt Supply circuit in the MAP Sensor harness connector. Is the voltage between 4.5 to 5.2 volts? Yes → Go To 4 No → Go To 8	All
4	Turn the ignition off. Disconnect the MAP Sensor harness connector. With the DRBIII®, monitor the MAP Sensor voltage. Ignition on, engine not running. Is the voltage between 4.75 and 5.2 volts? Yes → Inspect the MAP sensor and the intake for any restrictions, repair as necessary. If OK, replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K1) MAP Signal circuit at the MAP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K1) MAP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K1) MAP Signal circuit and the (K4) Sensor ground circuit in the MAP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the (K4) Sensor ground shorted to the (K1) MAP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 7	All
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0106-MAP SENSOR PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K6) 5 Volt Supply circuit in the MAP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 9	All
9	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K6) 5 Volt Supply circuit from the MAP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the open in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
10	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
11	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K6) 5 Volt Supply circuit from the MAP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 12 No → Repair the open in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
12	Turn the ignition off. Remove the MAP Sensor. Inspect the vacuum port, check for restrictions or any foreign materials. Were any restrictions found? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 13	All

P0106-MAP SENSOR PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
13	If there are no possible causes remaining, view repair. Repair Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0107-MAP SENSOR LOW

When Monitored and Set Condition:

P0107-MAP SENSOR LOW

When Monitored: Engine speed between 600 to 3500 RPM. TPS voltage less than 1.2 volts. Battery voltage greater than 10 volts.

Set Condition: The MAP sensor signal voltage is less than 0.0782 of a volt for 1.7 seconds. One trip Fault.

POSSIBLE CAUSES
MAP SENSOR VOLTAGE BELOW .078 VOLTS
(K6) 5 VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(K6) 5 VOLT SUPPLY CIRCUIT OPEN
MAP SENSOR INTERNAL FAILURE
(K1) MAP SIGNAL CIRCUIT SHORTED TO GROUND
(K1) MAP SIGNAL CIRCUIT SHORTED TO (K4) SENSOR GROUND CIRCUIT
PCM (K6) 5 VOLT SUPPLY CIRCUIT
PCM (K1) MAP SENSOR SIGNAL CIRCUIT

TEST	ACTION	APPLICABILITY
1	Start the engine. With the DRBIII®, read the MAP Sensor voltage. Is the voltage below .078 of a volt? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the MAP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K6) 5 Volt Supply circuit in the MAP Sensor harness connector. Is the voltage between 4.75 to 5.2 volts? Yes → Go To 3 No → Go To 7	All

P0107-MAP SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the MAP Sensor harness connector. Ignition on, engine not running. With the DRBIII®, monitor the MAP Sensor voltage. Is the voltage above 1.2 volts? Yes → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K1) MAP Signal circuit at the MAP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K1) MAP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K1) MAP Signal circuit and the (K4) Sensor ground circuit in the MAP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the (K4) Sensor ground shorted to the (K1) MAP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
7	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (K6) 5 Volt Supply circuit in the MAP Sensor harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 8	All

P0107-MAP SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K6) 5 Volt Supply circuit from the MAP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the open in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
9	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0108-MAP SENSOR HIGH

When Monitored and Set Condition:

P0108-MAP SENSOR HIGH

When Monitored: Engine speed between 600 to 3500 RPM. TP sensor voltage less than 1.2 volts for greater than 1.7 seconds. Battery voltage greater than 10 volts

Set Condition: The MAP sensor signal voltage is greater than 4.92 volts. One trip Fault.

POSSIBLE CAUSES
MAP SENSOR VOLTAGE ABOVE 4.9 VOLTS
(K1) MAP SIGNAL CIRCUIT SHORTED TO (K6) 5 VOLT SUPPLY CIRCUIT
(K1) MAP SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
MAP SENSOR INTERNAL FAILURE
(K1) MAP SIGNAL CIRCUIT OPEN
(K4) SENSOR GROUND CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Start the engine. With the DRBIII®, read the MAP Sensor voltage. Is the voltage above 4.9 volts? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K1) MAP Signal circuit and the (K6) 5 Volt Supply circuit in the MAP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the (K1) MAP Signal circuit for a short to the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All

P0108-MAP SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the MAP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K1) MAP Signal circuit in the MAP Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to battery voltage in the (K1) MAP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the MAP Sensor harness connector. Connect a jumper wire between the (K1) MAP Sensor Signal circuit and the (K4) Sensor ground circuit. With the DRBIII®, monitor the MAP Sensor voltage. Ignition on, engine not running. Is the voltage below 1.0 volt? Yes → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K1) MAP Signal circuit from the MAP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K1) MAP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor ground circuit from the MAP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the open in the (K4) Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0108-MAP SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0110-INTAKE AIR TEMPERATURE SENSOR STUCK
P0111-INTAKE AIR TEMPERATURE SENSOR PERFORMANCE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0110-INTAKE AIR TEMPERATURE SENSOR STUCK.

When Monitored and Set Condition:

P0110-INTAKE AIR TEMPERATURE SENSOR STUCK

When Monitored: Engine Running.

Set Condition: After 4 warm-up cycles, the PCM did not see a 2°C (18°F) change in the IAT Sensor voltage within 200 miles . Two Trip Fault

P0111-INTAKE AIR TEMPERATURE SENSOR PERFORMANCE

When Monitored: Engine off time is greater than 480 minutes. Ambient temperature is greater than 4°C (39°F).

Set Condition: After a calibrated amount of cool down time, the PCM compares the ECT Sensor, IAT Sensor and the Ambient Air Temperature Sensor values. If the IAT Sensor value is not within 2°C (18°F) of the other two temperature sensors an error is detected. Two Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
(K21) IAT SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
IAT SENSOR VOLTAGE BELOW 1.0 VOLTS
(K21) IAT SIGNAL CIRCUIT OPEN
(K4) SENSOR GROUND CIRCUIT OPEN
(K21) IAT SIGNAL SHORTED TO GROUND
(K21) IAT SIGNAL CIRCUIT SHORTED TO (K4) SENSOR GROUND
PCM HIGH
PCM LOW

P0110-INTAKE AIR TEMPERATURE SENSOR STUCK — Continued

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the IAT Sensor harness connector. **NOTE: Visually inspect both the component and the PCM connectors. Look for damaged, partially broken wires, and backed out or corroded terminals.** Ignition on, engine not running. Measure the voltage on the (K21) IAT Signal circuit in the IAT Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to battery voltage in the (K21) IAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Turn the ignition off. Disconnect the IAT Sensor harness connector. Ignition on, engine not running. With the DRBIII®, read the IAT Sensor voltage. Is the voltage above 4.9 volts? Yes → Go To 4 No → Go To 7	All
4	Turn the ignition off. Disconnect the IAT Sensor harness connector. Using a jumper wire, jumper across the IAT Sensor harness connector. Ignition on, engine not running. With the DRBIII®, read the IAT Sensor voltage. Is the voltage below 1.0 volt? Yes → Replace the IAT Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the IAT Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K21) IAT Signal circuit from the IAT Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K21) IAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0110-INTAKE AIR TEMPERATURE SENSOR STUCK — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the IAT Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor ground circuit from the IAT Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Repair the open in the (K4) Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
7	Turn the ignition off. Disconnect the IAT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K21) IAT Signal circuit in the IAT Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K21) IAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 8	All
8	Turn the ignition off. Disconnect the IAT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K4) Sensor ground circuit and the (K21) IAT Sensor Signal circuit at the IAT Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Repair the (K4) Sensor ground circuit shorted to the (K21) IAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:
P0112-INTAKE AIR TEMPERATURE SENSOR LOW

When Monitored and Set Condition:

P0112-INTAKE AIR TEMPERATURE SENSOR LOW

When Monitored: With the ignition on. Battery voltage greater than 10 volts.

Set Condition: The Intake Air Temperature (IAT) sensor voltage is less than 0.0784 of a volt. One trip Fault.

POSSIBLE CAUSES
IAT SENSOR VOLTAGE BELOW 1.0 VOLT
IAT SENSOR INTERNAL FAILURE
(K21) IAT SIGNAL SHORTED TO GROUND
(K21) IAT SIGNAL SHORTED TO (K4) SENSOR GROUND CIRCUIT
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read the IAT Sensor voltage. Is the voltage below 1.0 volt? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the IAT harness connector. Ignition on, engine not running. With the DRBIII®, read IAT Sensor voltage. Is the voltage above 1.0 volt? Yes → Replace the IAT Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Turn the ignition off. Disconnect the IAT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K21) IAT Signal circuit at the IAT Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K21) IAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All

P0112-INTAKE AIR TEMPERATURE SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the IAT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K21) IAT Sensor Signal circuit and the (K4) Sensor ground circuit in the IAT Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the (K4) Sensor ground shorted to the (K21) IAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0113-INTAKE AIR TEMPERATURE SENSOR HIGH

When Monitored and Set Condition:

P0113-INTAKE AIR TEMPERATURE SENSOR HIGH

When Monitored: With the ignition on. Battery voltage greater than 10 volts.

Set Condition: The Intake Air Temperature (IAT) sensor voltage at the PCM is greater than 4.98 volts. One trip Fault.

POSSIBLE CAUSES
IAT SENSOR VOLTAGE ABOVE 4.6 VOLTS
(K21) IAT SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
IAT SENSOR INTERNAL FAILURE
(K21) IAT SIGNAL CIRCUIT OPEN
(K4) SENSOR GROUND CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read the IAT Sensor voltage. Is the voltage above 4.6 volts? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the IAT Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K21) IAT Signal circuit in the IAT Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to battery voltage in the (K21) IAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All

P0113-INTAKE AIR TEMPERATURE SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the IAT harness connector. Connect a jumper wire between the (K21) IAT Signal circuit and the (K4) Sensor ground circuit in the IAT harness connector. Ignition on, engine not running. With the DRBIII®, read IAT voltage. Is the voltage below 1.0 volt? Yes → Replace the IAT Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the IAT Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K21) IAT Signal circuit from the IAT Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the (K21) IAT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Disconnect the IAT Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor ground circuit from the IAT Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K4) Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0116-ENGINE COOLANT TEMPERATURE PERFORMANCE

When Monitored and Set Condition:

P0116-ENGINE COOLANT TEMPERATURE PERFORMANCE

When Monitored: Engine off time is greater than 480 minutes. Ambient temperature is greater than 4°C (39°F).

Set Condition: After a calibrated amount of cool down time, the PCM compares the ECT Sensor, IAT Sensor and the Ambient Air Temperature Sensor values. If the ECT Sensor value is not within 2°C (18°F) of the other two temperartue sensors an error is detected. Two Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
(K2) ECT SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
ECT SENSOR VOLTAGE BELOW 1.0 VOLT
(K2) ECT SIGNAL CIRCUIT OPEN
(K4) SENSOR GROUND CIRCUIT OPEN
(K2) ECT SIGNAL CIRCUIT SHORTED TO GROUND
(K2) ECT SIGNAL SHORTED TO (K4) SENSOR GROUND
PCM HIGH
PCM LOW

TEST	ACTION	APPLICABILITY
1	**NOTE: Due to the fact that the PCM compares the IAT, AAT and ECT sensor to see if they are within a calibrated temp of one another, the use of a block heater can cause false readings for the PCM. Check with the customer to see if they use a block heater.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0116-ENGINE COOLANT TEMPERATURE PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. Disconnect the ECT Sensor harness connector. **NOTE: Visually inspect both the component and the PCM connectors. Look for damaged, partially broken wires, and backed out or corroded terminals.** Ignition on, engine not running. Measure the voltage on the (K2) ECT Signal circuit in the ECT Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to battery voltage in the (K2) ECT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Turn the ignition off. Disconnect the ECT Sensor harness connector. Ignition on, engine not running. With the DRBIII®, read the ECT Sensor voltage. Is the voltage above 4.6 volts? Yes → Go To 4 No → Go To 7	All
4	Turn the ignition off. Disconnect the ECT Sensor harness connector. Using a jumper wire, jumper across the ECT Sensor harness connector. Ignition on, engine not running. With the DRBIII®, read the ECT Sensor voltage. Is the voltage below 1.0 volt? Yes → Replace the ECT Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the ECT Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K2) ECT Signal circuit from the ECT Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K2) ECT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0116-ENGINE COOLANT TEMPERATURE PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the ECT harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor ground circuit from the ECT Sensor harness connector to the appropriate terminal of special tool # 8815. Is the resistance below 5.0 ohms? Yes → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Repair the open in the (K4) Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
7	Disconnect the ECT Sensor harness connector. Turn the ignition off. Disconnect the PCM harness connector. Measure the resistance between ground and the (K2) ECT Signal circuit in the ECT Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K2) ECT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 8	All
8	Turn the ignition off. Disconnect the ECT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K2) ECT Sensor Signal circuit and the (K4) Sensor ground circuit at the ECT Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Repair the (K4) Sensor ground shorted to the (K2) ECT Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0117-ENGINE COOLANT TEMPERATURE SENSOR LOW

When Monitored and Set Condition:

P0117-ENGINE COOLANT TEMPERATURE SENSOR LOW

When Monitored: With the ignition on. Battery voltage greater than 10 volts.

Set Condition: The Engine Coolant Temperature (ECT) sensor circuit voltage at the PCM is less than 0.0782 of a volt. One Trip Fault.

POSSIBLE CAUSES
ECT SENSOR VOLTAGE BELOW 1.0 VOLTS
ECT SENSOR INTERNAL FAILURE
(K2) ECT SIGNAL SHORTED TO GROUND
(K2) ECT SIGNAL SHORTED TO (K4) SENSOR GROUND CIRCUIT
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read the ECT Sensor voltage. Is the voltage below 1.0 volt? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the ECT harness connector. Ignition on, engine not running. With the DRBIII®, read ECT Sensor voltage. Is the voltage between 4.8 and 5.2 volts? Yes → Replace the ECT Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Turn the ignition off. Disconnect the ECT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K2) ECT Signal circuit in the ECT Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the ground shorted to the (K2) ECT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All

P0117-ENGINE COOLANT TEMPERATURE SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the ECT Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K2) ECT Sensor Signal circuit and the (K4) Sensor ground circuit in the ECT Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the (K4) Sensor ground shorted to the (K2) ECT Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0118-ENGINE COOLANT TEMPERATURE SENSOR HIGH

When Monitored and Set Condition:

P0118-ENGINE COOLANT TEMPERATURE SENSOR HIGH

When Monitored: With the ignition on. Battery voltage greater than 10 volts.

Set Condition: The Engine Coolant Temperature (ECT) sensor voltage at the PCM is greater than 4.98 volts. One trip Fault.

POSSIBLE CAUSES
ECT SENSOR VOLTAGE ABOVE 4.9 VOLTS
(K2) ECT SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
ECT SENSOR INTERNAL FAILURE
(K2) ECT SIGNAL CIRCUIT OPEN
(K4) SENSOR GROUND CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read the ECT Sensor voltage. Is the voltage above 4.9 volts? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the ECT Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K2) ECT Signal circuit in the ECT Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to battery voltage in the (K2) ECT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All

P0118-ENGINE COOLANT TEMPERATURE SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the ECT harness connector. Connect a jumper wire between the (K2) ECT Signal circuit and the (K4) Sensor ground circuit in the ECT harness connector. Ignition on, engine not running. With the DRBIII®, read ECT Sensor voltage. Is the voltage below 1.0 volt? Yes → Replace the ECT Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the ECT Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K2) ECT Signal circuit from the ECT Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the (K2) ECT Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Disconnect the ECT Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor ground circuit from the ECT Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K4) Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0121-THROTTLE POSITION SENSOR #1 PERFORMANCE

When Monitored and Set Condition:

P0121-THROTTLE POSITION SENSOR #1 PERFORMANCE

When Monitored: With the engine running and no MAP Sensor or TP Sensor DTC's set.

Set Condition: The PCM determines a valid range in which the TP Sensor should be, at a given RPM/Load. The actual TP Sensor voltage is then compared to this value. If the TP Sensor voltage does not fall within the expected range within a predetermined time an error will be detected. One Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
HIGH RESISTANCE IN MAP (K6) 5 VOLT SUPPLY CIRCUIT
RESISTANCE TO GROUND IN MAP (K6) 5 VOLT SUPPLY CIRCUIT
MAP SENSOR
HIGH RESISTANCE IN (K1) MAP SIGNAL CIRCUIT
RESISTANCE TO GROUND IN (K1) MAP SIGNAL CIRCUIT
HIGH RESISTANCE IN (K4) MAP GROUND CIRCUIT
PCM
TP SENSOR OPERATION
HIGH RESISTANCE IN TP SENSOR (K6) 5 VOLT SUPPLY CIRCUIT
RESISTANCE TO GROUND IN TP SENSOR (K6) 5 VOLT SUPPLY CIRCUIT
TP SENSOR
HIGH RESISTANCE IN (K22) TP SIGNAL CIRCUIT
RESISTANCE TO GROUND IN (K22) TP SENSOR SIGNAL CIRCUIT
HIGH RESISTANCE IN TP (K4) SENSOR GROUND CIRCUIT
PCM

P0121-THROTTLE POSITION SENSOR #1 PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Diagnose any TP Sensor or MAP Sensor component DTCs before continuing.** **NOTE: The throttle plate and linkage must be free from binding and carbon build up.** **NOTE: Ensure the throttle plate is at the idle position.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Start the engine. With the DRBIII®, monitor the MAP Sensor voltage. Snap the throttle. Does the MAP Sensor voltage vary from below 2.0 volts at idle to above 3.5 volts at WOT? Yes → Go To 3 No → Go To 11	All
3	Ignition on, engine not running. With the DRBIII®, monitor the TP Sensor voltage while slowly depressing the throttle pedal from the idle position to the wide open throttle position. Does the voltage start approximately at 0.8 volts and go above 3.5 volts with a smooth transition? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K6) 5 Volt Supply circuit from the TP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the TP Sensor (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0121-THROTTLE POSITION SENSOR #1 PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K6) 5 Volt Supply circuit at the TP Sensor harness connector. Is the resistance above 100k ohms? Yes → Go To 6 No → Repair the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	Turn the ignition off. Disconnect the TP Sensor harness connector. With the DRBIII®, monitor the TP Sensor voltage. Ignition on, engine not running. Connect a jumper wire between the (K22) TP Signal circuit and the (K4) Sensor ground circuit . Does the TP Sensor voltage change from approximately 4.9 volts to below 0.5 of a volt? Yes → Replace the Throttle Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 7	All
7	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K22) TP Signal circuit from the TP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 8 No → Repair the (K22) TP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
8	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K22) TP Signal circuit in the TP Sensor harness connector. Is the resistance above 100k ohms? Yes → Go To 9 No → Repair the (K22) TP Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0121-THROTTLE POSITION SENSOR #1 PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor ground circuit from the TP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the (K4) Sensor Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
10	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
11	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K6) 5 Volt Supply circuit from the MAP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 12 No → Repair the MAP (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
12	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K6) 5 Volt Supply circuit at the MAP Sensor harness connector. Is the resistance above 100k ohms? Yes → Go To 13 No → Repair the short to ground in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0121-THROTTLE POSITION SENSOR #1 PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
13	Turn the ignition off. Disconnect the MAP Sensor harness connector. With the DRBIII®, monitor the MAP Sensor voltage. Ignition on, engine not running. Connect a jumper wire between the (K1) MAP Sensor Signal circuit and the (K4) Sensor ground circuit . Cycle the ignition switch from off to on. With the DRBIII®, monitor the MAP Sensor voltage. Does the DRBIII® display MAP voltage from approximately 4.9 volts to below 0.5 volt? Yes → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 14	All
14	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K1) MAP Signal circuit from the MAP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 15 No → Repair the (K1) MAP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
15	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K1) MAP Signal circuit at the MAP Sensor harness connector. Is the resistance above 100k ohms? Yes → Go To 16 No → Repair the (K1) MAP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
16	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor ground circuit from the MAP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 17 No → Repair the (K4) Sensor Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0121-THROTTLE POSITION SENSOR #1 PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
17	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0122-THROTTLE POSITION SENSOR #1 LOW

When Monitored and Set Condition:

P0122-THROTTLE POSITION SENSOR #1 LOW

When Monitored: With the ignition on. Battery voltage greater than 10 volts.

Set Condition: Throttle Position Sensor voltage at the PCM is less than 0.0978 of a volt. One Trip Fault.

POSSIBLE CAUSES
THROTTLE POSITION SENSOR SWEEP
INTERMITTENT CONDITION
(K6) 5 VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(K6) 5 VOLT SUPPLY CIRCUIT OPEN
TP SENSOR INTERNAL FAILURE
(K22) TP SIGNAL CIRCUIT SHORTED TO GROUND
(K22) TP SIGNAL CIRCUIT SHORTED TO (K4) SENSOR GROUND CIRCUIT
PCM (K6) 5 VOLT SUPPLY CIRCUIT
PCM (K22) TP SENSOR SIGNAL

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read the Throttle Position Sensor voltage. Is the voltage below 0.2 of a volt? Yes → Go To 2 No → Go To 10	All
2	Turn the ignition off. Disconnect the TP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K6) 5 Volt Supply circuit in the TP Sensor harness connector. Is the voltage between 4.5 to 5.2 volts? Yes → Go To 3 No → Go To 7	All

P0122-THROTTLE POSITION SENSOR #1 LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the TP Sensor harness connector. With the DRBIII®, monitor the TP Sensor voltage. Ignition on, engine not running. Is the voltage above 4.5 volts? Yes → Replace the Throttle Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the TP harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K22) TP Signal circuit at the TP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K22) TP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K22) TPS Signal circuit and the (K4) Sensor ground circuit in the TPS harness connector. Is the resistance below 100 ohms? Yes → Repair the short to (K4) Sensor ground in the (K22) TP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
7	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K6) 5 Volt Supply circuit in the TP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 8	All

P0122-THROTTLE POSITION SENSOR #1 LOW — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K6) 5 Volt Supply circuit from the TP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the open in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
9	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
10	Ignition on, engine not running. With the DRBIII®, monitor the Throttle Position Sensor voltage. Slowly open the throttle from the idle position to the wide open throttle position. Does voltage start at approximately 0.7 of a volt and go above 3.5 volts with a smooth transition? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Replace the Throttle Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0123-THROTTLE POSITION SENSOR #1 HIGH

When Monitored and Set Condition:

P0123-THROTTLE POSITION SENSOR #1 HIGH

When Monitored: With the ignition on. Battery voltage greater than 10 volts.

Set Condition: Throttle Position Sensor voltage at the PCM is greater than 4.47 volts. One Trip Fault.

POSSIBLE CAUSES
THROTTLE POSITION SENSOR SWEEP
INTERMITTENT CONDITION
(K22) TP SIGNAL CIRCUIT SHORTED TO (K6) 5 VOLT SUPPLY CIRCUIT
(K22) TP SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
TP SENSOR INTERNAL FAILURE
(K22) TP SIGNAL CIRCUIT OPEN
(K4) SENSOR GROUND CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the throttle is fully closed and free from binding or carbon build up.** Start the engine. With the DRBIII®, read the TP Sensor voltage. Is the voltage above 4.5 volts? Yes → Go To 2 No → Go To 8	All
2	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K22) TP Signal circuit and the (K6) 5 Volt Supply circuit in the TP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to the (K6) 5 Volt Supply circuit in the (K22) TP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All

P0123-THROTTLE POSITION SENSOR #1 HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the TP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K22) TP Signal circuit in the TP Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to battery voltage in the (K22) TP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the TP Sensor harness connector. Connect a jumper wire between the (K22) TP Signal circuit and the (K4) Sensor ground circuit. With the DRBIII®, monitor the TP Sensor voltage. Ignition on, engine not running. Is the voltage below 0.5 of a volt? Yes → Replace the Throttle Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the TP harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K22) TP Signal circuit from the TP harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K22) TP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	Turn the ignition off. Disconnect the TP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor ground circuit from the TP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the open in the (K4) Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0123-THROTTLE POSITION SENSOR #1 HIGH — Continued

TEST	ACTION	APPLICABILITY
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
8	Ignition on, engine not running. With the DRBIII®, monitor the TP Sensor voltage. Slowly open the throttle from the idle position to the wide open throttle position. Does voltage start at approximately 0.7 of a volt and go above 3.5 volts with a smooth transition? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Replace the Throttle Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0125-INSUFFICIENT COOLANT TEMP FOR CLOSED-LOOP FUEL CONTROL

When Monitored and Set Condition:

P0125-INSUFFICIENT COOLANT TEMP FOR CLOSED-LOOP FUEL CONTROL

When Monitored: With battery voltage greater than 10.4 volts, after engine is started.

Set Condition: The engine temperature does not go above 15°C (60°F). Failure time depends on start-up coolant temperature and ambient temperature. (i.e. 2 minutes for a start temp of 10°C (50°F) or up to 10 minutes for a vehicle with a start-up temp of -28°C (20°F). Two Trip Fault.

POSSIBLE CAUSES
LOW COOLANT LEVEL
THERMOSTAT OPERATION
ENGINE COOLANT TEMPERATURE SENSOR

TEST	ACTION	APPLICABILITY
1	**NOTE: If a Engine Coolant Temperature (ECT) DTC is set along with this code, diagnose the ECT DTC first.** **NOTE: Inspect the ECT terminals and related PCM terminals. Ensure the terminals are free from corrosion and damage.** **NOTE: The best way to diagnose this DTC is to allow the vehicle to sit overnight outside in order to have a totally cold soaked engine.** **Note: Extremely cold outside ambient temperatures may have caused this DTC to set.** **WARNING: Never open the cooling system when the engine is hot. The system is under pressure. Extreme burns or scalding may result. Allow the engine to cool before opening the cooling system.** Check the coolant system to make sure that the coolant is in good condition and at the proper level. Is the coolant level and condition OK? Yes → Go To 2 No → Inspect the vehicle for a coolant leak and add the necessary amount of coolant. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0125-INSUFFICIENT COOLANT TEMP FOR CLOSED-LOOP FUEL CONTROL — Continued

TEST	ACTION	APPLICABILITY
2	**NOTE: This test works best if performed on a cold engine (cold soak).** Ignition on, engine not running. With the DRBIII®, read the ECT Deg value. If the engine was allowed to sit overnight (cold soak), the temperature value should be a sensible value that is somewhere close to the ambient temperature. **Note: If engine coolant temperature is above 82°C (180°F), allow the engine to cool until 65°C (150°F) is reached.** Start the Engine. During engine warm-up, monitor the ECT Deg value. The temp deg value change should be a smooth transition from start up to normal operating temp 82°C (180°F) . Also monitor the actual coolant temperature with a thermometer. **NOTE: As the engine warms up to operating temperature, the actual coolant temperature (thermometer reading) and the ECT Deg in the DRB sensor should stay relatively close to each other.** Using the appropriate service information, determine the proper opening temperature of the thermostat. Did the thermostat open at the proper temperature? Yes → Go To 3 No → Replace the thermostat. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
3	Ignition on, engine not running. With the DRBIII®, read the ECT Sensor temperature value. If the engine was allowed to sit overnight (cold soak), the temperature value should be a sensible value that is somewhere close to the ambient temperature. **Note: If engine coolant temperature is above 82°C (180°F), allow the engine to cool until 65°C (150°F) is reached.** Start the Engine. During engine warm-up, monitor the ECT Deg value. The temp deg value change should be a smooth transition from start up to normal operating temp 82°C (180°F) . Also monitor the actual coolant temperature with a thermometer. **NOTE: As the engine warms up to operating temperature, the actual coolant temperature (thermometer reading) and the ECT Sensor Temperature in the DRBIII® sensors should stay relatively close to each other.** Is the thermometer reading relatively close to the DRBIII® ECT Sensor reading? Yes → Test Complete. No → Replace the Engine Coolant Temperature Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:
P0128-THERMOSTAT RATIONALITY

When Monitored and Set Condition:

P0128-THERMOSTAT RATIONALITY

When Monitored: The engine running.

Set Condition: The PCM predicts a coolant temperature value that it will compare to the actual coolant temperature. If the two coolant temperature values are not within 10°C (50°F) of each other an error is detected. Two Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
LOW COOLANT LEVEL
OTHER POSSIBLE CAUSES
SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
THERMOSTAT OPERATION
TEMPERATURE SENSOR VOLTAGE BELOW 1.0 VOLT
SIGNAL CIRCUIT OPEN
SENSOR GROUND CIRCUIT OPEN
SIGNAL CIRCUIT SHORTED TO GROUND
SIGNAL CIRCUIT SHORTED TO SENSOR GROUND
PCM LOW
PCM HIGH

TEST	ACTION	APPLICABILITY
1	**NOTE: If any ECT, AAT, CMP or CKP sensor DTCs have set along with P0128, diagnose them first before continuing.** **NOTE: Ensure that Pinion Factor has been programmed correctly into the PCM.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0128-THERMOSTAT RATIONALITY — Continued

TEST	ACTION	APPLICABILITY
2	**NOTE: If a Engine Coolant Temperature (ECT) DTC is set along with this code, diagnose the ECT DTC first.** **NOTE: Inspect the ECT terminals and related PCM terminals. Ensure the terminals are free from corrosion and damage.** **NOTE: The best way to diagnose this DTC is to allow the vehicle to sit overnight outside in order to have a totally cold soaked engine.** **Note: Extremely cold outside ambient temperatures may have caused this DTC to set.** **WARNING: Never open the cooling system when the engine is hot. The system is under pressure. Extreme burns or scalding may result. Allow the engine to cool before opening the cooling system.** Check the coolant system to make sure that the coolant is in good condition and at the proper level. Is the coolant level and condition OK? Yes → Go To 3 No → Inspect the vehicle for a coolant leak and add the necessary amount of coolant. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
3	**NOTE: This test works best if performed on a cold engine (cold soak).** Ignition on, engine not running. With the DRBIII®, read the ECT Deg value. If the engine was allowed to sit overnight (cold soak), the temperature value should be a sensible value that is somewhere close to the ambient temperature. **Note: If engine coolant temperature is above 82°C (180°F), allow the engine to cool until 65°C (150°F) is reached.** Start the Engine. During engine warm-up, monitor the ECT Deg value. The temp deg value change should be a smooth transition from start up to normal operating temp 82°C (180°F) . Also monitor the actual coolant temperature with a thermometer. **NOTE: As the engine warms up to operating temperature, the actual coolant temperature (thermometer reading) and the ECT Deg in the DRB sensor should stay relatively close to each other.** Using the appropriate service information, determine the proper opening temperature of the thermostat. Did the thermostat open at the proper temperature? Yes → Go To 4 No → Replace the thermostat. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
4	Turn the ignition on. With the DRBIII®, read and record the AAT Sensor Temperature value Using the DRB Temperature Probe #CH7050, measure the ambient air temperature near the AAT sensor. Is the AAT Sensor value with -15°C (5°F) of the temperature probe reading? Yes → Go To 5 No → Go To 7	All

P0128-THERMOSTAT RATIONALITY — Continued

TEST	ACTION	APPLICABILITY
5	**WARNING: MAKE SURE THE ENGINE COOLING SYSTEM IS COOL BEFORE REMOVING THE PRESSURE CAP OR ANY HOSE. SEVERE PERSONAL INJURY MAY RESULT FROM ESCAPING HOT COOLANT. THE COOLING SYSTEM IS PRESSURIZED WHEN HOT.** Turn the ignition on. With the DRBIII®, read and record the ECT Sensor Temperature value Using the DRB Temperature Probe #CH7050, measure the engine coolant temperature. Is the ECT Sensor value with -15°C (5°F) of the temperature probe reading? Yes → Go To 6 No → Go To 7	All
6	Inspect the Temperature sensors for any physical damage. Inspect the engine coolant. Ensure the coolant is at the proper level. Refer to the Service Information COOLING. Ensure the Temperature sensors are properly mounted. Ensure the CMP and CKP sensors are mounted properly. Check the connectors for any signs of damage. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Refer to any Technical Service Bulletins (TSBs) that may apply. With the engine running at normal operating temperature, monitor the Temperature sensor parameters while wiggling the wire harness. Look for parameter values to change. Visually inspect the related wire harness. Look for any chafed, pierced, pinched, partially broken wires and broken, bent, pushed out, or corroded terminals. **CAUTION: NEVER PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Inspect and clean all PCM, engine, and chassis grounds. Were any problems found during the above inspections? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Test Complete.	All
7	**NOTE: Visually inspect both the component and the PCM connectors. Look for damage, partially broken wires and backed out or corroded terminals** Turn the ignition off. Disconnect the applicable Temperature Sensor harness connector. Ignition on, engine not running. Measure the voltage of the Signal circuit in the applicable Temperature Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to battery voltage in the Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 8	All

P0128-THERMOSTAT RATIONALITY — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the applicable Temperature Sensor harness connector. Ignition on, engine not running. With the DRBIII®, read the Temperature Sensor voltage. Is the voltage above 4.6 volts? Yes → Go To 9 No → Go To 12	All
9	Turn the ignition off. Disconnect the applicable Temperature Sensor harness connector. Using a jumper wire, jumper across the Temperature Sensor harness connector. Ignition on, engine not running. With the DRBIII®, read the Temperature voltage. Is the voltage below 1.0 volt? Yes → Replace the applicable Temperature Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 10	All
10	Turn the ignition off. Disconnect the applicable Temperature Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Signal circuit from the Temperature Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 11 No → Repair the open in the Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
11	Turn the ignition off. Disconnect the applicable Temperature Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Sensor ground circuit from the Ambient Air Temperature Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Contorl Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Repair the open in the Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0128-THERMOSTAT RATIONALITY — Continued

TEST	ACTION	APPLICABILITY
12	Turn the ignition off. Disconnect the applicable Temperature Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the Signal circuit in the Temperature harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 13	All
13	Turn the ignition off. Disconnect the applicable Temperature Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the Signal circuit and the Sensor ground circuit in the Temperature Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the Sensor ground shorted to the Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0129-BAROMETRIC PRESSURE OUT-OF-RANGE LOW

When Monitored and Set Condition:

P0129-BAROMETRIC PRESSURE OUT-OF-RANGE LOW

When Monitored: With the ignition key on. No Cam or Crank signal within 75 ms. Engine speed at less than 250 RPM.

Set Condition: The PCM senses the voltage from the MAP sensor to be less than 2.196 volts but above 0.0392 of a volt for 300 milliseconds.One Trip Fault.

POSSIBLE CAUSES
IAC SIGNAL CIRCUIT LOW
IAC SIGNAL CIRCUIT HIGH
INTERMITTENT CONDITION
(K6) 5 VOLT SUPPLY CIRCUIT SHORTED TO VOLTAGE
(K6) 5 VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(K6) 5 VOLT SUPPLY CIRCUIT OPEN
MAP SENSOR INTERNAL FAILURE
(K1) MAP SIGNAL CIRCUIT OPEN
(K1) MAP SIGNAL CIRCUIT SHORTED TO GROUND
PCM (K6) 5 VOLT SUPPLY CIRCUIT
PCM (K1) MAP SIG CIRCUIT

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read the MAP Sensor voltage. Is the voltage below 2.2 volts. Yes → Go To 2 No → Go To 11	All
2	Turn the ignition off. Disconnect the MAP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K6) 5 Volt Supply circuit in the MAP Sensor harness connector. Is the voltage between 4.5 to 5.2 volts? Yes → Go To 3 No → Go To 7	All

P0129-BAROMETRIC PRESSURE OUT-OF-RANGE LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the MAP Sensor harness connector. Ignition on, engine not running. With the DRBIII®, monitor the MAP Sensor voltage. Is the voltage above 2.2 volts? Yes → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K1) MAP Signal circuit from the MAP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the (K1) MAP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K1) MAP Signal circuit at the MAP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K1) MAP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
7	Turn the ignition off. Disconnect the MAP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K6) 5 Volt Supply circuit in the MAP Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to battery voltage in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 8	All

P0129-BAROMETRIC PRESSURE OUT-OF-RANGE LOW — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K6) 5 Volt Supply circuit at the MAP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 9	All
9	Turn the ignition off. Disconnect the MAP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the 5 Volt Supply circuit from the MAP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the open in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
10	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
11	Start the engine. **NOTE: If the engine will not idle, maintain an engine speed between 800 and 1500 RPM.** Allow the engine to idle. With the DRBIII®, read the IAC Current. Is the IAC Current below 146 mA? Yes → Refer to P0508 - IAC Valve Sense Low Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 12	All
12	Start the engine. **NOTE: If the engine will not idle, maintain an engine speed between 800 and 1500 RPM.** Allow the engine to idle. With the DRBIII®, read the IAC Current. Is the IAC Current above 999 mA? Yes → Refer to P0509 - IAC Valve Sense Circuit High Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0131-O2 SENSOR 1/1 VOLTAGE LOW
P0137-O2 SENSOR 1/2 VOLTAGE LOW

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0131-O2 SENSOR 1/1 VOLTAGE LOW.

When Monitored and Set Condition:

P0131-O2 SENSOR 1/1 VOLTAGE LOW

When Monitored: Engine Running for less than 30 seconds. O2 Sensor Heater Temperature less than 251°C (484°F) Battery voltage greater than 10.99 volts.

Set Condition: The oxygen sensor signal voltage is below 2.5196 volts for 3 seconds. One trip Fault.

P0137-O2 SENSOR 1/2 VOLTAGE LOW

When Monitored: Engine Running for less than 30 seconds. O2 Sensor Heater Temperature less than 251°C (484°F) Battery voltage greater than 10.99 volts.

Set Condition: The oxygen sensor signal voltage is below 2.5196 volts for 3 seconds. One trip Fault.

POSSIBLE CAUSES
O2 SENSOR BELOW 2.52 VOLTS
O2 SENSOR
O2 RETURN CIRCUIT SHORTED TO GROUND
O2 SIGNAL CIRCUIT SHORTED TO GROUND
O2 SIGNAL CIRCUIT SHORTED TO O2 RETURN CIRCUIT
O2 SIGNAL SHORTED TO HEATER GROUND CIRCUIT
PCM RETURN CIRCUIT
PCM SIGNAL CIRCUIT

P0131-O2 SENSOR 1/1 VOLTAGE LOW — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: If one of the O2 Sensors Signal or Return circuits are shorted to ground, the DRBIII® will display all O2 Sensor voltage readings low. The O2 Sensor that is shorted to ground will display a voltage reading near or at 0 volts.** **NOTE: It is important to perform the diagnostics on the O2 Sensor that set the DTC.** **NOTE: After the repairs have been made, verify proper O2 Sensor operation. If all the O2 Sensor voltage readings have not returned to normal, follow the diagnostic procedure for the remaining O2 Sensors.** Start the engine. Allow the engine to reach normal operating temperature. With the DRBIII®, read the O2 Sensor voltage. Is the voltage below 2.52 volts? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the O2 Sensor harness connector. Ignition on, engine not running. With the DRBIII®, monitor the O2 Sensor voltage. Is the O2 Sensor voltage above 4.8 volts? Yes → Go To 3 No → Go To 5	All
3	Turn the ignition off. Disconnect the O2 Sensor harness connector. Ignition on, engine not running. Measure the voltage on the O2 Return circuit in the O2 Sensor harness connector. Is the voltage at 2.5 volts? Yes → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the O2 Return circuit in the O2 Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the O2 Return circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0131-O2 SENSOR 1/1 VOLTAGE LOW — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the O2 Signal circuit in the O2 Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the O2 Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the O2 Signal circuit and the O2 Return circuit in the O2 Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the O2 Return circuit shorted to the O2 Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 7	All
7	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the O2 Signal circuit and the Heater ground circuit in the O2 Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the Heater Ground circuit shorted to the O2 Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 8	All
8	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0132-O2 SENSOR 1/1 VOLTAGE HIGH
P0138-O2 SENSOR 1/2 VOLTAGE HIGH

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0132-O2 SENSOR 1/1 VOLTAGE HIGH.

When Monitored and Set Condition:

P0132-O2 SENSOR 1/1 VOLTAGE HIGH

When Monitored: The engine running for 119 seconds. O2 Sensor Heater Temperature is greater than 496°C (925°F). Battery voltage greater than 10.99 volts.

Set Condition: The Oxygen Sensor voltage is above 3.9902 volts for 30 seconds. One trip fault.

P0138-O2 SENSOR 1/2 VOLTAGE HIGH

When Monitored: The engine running for 119 seconds. O2 Sensor Heater Temperature is greater than 496°C (925°F). Battery voltage greater than 10.99 volts.

Set Condition: The Oxygen Sensor voltage is above 3.9902 volts for 30 seconds. One trip fault.

POSSIBLE CAUSES
O2 SENSOR ABOVE 3.99 VOLTS
O2 SENSOR
O2 RETURN CIRCUIT OPEN
O2 SIGNAL SHORTED TO VOLTAGE
O2 SIGNAL OPEN
PCM RETURN CIRCUIT
PCM SIGNAL CIRCUIT

P0132-O2 SENSOR 1/1 VOLTAGE HIGH — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: If one of the O2 Sensors Signal or Return circuits are shorted to voltage, the DRBIII® will display all O2 Sensor voltage readings high.** **NOTE: It is important to perform the diagnostics on the O2 Sensor that set the DTC.** **NOTE: After the repairs have been made, verify proper O2 Sensor operation. If all the O2 Sensor voltage readings have not returned to normal, follow the diagnostic procedure for the remaining O2 Sensors.** Start the engine. Allow the engine to reach normal operating temperature. With the DRBIII®, read the O2 Sensor voltage. Is the voltage above 3.99 volts? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the O2 Sensor harness connector. Ignition on, engine not running. With the DRBIII®, monitor the O2 Sensor voltage. Is the O2 Sensor voltage below 4.8 volts? Yes → Go To 3 No → Go To 5	All
3	Turn the ignition off. Disconnect the O2 Sensor harness connector. Ignition on, engine not running. Measure the voltage on the O2 Return circuit in the O2 Sensor harness connector. Is the voltage at 2.5 volts? Yes → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the O2 Sensor harness connector Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the O2 Return circuit from the O2 Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accorance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Repair the open in the O2 Return circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0132-O2 SENSOR 1/1 VOLTAGE HIGH — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect the O2 Sensor harness connector **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine and allow the engine to idle. Measure the voltage on the O2 Signal circuit in the O2 Sensor harness connector. Is the voltage above 5.0 volts? Yes → Repair the short to voltage in the O2 Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	Turn the ignition off. Disconnect the O2 Sensor harness connector Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the O2 Signal circuit from the O2 Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the open in the O2 Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0133-O2 SENSOR 1/1 SLOW RESPONSE
P0139-O2 SENSOR 1/2 SLOW RESPONSE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0133-O2 SENSOR 1/1 SLOW RESPONSE.

When Monitored and Set Condition:

P0133-O2 SENSOR 1/1 SLOW RESPONSE

When Monitored: Start and drive vehicle greater than 20 MPH and less than 55 MPH. Throttle open for a minimum 120 seconds. Coolant Temp greater than 70°C (158°F) Catalytic Converter Temperature greater than 600°C (1112°F) EVAP Purge active.

Set Condition: The O2 sensor voltage switches only 11 times or less from lean to rich within 20 second during monitoring. Two Trip Fault.

P0139-O2 SENSOR 1/2 SLOW RESPONSE

When Monitored: Start and drive vehicle greater than 20 MPH and less than 55 MPH. Throttle open for a minimum 120 seconds. Coolant Temp greater than 70°C (158°F) Catalytic Converter Temperature greater than 600°C (1112°F)

Set Condition: The O2 sensor voltage switches properly from lean to rich during monitoring. Two Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
EXHAUST LEAK
O2 SIGNAL CIRCUIT
O2 RETURN CIRCUIT
O2 SENSOR

P0133-O2 SENSOR 1/1 SLOW RESPONSE — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: If one of the O2 Sensors Signal or Return circuits are shorted to ground or voltage, all the other O2 Sensor voltage readings will be affected.** **NOTE: It is important to perform the diagnostics on the O2 Sensor that set the DTC.** **NOTE: After the repairs have been made, verify proper O2 Sensor operation. If all the O2 Sensor voltage readings have not returned to normal, follow the diagnostic procedure for the remaining O2 Sensors.** **NOTE: Check for contaminates that may have damaged the O2 Sensor: contaminated fuel, unapproved silicone, oil and coolant.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Start the engine. Inspect the exhaust system for leaks between the engine and the O2 Sensors. Are there any exhaust leaks? Yes → Repair or replace the leaking exhaust parts as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Turn the ignition off Disconnect the O2 Sensor harness connector. Ignition on, engine not running. Measure the voltage on the O2 Signal circuit in the O2 Sensor harness connector. Is the voltage approximately 5.0 volts? Yes → Go To 4 No → Check the O2 Signal circuit for damage, short to ground, open, or short to voltage. If OK, replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
4	Turn the ignition off. Disconnect the O2 Sensor harness connector. Ignition on, engine not running. Measure the voltage on the O2 Return circuit in the O2 Sensor harness connector. Is the voltage at 2.5 volts? Yes → Check the O2 Return circuit for damage, short to ground, open, or short to voltage. If OK, replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	If there are no possible causes remaining, view repair. Repair Replace the O2 Sensor Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0135-O2 SENSOR 1/1 HEATER PERFORMANCE
P0141-O2 SENSOR 1/2 HEATER PERFROMANCE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0135-O2 SENSOR 1/1 HEATER PERFORMANCE.

When Monitored and Set Condition:

P0135-O2 SENSOR 1/1 HEATER PERFORMANCE

When Monitored: Engine Running and Heater duty cycle greater than 0%

Set Condition: O2 Heater Temperature does not reach 575°C (959°F) within 45 second during monitoring conditions. Two Trip Fault.

P0141-O2 SENSOR 1/2 HEATER PERFROMANCE

When Monitored: Engine Running and Heater duty cycle greater than 0%.

Set Condition: O2 Heater Temperature does not reach 400°C (752°F) within 45 second during monitoring conditions. Two Trip Fault.

POSSIBLE CAUSES
O2 SENSOR HEATER OPERATION
O2 HEATER ELEMENT
O2 HEATER GROUND CIRCUIT OPEN
O2 HEATER CONTROL CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter display and equal to zero? Yes → Go To 3 No → Go To 2	All

P0135-O2 SENSOR 1/1 HEATER PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. **NOTE: Allow the O2 Sensor to cool down before continuing the test. The O2 voltage should stabilize at 5.0 volts. Raising the hood may help in reducing under hood temps.** Ignition on, engine not running. With the DRBIII®, actuate the O2 Heater Test. With the DRBIII®, monitor O2 Sensor voltage for at least 2 minutes. Does the voltage stay above 4.5 volts? Yes → Go To 3 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
3	**NOTE: Allow the O2 sensor to cool down to room temperature.** Turn the ignition off. Disconnect the O2 Sensor harness connector. Measure the resistance across the O2 Sensor Heater element component side. **NOTE: O2 Sensor Heater Resistance Specification: 1/1 and 2/1 = 3.0 to 4.0 ohms or 1/2 and 2/2 = 4.0 to 5.0 ohms.** Is the resistance within the specifications? Yes → Go To 4 No → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
4	Turn the ignition off. Disconnect the O2 Sensor harness connector. Measure the resistance between an engine ground and the O2 Heater Ground circuit in the O2 Sensor harness connector. Is the resistance below 0.5 of an ohm? Yes → Go To 5 No → Repair the open/high resistance in the O2 Heater Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Disconnect the O2 Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the O2 Heater Control circuit from the O2 Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 0.5 of an ohm? Yes → Go To 6 No → Repair the open/high resistance in the O2 Heater Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0135-O2 SENSOR 1/1 HEATER PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0171-FUEL SYSTEM 1/1 LEAN

When Monitored and Set Condition:

P0171-FUEL SYSTEM 1/1 LEAN

When Monitored: With the engine running in closed loop mode, the ambient/battery temperature above 20°F(-7C) and altitude below 8500 ft.

Set Condition: If the PCM multiplies short term compensation by long term adaptive and a certain percentage is exceeded for two trips, a freeze frame is stored, the MIL illuminates and a trouble code is stored.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
RESTRICTED FUEL SUPPLY LINE
FUEL PUMP INLET STRAINER PLUGGED
FUEL PUMP MODULE
O2 SENSOR
O2 SIGNAL CIRCUIT
O2 RETURN CIRCUIT
O2 SENSOR HEATER OPERATION
THROTTLE POSITION SENSOR SWEEP
MAP SENSOR OPERATION
ECT SENSOR OPERATION
ENGINE MECHANICAL PROBLEM
FUEL CONTAMINATION/EXHAUST LEAK

TEST	ACTION	APPLICABILITY
1	**NOTE: Check for contaminates that may have damaged the O2 Sensor: contaminated fuel, unapproved silicone, oil and coolant.** **NOTE: Diagnose any Misfire DTC(s) first, if set along with the fuel system DTC.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0171-FUEL SYSTEM 1/1 LEAN — Continued

TEST	ACTION	APPLICABILITY
2	**Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install a fuel pressure gauge. Ignition on, engine not running. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Turn the ignition off. Choose a conclusion that best matches your fuel pressure reading. Within Specification Go To 3 Below Specification Go To 12 **Caution: Stop All Actuations.**	All
3	**NOTE: If one of the O2 Sensors Signal or Return circuits are shorted to ground or voltage, all the other O2 Sensor voltage readings will be affected.** **NOTE: After the repairs have been made, verify proper O2 Sensor operation. If all the O2 Sensor voltage readings have not returned to normal, follow the diagnostic procedure for the remaining O2 Sensors.** Start the engine. Allow the engine to reach normal operating temperature. With the DRBIII®, read the O2 Sensor voltage. Is the voltage switching between 2.5 and 3.4 volts? Yes → Go To 4 No → Go To 9	All
4	Turn the ignition off. **NOTE: Allow the O2 Sensor to cool down before continuing the test. The O2 voltage should stabilize at 5.0 volts. Raising the hood may help in reducing under hood temps.** Ignition on, engine not running. With the DRBIII®, actuate the O2 Heater Test. With the DRBIII®, monitor O2 Sensor voltage for at least 2 minutes. Does the voltage stay above 4.5 volts? Yes → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Ignition on, engine not running. With the DRBIII®, read the TP Sensor voltage. While monitoring the DRBIII®, slowly open and close the throttle. Does the voltage increase and decease smoothly? Yes → Go To 6 No → Replace the Throttle Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0171-FUEL SYSTEM 1/1 LEAN — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Connect a Vacuum Gauge to a Manifold Vacuum source. Start the engine. Allow the engine to idle. **Note: If engine will not idle, maintain a constant RPM above idle.** With the DRBIII® in Sensors, read the MAP Sensor vacuum value. Is the DRBIII® reading within 1″ of the Vacuum Gauge reading? Yes → Go To 7 No → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
7	**Note: For this test to be valid, the thermostat must be operating correctly.** **Note: This test works best if performed on a cold engine (cold soak)** Ignition on, engine not running. With the DRBIII®, read the Engine Coolant Temperature (ECT) Sensor value. If the engine was allowed to sit overnight (cold soak), the temperature value should be a sensible value that is somewhere close to the ambient temperature. **Note: If engine coolant temperature is above 82°C (180°F), allow the engine to cool until 65°C (150°F) is reached.** Start the Engine. During engine warm-up, monitor the ECT Sensor value. The temperature value change should be a smooth transition from start up to normal operating temperature 82°C (180°F). The value should reach at least 82°C (180°F). Did the ECT value increase with a smooth transition and did it reach at least 82°C? Yes → Go To 8 No → Replace the Engine Coolant Temperature Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
8	Check for any of the following conditions/mechanical problems. AIR INDUCTION SYSTEM - must be free from leaks. ENGINE VACUUM - must be at least 13 inches in neutral ENGINE VALVE TIMING - must be within specifications ENGINE COMPRESSION - must be within specifications ENGINE EXHAUST SYSTEM - must be free of any restrictions or leaks. ENGINE PCV SYSTEM - must flow freely TORQUE CONVERTER STALL SPEED - must be within specifications POWER BRAKE BOOSTER - no internal vacuum leaks FUEL - must be free of contamination FUEL INJECTOR - plugged or restricted injector; control wire not connected to correct injector Are there any engine mechanical problems? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Test Complete.	All

P0171-FUEL SYSTEM 1/1 LEAN — Continued

TEST	ACTION	APPLICABILITY
9	Ignition on, engine not running. Disconnect the O2 Sensor harness connector. With the DRBIII®, monitor the O2 Sensor voltage. The O2 Sensor voltage should read 5.0 volts on the DRBIII® with the connector disconnected. Using a jumper wire, jump across the O2 Sensor harness connector from the O2 Signal circuit to the O2 Return circuit at the O2 Sensor harness connector. **NOTE: The voltage should drop from 5.0 volts to 2.5 volts with the jumper wire in place.** Did the O2 Sensor volts change from 5.0 volts to 2.5 volts? Yes → Replace the O2 Sensor Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 10	All
10	Turn the ignition off. Disconnect the O2 Sensor harness connector. Ignition on, engine not running. With the DRBIII®, monitor the O2 Sensor voltage. Is the voltage above 4.8 volts? Yes → Go To 11 No → Check the O2 Signal circuit for a short to ground, open, or short to voltage. Inspect the O2 Sensor connector and the PCM harness connector. If OK, replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
11	Turn the ignition off. Disconnect the O2 Sensor harness connector. Ignition on, engine not running. Measure the voltage on the O2 Return circuit in the O2 Sensor harness connector. Is the voltage at 2.5 volts? Yes → Check the fuel system for contaminates. Also, check the exhaust system for any leaks. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Check the O2 Return circuit for a short to ground, open, or short to voltage. Inspect the O2 Sensor connector and the PCM harness connector. If OK, replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0171-FUEL SYSTEM 1/1 LEAN — Continued

TEST	ACTION	APPLICABILITY
12	Turn the ignition off. **Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Raise vehicle on hoist, and disconnect the fuel pressure line at the fuel pump module. Install special 5/16 fuel line adapter tool #6539 between the disconnected fuel line and the fuel pump module. Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Is the fuel pressure within specification? Yes → Repair or replace fuel supply line as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 13 **Caution: Stop All Actuations.**	All
13	Turn the ignition off. **Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose,fitting or line, the fuel system pressure must be released.** Remove the Fuel Pump Module and inspect the Fuel Inlet Strainer. Is the Fuel Inlet Strainer plugged? Yes → Replace the Fuel Pump Inlet Strainer. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 14	All
14	If there are no possible causes remaining, view repair. Repair Replace the Fuel Pump Module. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0172-FUEL SYSTEM 1/1 RICH

When Monitored and Set Condition:

P0172-FUEL SYSTEM 1/1 RICH

When Monitored: With the engine running in closed loop mode, the ambient/battery temperature above 20°F(-7°C) and altitude below 8500 ft.

Set Condition: If the PCM multiplies short term compensation by long term adaptive and a purge fuel multiplier and the result is below a certain value for 30 seconds over trips, a freeze frame is stored, the MIL illuminates and a trouble code is stored.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
O2 SENSOR HEATER OPERATION
O2 SENSOR
EVAP PURGE SOLENOID OPERATION
O2 SIGNAL CIRCUIT
O2 RETURN CIRCUIT
MAP SENSOR OPERATION
ECT SENSOR OPERATION
ENGINE MECHANICAL PROBLEM
FUEL FILTER/PRESSURE REGULATOR
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Check for contaminates that may have damaged the O2 Sensor: contaminated fuel, unapproved silicone, oil and coolant.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0172-FUEL SYSTEM 1/1 RICH — Continued

TEST	ACTION	APPLICABILITY
2	**Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install a fuel pressure gauge. Ignition on, engine not running. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Turn the ignition off. Choose a conclusion that best matches your fuel pressure reading. Within Specification Go To 3 Above Specification Replace the fuel filter/pressure regulator. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. **Caution: Stop All Actuations.**	All
3	**NOTE: If one of the O2 Sensors Signal or Return circuits are shorted to ground or voltage, all the other O2 Sensor voltage readings will be affected.** **NOTE: After the repairs have been made, verify proper O2 Sensor operation. If all the O2 Sensor voltage readings have not returned to normal, follow the diagnostic procedure for the remaining O2 Sensors.** Start the engine. Allow the engine to reach normal operating temperature. With the DRBIII®, read the O2 Sensor voltage. Is the voltage switching between 2.5 and 3.4 volts? Yes → Go To 4 No → Go To 9	All
4	Turn the ignition off. **NOTE: Allow the O2 Sensor to cool down before continuing the test. The O2 voltage should stabilize at 5.0 volts. Raising the hood may help in reducing under hood temps.** Ignition on, engine not running. With the DRBIII®, actuate the O2 Heater Test. With the DRBIII®, monitor O2 Sensor voltage for at least 2 minutes. Does the voltage stay above 4.5 volts? Yes → Replace the O2 Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the hoses at the Evap Purge Solenoid. Using a hand vacuum pump, apply 10 inches of vacuum to the Evap Purge Solenoid vacuum source port on the component side. Did the Evap Purge Solenoid hold vacuum? Yes → Go To 6 No → Replace the EVAP Purge Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0172-FUEL SYSTEM 1/1 RICH — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Connect a Vacuum Gauge to a Manifold Vacuum source. Start the engine. Allow the engine to idle. **Note: If engine will not idle, maintain a constant RPM above idle.** With the DRBIII® in Sensors, read the MAP Sensor vacuum value. Is the DRB reading within 1″ of the Vacuum Gauge reading? Yes → Go To 7 No → Replace the MAP Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
7	**Note: For this test to be valid, the thermostat must be operating correctly.** **Note: This test works best if performed on a cold engine (cold soak)** Ignition on, engine not running. With the DRBIII®, read the Engine Coolant Temperature Sensor value. If the engine was allowed to sit overnight (cold soak), the temperature value should be a sensible value that is somewhere close to the ambient temperature. **Note: If engine coolant temperature is above 82°C (180°F), allow the engine to cool until 65°C (150°F) is reached.** Start the Engine. During engine warm-up, monitor the Engine Coolant Temperature value. The temp value change should be a smooth transition from start up to normal operating temp 82°C (180°F). The value should reach at least 82°C (180°F). Did the Engine Coolant Temperature value increase a smooth transition and did it reach at least 82°C Yes → Go To 8 No → Replace the Engine Coolant Temperature Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
8	Check for any of the following conditions/mechanical problems. AIR INDUCTION SYSTEM - must be free from restrictions. ENGINE VACUUM - must be at least 13 inches in neutral ENGINE VALVE TIMING - must be within specifications ENGINE COMPRESSION - must be within specifications ENGINE EXHAUST SYSTEM - must be free of any restrictions or leaks. ENGINE PCV SYSTEM - must flow freely TORQUE CONVERTER STALL SPEED - must be within specifications POWER BRAKE BOOSTER - no internal vacuum leaks FUEL - must be free of contamination FUEL INJECTOR - plugged or restricted injector; control wire not connected to correct injector Are there any engine mechanical problems? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Test Complete.	All

P0172-FUEL SYSTEM 1/1 RICH — Continued

TEST	ACTION	APPLICABILITY
9	Ignition on, engine not running. Disconnect the O2 Sensor harness connector. With the DRBIII®, monitor the O2 Sensor voltage. The O2 Sensor voltage should read 5.0 volts on the DRBIII® with the connector disconnected. Using a jumper wire, jump from the O2 Signal circuit to the O2 Return circuit in the O2 Sensor harness connector. **NOTE: The voltage should drop from 5.0 volts down to 2.5 volts with the jumper wire connected.** Did the O2 Sensor voltage drop from 5 volts to 2.5 volts? Yes → Replace the O2 Sensor Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 10	All
10	Turn the ignition off. Disconnect the O2 Sensor harness connector. Turn the ignition on. Measure the voltage of the O2 Signal circuit in the O2 Sensor harness connector. Is the voltage above 4.8 volts? Yes → Check the O2 Signal circuit for damage, short to ground, open, or short to voltage. Inspect the O2 Sensor connector and the PCM harness connector. If OK, replace the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 11	All
11	Turn the ignition off. Disconnect the O2 Sensor harness connector. Turn the ignition on. Measure the voltage on the O2 Return circuit in the O2 Sensor harness connector. Is the voltage at 2.5 volts? Yes → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Check the O2 Return circuit for damage, short to ground, open, or short to voltage. Inspect the O2 Sensor connector and the PCM harness connector. If OK, replace the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0201-FUEL INJECTOR #1
P0202-FUEL INJECTOR #2
P0203-FUEL INJECTOR #3
P0204-FUEL INJECTOR #4

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0201-FUEL INJECTOR #1.

When Monitored and Set Condition:

P0201-FUEL INJECTOR #1

When Monitored: With battery voltage greater than 10 volts. Auto Shutdown Relay energized. Engine speed less than 3000 rpm.

Set Condition: No inductive spike is detected after injector turn off. One Trip Fault.

P0202-FUEL INJECTOR #2

When Monitored: With battery voltage greater than 10 volts. Auto Shutdown Relay energized. Engine speed less than 3000 rpm.

Set Condition: No inductive spike is detected after injector turn off. One Trip Fault.

P0203-FUEL INJECTOR #3

When Monitored: With battery voltage greater than 10 volts. Auto Shutdown Relay energized. Engine speed less than 3000 rpm.

Set Condition: No inductive spike is detected after injector turn off. One Trip Fault.

P0204-FUEL INJECTOR #4

When Monitored: With battery voltage greater than 10 volts. Auto Shutdown Relay energized. Engine speed less than 3000 rpm.

Set Condition: No inductive spike is detected after injector turn off. One Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
(F42) ASD RELAY OUTPUT CIRCUIT
FUEL INJECTOR
INJECTOR CONTROL CIRCUIT OPEN
INJECTOR CONTROL CIRCUIT SHORTED TO GROUND
PCM

P0201-FUEL INJECTOR #1 — Continued

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the Fuel Injector harness connector. Ignition on, engine not running. With the DRBIII®, actuate the ASD Relay. Using a 12-volt test light connected to ground, backprobe the (F42) ASD Relay Output circuit at the Fuel Injector harness connector. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the open or high resistance in the (F42) ASD Relay Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
3	Turn the ignition off. Disconnect the Fuel Injector harness connector. Ignition on, engine not running. Using a 12-volt test light connected to 12-volts, backprobe the Injector Control circuit. With the DRBIII®, actuate the Fuel Injector. Does the test light blink/flicker? Yes → Replace the Fuel Injector. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the Fuel Injector harness connector. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Injector Control circuit from the Fuel Injector harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the Injector Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0201-FUEL INJECTOR #1 — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect the Fuel Injector harness connector. Disconnect the PCM harness connectors. Measure the resistance between ground and the Injector Control circuit at the Fuel Injector harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the Injector Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0300-MULTIPLE CYLINDER MISFIRE
P0301-CYLINDER #1 MISFIRE
P0302-CYLINDER #2 MISFIRE
P0303-CYLINDER #3 MISFIRE
P0304-CYLINDER #4 MISFIRE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0300-MULTIPLE CYLINDER MISFIRE.

When Monitored and Set Condition:

P0300-MULTIPLE CYLINDER MISFIRE

When Monitored: Any time the engine is running, and the Target Learning Coefficient has been successfully updated.

Set Condition: When more than a 1.8% misfire rate is measured during two trips. Above 3000 RPM 1 trip less than 3000 RPM 2 trip.

P0301-CYLINDER #1 MISFIRE

When Monitored: Any time the engine is running, and the Target Learning Coefficient has been successfully updated.

Set Condition: When more than a 1.8% misfire rate is measured during two trips, or with a 10% to 30% misfire rate during one trip.

P0302-CYLINDER #2 MISFIRE

When Monitored: Any time the engine is running, and the Target Learning Coefficient has been successfully updated.

Set Condition: When more than a 1.8% misfire rate is measured during two trips, or with a 10% to 30% misfire rate during one trip.

P0303-CYLINDER #3 MISFIRE

When Monitored: Any time the engine is running, and the Target Learning Coefficient has been successfully updated.

Set Condition: When more than a 1.8% misfire rate is measured during two trips, or with a 10% to 30% misfire rate during one trip.

P0304-CYLINDER #4 MISFIRE

When Monitored: Any time the engine is running, and the Target Learning Coefficient has been successfully updated.

Set Condition: When more than a 1.8% misfire rate is measured during two trips, or with a 10% to 30% misfire rate during one trip.

P0300-MULTIPLE CYLINDER MISFIRE — Continued

POSSIBLE CAUSES
INTERMITTENT MISFIRE
VISUAL AND PHYSICAL INSPECTION
IGNITION WIRE
ASD RELAY OUPUT CIRCUIT (COIL)
ENGINE MECHANICAL PROBLEM
IGNITION COIL
COIL CONTROL CIRCUIT
SPARK PLUG
CHECKING FUEL PRESSURE
FUEL PUMP INLET STRAINER PLUGGED
RESTRICTED FUEL SUPPLY LINE
FUEL PUMP MODULE
CHECKING FUEL LEAK DOWN
FUEL INJECTOR OPERATION
ASD RELAY OUTPUT CIRCUIT (INJECTOR)
FUEL INJECTOR
INJECTOR CONTROL CIRCUIT
PCM (IGNITION SYSTEM)
PCM

TEST	ACTION	APPLICABILITY
1	Read and record the FREEZE FRAME DATA. Select OBD II MONITORS. Read and record the MIS-FIRE SIMILAR CONDITIONS WINDOW DATA. With these screens, attempt to duplicate the condition(s) that has set this DTC. When the vehicle is operating in the SIMILAR CONDITIONS WINDOW, refer to the WHICH CYLINDER IS MISFIRING screen. Observe the WHICH CYLINDER IS MISFIRING screen for at least one minute. Is there a misfire present? Yes → Go To 2 No → Go To 18	All

P0300-MULTIPLE CYLINDER MISFIRE — Continued

TEST	ACTION	APPLICABILITY
2	**NOTE: Reviewing the vehicle repair history may aid in the repair of the misfire condition.** Visually and physically inspect the engine for any of the following conditions. - Worn serpentine belt - Binding Engine-Driven accessories. - Misaligned water pump, P/S pump and A/C compressor pulleys - Improper CKP sensor mounting - Poor connector/terminal to component connection. i.e., CKP sensor, Fuel Injector, Ign coil, etc. - Vacuum leaks - Restricted Air Induction system **NOTE: Ensure the powers and grounds for the PCM are operating properly.** Were any of the above conditions present? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Turn the ignition off. Disconnect the Ignition wire from the spark plug. **NOTE: Before continuing, inspect the ignition wire for damage or carbon tracking. Replace as necessary.** Install a spark tester to the ignition wire. While cranking the engine, observe the spark coming from the spark tester. **NOTE: A crisp blue spark should be generated that is able to jump the gap of the spark tester.** Is good spark present? Yes → Go To 4 No → Go To 14	All
4	Turn the ignition off. Remove the Spark Plug. Inspect the Spark Plug for the following conditions. - Cracks - Carbon Tracking - Foreign Material - Gap size out of specifications - Loose or broke electrode **NOTE: Lightly tap the bottom of the spark plug on a solid surface. The electrode in the spark plug should not move.** Were any of the above condition present? Yes → Replace the Spark Plug. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All

P0300-MULTIPLE CYLINDER MISFIRE — Continued

TEST	ACTION	APPLICABILITY
5	**Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install a fuel pressure gauge. Start the engine and observe the fuel pressure reading. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Choose a conclusion that best matches your fuel pressure reading. Within Specification Go To 6 Below Specification Go To 12 Above Specification Replace the fuel filter/pressure regulator. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	**NOTE: Before continuing visually and physically inspect the fuel delivery system for external leaks or damage. Repair /replace as necessary.** Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install special 5/16 fuel line adapter tool #6539. Attach a fuel pressure test gauge to the T fitting on the tool #6539 Start the engine and allow the fuel system to reach maximum pressure. Turn the ignition off. **NOTE: Fuel specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Using special tool #C4390, Hose Clamp Pliers, slowly clamp off the rubber hose on the Fuel Pressure adapter between the fuel pressure gauge and the fuel pump module. Monitor the fuel pressure gauge for a minimum of 5 minutes. **NOTE: The pressure should not fall below 241 KPa (35 psi)** Does the fuel pressure gauge fall below the above specification? Yes → Replace the leaking Injector(s). Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 7	All
7	**Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** **CAUTION: After each actuation of the Fuel Injector, start the engine to clear the cylinder of fuel. Failure to do so could cause engine damage.** Install a Fuel Pressure Gauge to the fuel rail. Start the engine and allow the fuel pressure to reach maximum pressure. Turn the engine off, leaving the ignition on. Using the DRBIII®, actuate the Fuel Injector for the cylinder that indicated the misfire. Monitor the fuel pressure gauge. Does the fuel pressure gauge indicate a drop in fuel pressure? Yes → Go To 8 No → Go To 9	All

P0300-MULTIPLE CYLINDER MISFIRE — Continued

TEST	ACTION	APPLICABILITY
8	Check for any of the following conditions/mechanical problems. ENGINE VACUUM - must be at least 13 inches in neutral ENGINE VALVE TIMING - must be within specifications ENGINE COMPRESSION - must be within specifications ENGINE EXHAUST SYSTEM - must be free of any restrictions or leaks. ENGINE PCV SYSTEM - must flow freely TORQUE CONVERTER STALL SPEED - must be within specifications POWER BRAKE BOOSTER - no internal vacuum leaks FUEL - must be free of contamination Are there any engine mechanical problems? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 18	All
9	Turn the ignition off. Disconnect the Fuel Injector harness connector. Ignition on, engine not running. With the DRBIII®, actuate the ASD Relay. Using a 12-volt test light connected to ground, probe the ASD Relay Output circuit at the Fuel Injector harness connector. Does the test light illuminate brightly? Yes → Go To 10 No → Repair the ASD Relay Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
10	Turn the ignition off. Disconnect the Fuel Injector harness connector. Ignition on, engine not running. Using a 12-volt test light connected to 12-volts, probe the Injector Control circuit. With the DRBIII®, actuate the Fuel Injector. Does the test light blink/flicker? Yes → Replace the Fuel Injector. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 11	All
11	Turn the ignition off. Disconnect the Fuel Injector harness connector. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Check the Injector Control circuit. Was a problem found with the Injector Control circuit? Yes → Repair the Injector Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0300-MULTIPLE CYLINDER MISFIRE — Continued

TEST	ACTION	APPLICABILITY
12	Turn the ignition off. **Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Raise vehicle on hoist, and disconnect the fuel pressure line at the fuel pump module. Install special 5/16 fuel line adapter tool #6539 between the disconnected fuel line and the fuel pump module. Attach a fuel pressure test gauge to the T fitting on the tool #6539 Ignition on, engine not running. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Is the fuel pressure within specification? Yes → Repair or replace fuel supply line as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 13	All
13	Turn the ignition off. **Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose,fitting or line, the fuel system pressure must be released.** Remove the Fuel Pump Module and inspect the Fuel Inlet Strainer. Is the Fuel Inlet Strainer plugged? Yes → Replace the Fuel Pump Inlet Strainer. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → NOTE: Before continuing, check the Fuel Pump Module harness connector terminals for corrosion, damage, or terminal push out. Ensure the ground circuit is operating properly. Repair as necessary. Replace the Fuel Pump Module. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
14	Turn the ignition off. Remove the ignition wire. Measure the resistance of the ignition wire. Is the resistance below 10K ohms? Yes → Go To 15 No → Replace the Ignition Wire. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
15	Turn the ignition off. Disconnect the Ignition Coil harness connector. Ignition on, engine not running. With the DRBIII®, actuate the ASD Relay. Using a 12-volt test light connected to ground, probe the ASD Relay Output circuit at the Ignition Coil harness connector. Does the test light illuminate brightly? Yes → Go To 16 No → Repair the ASD Relay Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0300-MULTIPLE CYLINDER MISFIRE — Continued

TEST	ACTION	APPLICABILITY
16	Turn the ignition off. Disconnect the Ignition Coil harness connector. Using a 12-volt test light connected to 12-volts, probe the Ignition Coil Control circuit. Crank the engine for 5 second while observing the test light. Does the test light blink/flicker? Yes → Replace the Ignition Coil. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 17	All
17	Turn the ignition off. Disconnect the Ignition Coil harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Check the Coil Control circuit. Was a problem found with the Coil Control circuit? Yes → Repair the Coil Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0300-MULTIPLE CYLINDER MISFIRE — Continued

TEST	ACTION	APPLICABILITY
18	**NOTE: The conditions that set the DTC are not present at this time.** **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Refer to any Technical Service Bulletins (TSBs) that may apply. Review the DRB Freeze Frame information. If possible, try to duplicate the conditions under which the DTC set. With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wire harness. Look for parameter values to change and/or a DTC to set. Visually inspect the related wire harness. Look for any chafed, pierced, pinched, partially broken wires and broken, bent, pushed out, or corroded terminals. **CAUTION: NEVER PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Inspect and clean all PCM, engine, and chassis grounds. **NOTE: Reviewing the vehicle repair history may aid in the repair of the misfire condition.** Visually and physically inspect the engine for any of the following conditions. - Worn serpentine belt - Binding Engine-Driven accessories. - Misaligned water pump, P/S pump and A/C compressor pulleys - Improper CKP sensor mounting - Poor connector/terminal to component connection. i.e., CKP sensor, Fuel Injector, Ign coil, etc. - Vacuum leaks - Restricted Air Induction system Were any of the above conditions present? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Test Complete.	All

Symptom:

P0315-NO CRANK SENSOR LEARNED

When Monitored and Set Condition:

P0315-NO CRANK SENSOR LEARNED

When Monitored: Under closed throttle decel and A/C off. ECT above 75°C (167°F). Engine start time is greater than 50 seconds.

Set Condition: One of the CKP sensor target windows has more than 2.86% variance from the reference. One Trip Fault.

POSSIBLE CAUSES
DTC VERIFICATION
TONE WHEEL/PULSE RING INSPECTION
WIRING HARNESS INSPECTION
CRANKSHAFT POSITION SENSOR

TEST	ACTION	APPLICABILITY
1	**NOTE: Check for any TSBs that may apply to this symptom.** Ignition on, engine not running. With the DRBIII®, clear DTCs, and perform the PCM battery disconnect to reset the PCM. Start the engine. If the MIL has not yet illuminated, test drive the vehicle to try to get the code to reset. Does the code reset while cranking or during the test drive? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Visually inspect the CKP wire harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the CKP wire harness connectors. Look for broken, bent, pushed out, or corroded terminals. Ensure the Crankshaft Position Sensor is properly installed and the mounting bolt tight. Refer to any TSB that may apply. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All

P0315-NO CRANK SENSOR LEARNED — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Remove the Crankshaft Position Sensor. Inspect the Tone Wheel/Flex Plate slots for damage, foreign material, or excessive movement. Were any problems found? Yes → Repair or replace the Tone Wheel/Flex Plate as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	If there are no possible causes remaining, view repair. Repair Replace the Crankshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0325-KNOCK SENSOR #1 CIRCUIT

When Monitored and Set Condition:

P0325-KNOCK SENSOR #1 CIRCUIT

When Monitored: With the ignition on and the engine running.

Set Condition: The Knock Sensor circuit voltage falls below a minimum value at idle or deceleration. The minimum value is from a look-up table internal to the PCM and is based on engine rpm. DTC also sets if sensor output goes above 5.0 volts. One Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
(K42) KS SIGNAL CIRCUIT SHORTED TO VOLTAGE
(K42) KS SIGNAL CIRCUIT SHORTED TO GROUND
(K42) KS SIGNAL CIRCUIT OPEN
(K42) KS SIGNAL CIRCUIT SHORTED TO (K45) KS RETURN CIRCUIT
(K45) KS RETURN CIRCUIT OPEN
KNOCK SENSOR

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the Knock Sensor harness connector. Measure the voltage of the (K42) KS Signal circuit in the Knock Sensor harness connector. Is the voltage above 2.0 volts? Yes → Repair the short to voltage in the (K42) KS Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All

P0325-KNOCK SENSOR #1 CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Knock Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K42) KS Signal circuit at the Knock Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K42) KS Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the Knock Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K42) KS Signal circuit from the Knock Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the (K42) KS Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Disconnect the Knock Sensor harness connector. Measure the resistance between the (K42) KS Signal circuit and the (K45) KS Return circuit in the Knock Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the (K42) KS Signal circuit for a short to (K45) KS Return circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	Turn the ignition off. Disconnect the Knock Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K45) KS Return circuit from the Knock Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the open in the (K45) KS Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0325-KNOCK SENSOR #1 CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Replace the Knock Sensor. Ignition on, engine not running. With the DRBIII®, erase DTC. Attempt to operate the vehicle using the information noted in the Freeze Frame. With the DRBIII®, read DTC's. Does the DRBIII® display the DTC that was previously erased? Yes → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Test Complete.	All

Symptom:

P0335-CRANKSHAFT POSITION SENSOR CIRCUIT

When Monitored and Set Condition:

P0335-CRANKSHAFT POSITION SENSOR CIRCUIT

When Monitored: Engine cranking.

Set Condition: No CKP signal is present during engine cranking, and at least 8 camshaft position sensor signals have occurred.

POSSIBLE CAUSES
CHECKING INTERMITTENT CMP SIGNAL WITH LAB
INTERMITTENT CKP SIGNAL
(K6) 5 VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(K6) 5 VOLT SUPPLY CIRCUIT OPEN
(K6) 5 VOLT SUPPLY CIRCUIT SHORTED TO VOLTAGE
(K24) CKP SIGNAL CIRCUIT SHORTED GROUND
(K24) CKP SIGNAL CIRCUIT OPEN
(K24) CKP SIGNAL CIRCUIT SHORTED TO VOLTAGE
(K24) CKP SIGNAL SHORTED TO (K6) 5 VOLT SUPPLY CIRCUIT
(K4) SENSOR GROUND CIRCUIT OPEN
PCM - (K6) 5 VOLT SUPPLY
PCM - (K24) CKP SIGNAL
CRANKSHAFT POSITION SENSOR

TEST	ACTION	APPLICABILITY
1	Start the engine. With the DRBIII®, read the CKP SYNC State. Does the DRBIII® display CKP SYNC state IN SYNC? Yes → Go To 2 No → Go To 4	All

P0335-CRANKSHAFT POSITION SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, back probe the (K44) Camshaft Position (CMP) Sensor Signal circuit in the CMP harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Ignition on, engine not running. Wiggle the related wire harness and lightly tap on the Cam Position Sensor. Observe the lab scope screen. Look for any pulses generated by the CMP Sensor. Start the engine. Allow the engine to idle. Observe the lab scope screen. Did the CMP Sensor generate any erratic pulses? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the (K24) CKP Signal circuit in the CKP harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Ignition on, engine not running. Wiggle the related wire harness and lightly tap on the Crank Position Sensor. Observe the lab scope screen. Look for any pulses generated by the CKP Sensor. Start the engine. Allow the engine to idle. Observe the lab scope screen. Did the CKP Sensor generate any pulses? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Test Complete.	All
4	Turn the ignition off. Disconnect the CKP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K6) 5 Volt Supply circuit in the CKP Sensor harness connector. Is the voltage between 4.5 and 5.5 volts? Yes → Go To 5 No → Go To 13	All
5	Turn the ignition off. Disconnect the CKP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (24) CKP Signal circuit in the CKP Sensor harness connector. Is the voltage between 4.5 and 5.0 volts? Yes → Go To 6 No → Go To 8	All

P0335-CRANKSHAFT POSITION SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the CKP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor Ground circuit from the CKP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the open in the (K4) Sensor Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
7	**NOTE: Inspect the slots on the flywheel for damage. If a problem is found repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace the Crankshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
8	Turn the ignition off. Disconnect the CKP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K24) CKP Signal circuit in the CKP Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (K24) CKP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 9	All
9	Turn the ignition off. Disconnect the CKP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K24) CKP Signal circuit from the CKP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the open in the (K24) CKP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0335-CRANKSHAFT POSITION SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
10	Turn the ignition off. Disconnect the CKP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K24) CKP Signal circuit in the CKP Sensor harness connector. Is the voltage above 5.5 volts? Yes → Repair the short to battery voltage in the (K24) CKP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 11	All
11	Turn the ignition off. Disconnect the CKP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (K24) CKP Signal circuit and the (K6) 5 Volt Supply circuit in the CKP Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Repair the (K24) CKP Signal circuit shorted to the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 12	All
12	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
13	Turn the ignition off. Disconnect the CKP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K6) 5 Volt Supply circuit in the CKP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 14	All
14	Turn the ignition off. Disconnect the CKP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K6) 5 Volt Supply circuit from the CKP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 15 No → Repair the open in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0335-CRANKSHAFT POSITION SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
15	Turn the ignition off. Disconnect the CKP Sensor harness connector. Ignition on, engine not running. Measure the voltage on the (K6) 5 Volt Supply circuit in the CKP Sensor harness connector. Is the voltage above 5.5 volts? Yes → Repair the short to battery voltage in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 16	All
16	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0339-CRANKSHAFT POSITION SENSOR INTERMITTENT

When Monitored and Set Condition:

P0339-CRANKSHAFT POSITION SENSOR INTERMITTENT

When Monitored: Engine running or Cranking.

Set Condition: When the failure counter reaches 20. One Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
WIRING HARNESS INSPECTION
(K6) 5 VOLT SUPPLY CIRCUIT OPEN OR SHORTED TO GROUND
TONE WHEEL/PULSE RING INSPECTION
CHECKING CAMSHAFT POSITION SENSOR SIGNAL WITH THE DRBIII® LAB
CRANKSHAFT POSITION SENSOR
(K24) CKP SIGNAL CIRCUIT OPEN
(K24) CKP SIGNAL CIRCUIT SHORT TO GROUND
(K24) CKP SIGNAL CIRCUIT SHORTED TO B+
(K24) CKP SIGNAL CIRCUIT SHORT TO (K6) 5 VOLTS
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0339-CRANKSHAFT POSITION SENSOR INTERMITTENT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read and record Freeze Frame Data specific to the CKP signal, ECT, RPM, Sync state, vehicle speed, etc.) Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the (K24) CKP Signal circuit at the Sensor harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Ignition on, engine not running. Observe the lab scope screen. Start the engine. Observe the lab scope screen. Are there any irregular or missing signals? Yes → Go To 3 No → Go To 8	All
3	Visually inspect the related wire harness including the ground circuit. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals. Ensure the Crankshaft Position Sensor and the Camshaft Position Sensor are properly installed and the mounting bolt(s) are tight. Refer to any TSBs that may apply. Were any of the above conditions present? Yes → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the CKP Sensor connector. Ignition on, engine not running. Measure the voltage on the (K6) 5 Volt Supply circuit. Is the voltage between 4.5 and 5.5 volts? Yes → Go To 5 No → Repair the open or short to ground in the (K6) 5 Volt Supply circuit. Use Miller special tool #8815 when checking for an open circuit to prevent PCM harness connector terminal damage. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Carefully disconnect the Battery (-) Ground cable. Remove the Crankshaft Position Sensor. Inspect the Tone Wheel/Flex Plate slots for damage, foreign material, or excessive movement. Were any problems found? Yes → Repair or replace the Tone Wheel/Flex Plate as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All

P0339-CRANKSHAFT POSITION SENSOR INTERMITTENT — Continued

TEST	ACTION	APPLICABILITY
6	**NOTE: An intermittent glitch in the Camshaft Position Sensor can cause the P0339 to set.** Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the (K44) CMP Signal circuit at the Sensor harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Ignition on, engine not running. Wiggle the related wire harness and lightly tap on the Camshaft Position Sensor. Observe the lab scope screen. Start the engine. Observe the lab scope screen. Are there any irregular or missing signals? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Crankshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
8	Turn the ignition off. Disconnect the CKP Sensor connector. Disconnect the PCM connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance in the (K24) CKP Signal circuit between the CKP harness connector and the appropriate terminal of special tool #8815. Wiggle the wire harness while taking this measurement. Is the resistance below 1.0 ohm? Yes → Go To 9 No → Repair the open/high resistance in the (K24) CKP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
9	Turn the ignition off. Disconnect the PCM connector. Disconnect the CKP Sensor connector. Measure the resistance between ground and the (K24) CKP Signal circuit at the CKP Sensor harness connector. Wiggle the related wire harness while monitoring the resistance value. Does the resistance stay below 100 ohms? Yes → Repair the short to ground in the (K24) CKP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 10	All

P0339-CRANKSHAFT POSITION SENSOR INTERMITTENT — Continued

TEST	ACTION	APPLICABILITY
10	Turn the ignition off. Disconnect the CKP Sensor connector. Ignition on, engine not running. Measure the voltage on the (K24) CKP Signal circuit. Wiggle the related wire harness while taking this measurement. Does the voltage ever increase above 5.5 volts? Yes → Repair the short to B+ voltage in the (K24) CKP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 11	All
11	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the CKP Sensor harness connector. Measure the resistance between the (K6) 5 Volt Supply circuit and the (K24) CKP signal circuit at the CKP Sensor harness connector. Wiggle the related wire harness while taking this measurement. Is the resistance below 5.0 ohms? Yes → Repair the short to the (K6) 5 Volt Supply circuit in the (K24) CKP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 12	All
12	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, review repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0340-CAMSHAFT POSITION SENSOR CIRCUIT

When Monitored and Set Condition:

P0340-CAMSHAFT POSITION SENSOR CIRCUIT

When Monitored: Engine cranking/running. Battery voltage greater than 10 volts.

Set Condition: At least 5 seconds or 2.5 engine revolutions have elapsed with crankshaft position sensor signals present but no camshaft position sensor signal. One Trip Fault.

POSSIBLE CAUSES
INTERMITTENT CRANKSHAFT POSITION SENSOR SIGNAL
INTERMITTENT CAMSHAFT POSITION SENSOR SIGNAL
(K6) 5 VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(K6) 5 VOLT SUPPLY CIRCUIT OPEN
(K6) 5 VOLT SUPPLY CIRCUIT SHORTED TO VOLTAGE
(K44) CMP SIGNAL CIRCUIT SHORTED GROUND
(K44) CMP SIGNAL CIRCUIT OPEN
(K44) CMP SIGNAL CIRCUIT SHORTED TO VOLTAGE
(K44) CMP SIGNAL SHORTED TO (K6) 5 VOLT SUPPLY CIRCUIT
(K4) SENSOR GROUND CIRCUIT OPEN
PCM - (K6) 5 VOLT SUPPLY
PCM - (K44) CMP SIGNAL
CAMSHAFT POSITION SENSOR

TEST	ACTION	APPLICABILITY
1	Start the engine. With the DRBIII®, read the CMP SYNC State. Does the DRBIII® display the CMP SYNC State IN SYNC? Yes → Go To 2 No → Go To 4	All

P0340-CAMSHAFT POSITION SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, back probe the (K24) CKP signal circuit in the CKP harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Ignition on, engine not running. Wiggle the related wire harness and lightly tap the Crankshaft Position Sensor. Observe the lab scope screen. Start the engine. Allow the engine to idle. Observe the lab scope screen. Did the CKP Sensor generate any erratic pulses? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the (K44) CMP Signal circuit in the CMP harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Ignition on, engine not running. Wiggle the related wire harness and lightly tap on the Camshaft Position Sensor. Observe the lab scope screen. Start the engine. Allow the engine to idle. Observe the lab scope screen. Did the CMP Sensor generate any erratic pulses? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Test Complete.	All
4	Turn the ignition off. Disconnect the CMP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K6) 5 Volt Supply circuit in the CMP Sensor harness connector. Is the voltage between 4.5 and 5.5 volts? Yes → Go To 5 No → Go To 13	All
5	Turn the ignition off. Disconnect the CMP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K44) CMP Signal circuit in the CMP Sensor harness connector. Is the voltage between 4.5 and 5.0 volts? Yes → Go To 6 No → Go To 8	All

P0340-CAMSHAFT POSITION SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the CMP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor Ground circuit from the CMP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the open in the (K4) Sensor Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
7	**NOTE: Inspect the Camshaft sprocket for damage per the Service Information. If a problem is found repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace the Camshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
8	Turn the ignition off. Disconnect the CMP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K44) CMP Signal circuit in the CMP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K44) CMP Signal circuit Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 9	All
9	Turn the ignition off. Disconnect the CMP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K44) CMP Signal circuit from the CMP Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the open in the (K44) CMP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0340-CAMSHAFT POSITION SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
10	Turn the ignition off. Disconnect the CMP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K44) CMP Signal circuit in the CMP Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to battery voltage in the (K44) CMP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 11	All
11	Turn the ignition off. Disconnect the CMP Sensor harness connector. Measure the resistance between the (K44) CMP Signal circuit and the (K6) 5 Volt Supply circuit in the CMP Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Repair the (K44) CMP Signal circuit shorted to the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 12	All
12	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
13	Turn the ignition off. Disconnect the CMP Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K6) 5 Volt Supply circuit in the CMP Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 14	All
14	Turn the ignition off. Disconnect the CMP Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K6) 5 Volt Supply circuit between the CMP Sensor harness connector and the special tool #8815 terminal. Is the resistance below 5.0 ohms? Yes → Go To 15 No → Repair the open in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0340-CAMSHAFT POSITION SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
15	Turn the ignition off. Disconnect the CMP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the (K6) 5 Volt Supply circuit in the CMP Sensor harness connector. Is the voltage above 5.5 volts? Yes → Repair the short to battery voltage in the (K6) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 16	All
16	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:
P0344-CAMSHAFT POSITION SENSOR INTERMITTENT

When Monitored and Set Condition:

P0344-CAMSHAFT POSITION SENSOR INTERMITTENT

When Monitored: Engine running or Cranking.

Set Condition: When the failure counter reaches 20. One Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
WIRING HARNESS INSPECTION
(K6) 5 VOLT SUPPLY CIRCUIT OPEN OR SHORTED TO GROUND
TONE WHEEL/PULSE RING INSPECTION
CHECKING CKP SIGNAL WITH THE DRBIII® LAB
CAMSHAFT POSITION SENSOR
(K44) CMP SIGNAL CIRCUIT OPEN
(K44) CMP SIGNAL CIRCUIT SHORT TO GROUND
(K44) CMP SIGNAL CIRCUIT SHORTED TO B+
(K44) CMP SIGNAL CIRCUIT SHORT TO (K6) 5 VOLTS
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the (K44) CMP Signal circuit in the CMP harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Ignition on, engine not running. Observe the lab scope screen. Start the engine. Observe the lab scope screen. Are there any irregular or missing signals? Yes → Go To 3 No → Go To 8	All

P0344-CAMSHAFT POSITION SENSOR INTERMITTENT — Continued

TEST	ACTION	APPLICABILITY
3	Visually inspect the related wire harness including the ground circuit. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals. Ensure the Crankshaft Position Sensor and the Camshaft Position Sensor are properly installed and the mounting bolt(s) are tight. Refer to any TSBs that may apply. Were any of the above conditions present? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the CMP Sensor connector. Ignition on, engine not running. Measure the voltage on the (K6) 5 Volt Supply circuit. Is the voltage between 4.5 and 5.5 volts? Yes → Go To 5 No → Repair the open or short to ground in the (K6) 5 Volt Supply circuit. Use Miller special tool #8815 when checking for an open circuit to prevent PCM harness connector terminal damage. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Carefully disconnect the Battery (-) Ground cable. Remove the Camshaft Position Sensor. Inspect the Tone Wheel/Pulse Ring for damage, foreign material, or excessive movement. Were any problems found? Yes → Repair or replace the Tone Wheel/Pulse Ring as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	**NOTE: An intermittent glitch in the Crankshaft Position Sensor can cause the P0344 to set.** Turn the ignition off. With the DRBIII® lab scope probe and the Miller special tool #6801, backprobe the (K24) CKP Signal circuit in the CKP Sensor harness connector. **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Ignition on, engine not running. Wiggle the related wire harness and lightly tap on the Crank Position Sensor. Observe the lab scope screen. Start the engine. Observe the lab scope screen. Are there any irregular or missing signals? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 7	All

P0344-CAMSHAFT POSITION SENSOR INTERMITTENT — Continued

TEST	ACTION	APPLICABILITY
7	If there are no possible causes remaining, view repair. Repair Replace the Camshaft Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
8	Turn the ignition off. Disconnect the CMP Sensor connector. Disconnect the PCM connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance in the (K44) CMP Signal circuit from the CMP harness connector to the appropriate terminal of special tool #8815. Wiggle the related wire harness while taking this measurement. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the open/high resistance in the (K44) CMP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
9	Turn the ignition off. Disconnect the PCM connector. Disconnect the CMP Sensor connector. Measure the resistance between ground and the (K44) CMP Signal circuit in the CMP Sensor harness connector. Wiggle the related wire harness while monitoring the resistance value. Does the resistance stay below 100 ohms? Yes → Repair the short to ground in the (K44) CMP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 10	All
10	Turn the ignition off. Disconnect the CMP Sensor connector. Ignition on, engine not running. Measure the voltage on the (K44) CMP Signal circuit. Wiggle the related wire harness while taking this measurement. Does the voltage ever increase above 5.5 volts? Yes → Repair the short to B+ voltage in the (K44) CMP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 11	All
11	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the CMP harness connector. Measure the resistance between the (K6) 5 Volt Supply circuit and the signal circuit in the CMP harness connector. Wiggle the related wire harness while taking this measurement. Is the resistance below 5.0 ohms? Yes → Repair the short to the (K6) 5 Volt Supply circuit in the (K44) CMP Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 12	All

P0344-CAMSHAFT POSITION SENSOR INTERMITTENT — Continued

TEST	ACTION	APPLICABILITY
12	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0351-IGNITION COIL #1 CIRCUIT
P0352-IGNITION COIL #2 CIRCUIT

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0351-IGNITION COIL #1 CIRCUIT.

When Monitored and Set Condition:

P0351-IGNITION COIL #1 CIRCUIT

When Monitored: With battery voltage greater than 11 volts. Engine running. Engine RPM less than 8160. No coil in dwell during test.

Set Condition: Peak current is not achieved with battery based dwell plus 1.5 msec of diagnostic offset. It takes less than 3 seconds during cranking or up to 6 seconds while running to set. One Trip Fault.

P0352-IGNITION COIL #2 CIRCUIT

When Monitored: With battery voltage greater than 11 volts. Engine running. Engine RPM less than 8160. No coil in dwell during test.

Set Condition: Peak current is not achieved with battery based dwell plus 1.5 msec of diagnostic offset. It takes less than 3 seconds during cranking or up to 6 seconds while running to set. One trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
IGNITION COIL
(A142) ASD RELAY OUTPUT CIRCUIT
IGNITION COIL DRIVER CIRCUIT OPEN
COIL CONTROL CIRCUIT SHORTED TO GROUND
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Record the Freeze Frame Information that set along with the DTC.** Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0351-IGNITION COIL #1 CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. Disconnect the Ignition Coil harness connector. Turn the ignition on. With the DRBIII®, actuate the ASD Relay. Using a 12-volt test light connected to ground, probe the (A142) ASD Relay Output circuit in the Ignition Coil harness connector. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the (A142) ASD Relay Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
3	Turn the ignition off. Disconnect the Ignition Coil harness connector. Using a 12-volt test light connected to 12-volts, probe the Ignition Coil Driver circuit. Crank the engine for 5 second while observing the test light. Does the test light blink/flicker? Yes → Replace the Ignition Coil. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the Ignition Coil harness connector. Disconnect the PCM harness connector. Measure the resistance of the Coil Control circuit between the Ignition Coil harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Coil Control circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Disconnect the Ignition Coil harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the Coil Control circuit in the Ignition Coil harness connector. Is the resistance below 100k ohms? Yes → Repair the Coil Control circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0420-CATALYTIC 1/1 EFFICIENCY
P0432-CATALYTIC 2/1 EFFICIENCY

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0420-CATALYTIC 1/1 EFFICIENCY.

When Monitored and Set Condition:

P0420-CATALYTIC 1/1 EFFICIENCY

When Monitored: Engine Run time greater than 90 seconds. Engine Coolant greater than 70°C (158°F) Vehicle speed greater than 20 MPH and less than 55 MPH. Engine Speed greater than 1216 RPM and less than 1952 RPM.

Set Condition: As catalyst efficiency deteriorates, the switch rate of the downstream O2 sensor approaches that of the upstream O2 sensor. If at any point during the test the switch ratio reaches a predetermined value a counter is incremented by one. One Trip Fault.

P0432-CATALYTIC 2/1 EFFICIENCY

When Monitored: Engine Run time greater than 90 seconds. Engine Coolant greater than 70°C (158°F) Vehicle speed greater than 20 MPH and less than 55 MPH. Engine Speed greater than 1216 RPM and less than 1952 RPM.

Set Condition: As catalyst efficiency deteriorates, the switch rate of the downstream O2 sensor approaches that of the upstream O2 sensor. If at any point during the test the switch ratio reaches a predetermined value a counter is incremented by one. One Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
VISUALLY INSPECT CATALYTIC CONVERTER
EXHAUST LEAK
ENGINE MECHANICAL CONDITION
AGING O2 SENSOR
CATALYTIC CONVERTER

P0420-CATALYTIC 1/1 EFFICIENCY — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: A new rear O2 Sensor along with an aging front O2 Sensor may cause the DTC to set. Review the repair history of the vehicle before continuing.** **NOTE: If an O2 Sensor or Fuel System Lean DTC(s) is set along with the Catalytic Converter Efficiency DTC, diagnose the O2 Sensor DTC(s) before continuing.** **NOTE: Check for contaminates that may have damaged the O2 Sensor and Catalytic Converter: contaminated fuel, unapproved silicone, oil and coolant, repair necessary.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Inspect the Catalytic Converter for the following damage. Damaged Catalytic Converter, dent and holes. Severe discoloration caused by overheating the Catalytic Converter. Catalytic Converter broke internally. Leaking Catalytic Converter. Were any problems found? Yes → Replace the Catalytic Converter. Repair the condition that may have caused the failure. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Start the engine. Inspect the exhaust for leaks between the engine and the O2 Sensor. Inspect the exhaust for leaks between the engine and the appropriate rear O2 Sensor. Are there any exhaust leaks? Yes → Repair or replace the leaking exhaust parts as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Check the exhaust for excessive smoke caused by an internal problem in the engine. Is a engine mechanical condition present? Yes → Repair the engine mechanical condition as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	A new rear O2 Sensor along with an aging front O2 Sensor may cause the DTC to set. Review the vehicles repair history. Has the rear O2 Sensor been replaced without replacing the front O2 Sensor? Yes → Replace the Front O2 Sensor as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Replace the Catalytic Converter. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0440-GENERAL EVAP SYSTEM FAILURE

When Monitored and Set Condition:

P0440-GENERAL EVAP SYSTEM FAILURE

When Monitored: Engine Running. Fuel Level greater than 12%. Ambient Temperature between 4°C and 32°C (39°F and 89°F)

Set Condition: The PCM does not see the NVLD switch close during the medium/large leak test. The PCM will then increase the vacuum supply to the EVAP system by increasing flow through the EVAP Purge valve. If the switch does not close with an increase in vacuum, an error is detected. Two Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
VISUAL AND PHYSICAL INSPECTION
EVAP PURGE SOLENOID VACUUM SUPPLY INSPECTION
EVAP PURGE SOLENOID STUCK CLOSED
NVLD SWITCH OPERATION
(Z1) GROUND CIRCUIT OPEN
NVLD ASSEMBLY
(K107) NVLD SWITCH SIGNAL CIRCUIT OPEN
EVAPORATIVE EMISSION LEAK DETECTION
PCM
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: If any of the following DTCs are set (P0443, P0452, P0453, P0498 or P0499) diagnose them first before continuing with P0440.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0440-GENERAL EVAP SYSTEM FAILURE — Continued

TEST	ACTION	APPLICABILITY
2	Perform a visual and physical inspection of the entire Evaporative Emission system. Check for the following conditions: - Hoses disconnected or left off - Holes or cracks - Loose seal points - Evidence of damaged components - Incorrect routing of hoses and tubes - Fuel Cap left off or bad gasket seal Were any of the above conditions found? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Turn the ignition off. Carefully inspect the Evap Purge Solenoid vacuum supply hose for proper routing. Check for a pinched or plugged hose from the throttle body to the Purge Solenoid. Ensure the vacuum port at the throttle body is free from any blockage. Were any problems found? Yes → Repair the vacuum supply, hose/tube as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Disconnect the vacuum supply hoses form the EVAP Purge Solenoid. Using a hand vacuum pump, apply 10 in Hg to the ″CAN″ side of the EVAP Purge Solenoid. Ignition on, engine not running. Observe the vacuum gauge. With the DRBIII®, actuate the EVAP Purge Solenoid . Does the vacuum drop when the solenoid is actuated? Yes → Go To 5 No → Replace the Evap Purge Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	**NOTE: The fuel level must be below 85%, or the Onboard Refueling Vapor Recovery (ORVR) system control valve will seal the tank.** Turn the ignition off. Install the Miller #8382 gas cap adaptor. Attach the gas cap to the adapter. Connect a hand-held vacuum pump to the gas cap adapter. **NOTE: At 1″ in Hg the switch should close. Using a manometer (Miller #6872A) connected to the service port can aid in properly reading the system vacuum.** Slowly apply vacuum while monitoring the NVLD Switch State on the DRBIII®. Do not exceed 2″ in Hg while performing this step. **NOTE: The NVLD Switch reads normally open. When the vacuum is applied and 1″ in Hg is reached the switch state should be in the closed position. Once the vacuum has been released the Switch state should return to the open position.** Did the NVLD Switch operate as described above? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All

P0440-GENERAL EVAP SYSTEM FAILURE — Continued

TEST	ACTION	APPLICABILITY
6	To continue testing you will need Miller Tool #8404 Evaporative Emission Leak Detector (EELD). **WARNING: Keep lit cigarettes, sparks, flames, and other ignition sources away from the test area to prevent the ignition of explosive gases. Keep the test area well ventilated.** **NOTE: The fuel tank should have between 20% and 80% of fuel tank capacity to properly test the Evap system.** Connect the red power lead of EELD to the battery positive terminal and the black ground lead to battery negative terminal. **NOTE: See Charts and Graph support material EELD Calibration Setup for an example.** Block the vent hose of the EVAP Canister. Connect shop air to the EELD. Set the smoke/air control switch to AIR. Insert the tester's AIR supply tip (clear hose) into the .040 orifice on the tester's control panel. Press the remote smoke/air start button. Position the red flag on the air flow meter so it is aligned with the indicator ball. When the calibration is complete, release the remote button. The EELD is now calibrated the flow meter in liters per minute. Install the service port adapter #8404-14 on the vehicle's service port. Connect the Air supply hose from the EELD to the service port. Press the remote button to activate AIR flow. **NOTE: Larger volume fuel tanks, lower fuel levels or if the vehicle is equipped with a Flow Management Valve, this may indicate high flow and will require 4 to 5 minutes to fill.** Compare the flow meter indicator ball reading to the red flag. ABOVE the red flag indicates a leak present. BELOW the red flag indicates a sealed system. Is the indicator ball above the red flag? Yes → Go To 7 No → Go To 8	All

P0440-GENERAL EVAP SYSTEM FAILURE — Continued

TEST	ACTION	APPLICABILITY
7	**NOTE: A thorough visual inspection of the Evap system hoses, tubes, and connections may save time in your diagnosis. Look for any physical damage or signs of wetness at connections. The strong smell of fuel vapors may aid diagnosis also.** To continue testing, you will need Miller Tool #8404 Evaporative Emissions Leak Detector (EELD). Remove the Air supply hose from the service port. Connect the SMOKE supply tip (black hose) to the service port. Set the smoke/air control switch to SMOKE. **NOTE: The flow meter indicator ball will not move at this point.** Press the remote smoke/air start button. **NOTE: Ensure that smoke has filled the EVAP system by continuing to press the remote smoke/air start button, remove the vehicle fuel cap, and wait for the smoke to exit. Once smoke is indicated reinstall the fuel cap.** **NOTE: For optimal performance, introduce smoke into the system for an additional 60 seconds; continue introducing smoke at 15 second intervals, as necessary.** While still holding the remote smoke/air start button, use the white light (#8404-CLL) to follow the EVAP system path, and look for the source of the leak indicated by exiting smoke. If a leak is concealed from view (i.e., top of fuel tank), release the remote smoke/air start button, and use the ultraviolet (UV) black light #8404-UVL and the yellow goggles 8404-20 to look for residual traces of dye that are left behind by the smoke. The exiting smoke deposits a residual fluid that is either bright green or bright yellow in color when viewed with a UV light. **NOTE: Carefully inspect the vent side of the EVAP Canister. Due to the filtering system in the canister the smoke or dye may or may not be visual. Introducing smoke into the filtered side of the canister may assist in locating the leak.** Was a leak found? Yes → Repair or replace the leaking component as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 6 - NGC. No → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
8	Turn the ignition off. Disconnect the NVLD electrical harness connector. Check connectors - Clean/repair as necessary. Using a jumper wire, jumper across the (K107) NVLD Switch Sense circuit and the (Z1) Ground circuit in the NVLD electrical harness connector. Monitor the NVLD Switch state on the DRBIII®. Does the Switch change from OPEN to CLOSED. Yes → Replace the NVLD Assembly. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 9	All

P0440-GENERAL EVAP SYSTEM FAILURE — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off. Disconnect the NVLD electrical harness connector. Measure the resistance between the (Z1) Ground circuit and ground. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the open in the (Z1) Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
10	Turn the ignition off. Disconnect the NVLD electrical harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K107) NVLD Switch Signal circuit from the NVLD electrical harness connector to the appropriate terminal of the special tool #8815. Is the resistance below 5.0 ohms? Yes → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Repair the open in the (K107) NVLD Switch Signal Circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0441-EVAP PURGE SYSTEM PERFORMANCE

When Monitored and Set Condition:

P0441-EVAP PURGE SYSTEM PERFORMANCE

When Monitored: Cold start test. Engine Running. Small Leak Test Passed.

Set Condition: The PCM activates the EVAP Purge solenoid and gradually increases to maximum flow. During flow, the PCM looks for the NVLD switch to close. If the PCM does not see the NVLD switch close at maximum flow an error is detected. Two Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
INTERMITTENT CONDITION
CHECKING EVAP PURGE SOLENOID FUNCTIONALITY
EVAP PURGE SOLENOID VACUUM SUPPLY

TEST	ACTION	APPLICABILITY
1	**NOTE: If any of the following DTCs are set (P0443, P0452, P0453, P0498 or P0499) diagnose them first before continuing with P0441.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	**NOTE: After disconnecting the Evap Purge vacuum connections, inspect the lines and solenoid for any signs of contamination or foreign materials.** Using a hand vacuum pump, apply 10 in Hg to ″CAN″ side of the EVAP Purge Solenoid. Ignition on, engine not running. Observe the vacuum gauge. With the DRBIII®, actuate the EVAP Purge Solenoid . Does the vacuum drop when the solenoid is actuated? Yes → Go To 3 No → Replace the Evap Purge Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0441-EVAP PURGE SYSTEM PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Carefully inspect the Evap Purge Solenoid vacuum supply hose for proper routing. Check for a pinched or plugged hose from the throttle body to the Purge Solenoid. Inspect the vacuum port at the throttle body for any damage or plugging. Were any problems found? Yes → Repair the vacuum supply hose/tube as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0442-EVAP SYSTEM MEDIUM LEAK
P0455-EVAP SYSTEM LARGE LEAK

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0442-EVAP SYSTEM MEDIUM LEAK.

When Monitored and Set Condition:

P0442-EVAP SYSTEM MEDIUM LEAK

When Monitored: Engine Running. Cold start test. Fuel Level greater than 12%. Ambient Temperature between 4°C and 32°C (39°F and 89°F) Close Loop fuel system. Test runs when small leak test is maturing.

Set Condition: The PCM activates the EVAP Purge Solenoid to pull the EVAP system into a vacuum to close the NVLD swtich. Once the NVLD swtich is closed, the PCM turns the EVAP Pugre solenoid off to seal the EVAP system. If the NVLD switch reopens before the calibrated amount of time for a Medium leak an error is detected. Two Trip Fault.

P0455-EVAP SYSTEM LARGE LEAK

When Monitored: Engine Running. Cold start test. Fuel Level greater than 12%. Ambient Temperature between 4°C and 32°C (39°F and 89°F) Close Loop fuel system. Test runs when small leak test is maturing.

Set Condition: The PCM activates the EVAP Purge Solenoid to pull the EVAP system into a vacuum to close the NVLD swtich. Once the NVLD switch is closed, the PCM turns the EVAP Purge solenoid off to seal the EVAP system. If the NVLD switch reopens before the calibrated amount of time for a Large leak an error is detected. Two Trip Fault.

POSSIBLE CAUSES
INTERMITTENT CONDITION
VISUAL AND PHYSICAL INSPECTION
EVAPORATIVE EMISSION LEAK DETECTION
EVAP PURGE SOLENOID OPERATION
NVLD SWITCH OPERATION

P0442-EVAP SYSTEM MEDIUM LEAK — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Since a hot vehicle can conceal a leak, it is best to perform this test at room temperature.** **NOTE: A loose gas cap could have caused this DTC to set. Make sure gas cap is tight and in good condition. Ensure the gas cap meets OEM specifications.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Go To 7	All
2	Perform a visual and physical inspection of the entire Evaporative Emission system. Check for the follow conditions: - Holes or cracks - Loose seal points - Evidence of damaged components - Incorrect routing of hoses and tubes - Fuel Cap gasket seal Were any of the above conditions found? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 6 - NGC. No → Go To 3	All

P0442-EVAP SYSTEM MEDIUM LEAK — Continued

TEST	ACTION	APPLICABILITY
3	To continue testing you will need Miller Tool #8404 Evaporative Emission Leak Detector (EELD). **WARNING: Keep lighted cigarettes, sparks, flames, and other ignition sources away from the test area to prevent the ignition of explosive gases. Keep the test area well ventilated.** **NOTE: The fuel tank should have between 20% and 80% of fuel tank capacity to properly test the Evap system.** Connect the red power lead of the EELD to the battery positive terminal and the black ground lead to battery negative terminal. **NOTE: See Charts and Graph support material EELD Calibration Setup for an example.** Block the vent hose of the EVAP Canister. Connect shop air to the EELD. Set the smoke/air control switch to AIR. Insert the tester's AIR supply tip (clear hose) into the appropriate calibration orifice on the tester's control panel (based on DTC leak size). Press the remote smoke/air start button. Position the red flag on the air flow meter so it is aligned with the indicator ball. When the calibration is complete, release the remote button. The EELD is now calibrated the flow meter in liters per minute to the size leak indicated by the DTC set in the PCM. Install the service port adapter #8404-14 on the vehicle's service port. Connect the Air supply hose from the EELD to the service port. Press the remote button to activate AIR flow. **NOTE: Larger volume fuel tanks, lower fuel levels or if the vehicle is equipped with a Flow Management Valve may indicate high flow and will require 4 to 5 minutes to fill** Compare the flow meter indicator ball reading to the red flag. ABOVE the red flag indicates a leak present. BELOW the red flag indicates a sealed system. Is the indicator ball above the red flag? Yes → Go To 4 No → Go To 7	All

P0442-EVAP SYSTEM MEDIUM LEAK — Continued

TEST	ACTION	APPLICABILITY
4	**NOTE: A thorough visual inspection of the Evap system hoses, tubes, and connections may save time in your diagnosis. Look for any physical damage or signs of wetness at connections. The strong smell of fuel vapors may aid diagnosis also.** To continue testing, you will need Miller Tool #8404 Evaporative Emissions Leak Detector (EELD). Remove the Air supply hose from the service port. Connect the SMOKE supply tip (black hose) to the service port. Set the smoke/air control switch to SMOKE. **NOTE: The flow meter indicator ball will not move in the smoke mode.** Press the remote smoke/air start button. **NOTE: Ensure that smoke has filled the EVAP system by continuing to press the remote smoke/air start button, remove the vehicle fuel cap, and wait for the smoke to exit. Once smoke is indicated reinstall the fuel cap.** **NOTE: For optimal performance, introduce smoke into the system for an additional 60 seconds; continue introducing smoke at 15 second intervals, as necessary.** While still holding the remote smoke/air start button, use the white light (#8404-CLL) to follow the EVAP system path, and look for the source of the leak indicated by exiting smoke. If a leak is concealed from view (i.e., top of fuel tank), release the remote smoke/air start button, and use the ultraviolet (UV) black light #8404-UVL and the yellow goggles 8404-20 to look for residual traces of dye that is left behind by the smoke. The exiting smoke deposits a residual fluid that is either bright green or bright yellow in color when viewed with a UV light. **NOTE: Carefully inspect the vent side of the EVAP Canister. Due to the filtering system in the canister the smoke may not be as thick. Introducing smoke into the filtered side of the canister may assist in locating the leak.** Was a leak found? Yes → Repair or replace the leaking component as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 6 - NGC. No → Go To 5	All
5	**NOTE: After disconnecting the Evap Purge Solenoid vacuum connections, inspect the lines and solenoid for any signs of contamination from the EVAP Canister. This may indicate a faulty rollover valve. Replace/repair as necessary.** Turn the ignition off. Disconnect the vacuum hoses at the Evap Purge Solenoid. Using a hand vacuum pump, apply 10 in Hg to the ″CAN″ of the EVAP Purge Solenoid. **NOTE: Monitor the vacuum gauge for at least 15 seconds.** Does the EVAP Purge Solenoid hold vacuum? Yes → Go To 6 No → Replace the Evap Purge Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 6 - NGC.	All

P0442-EVAP SYSTEM MEDIUM LEAK — Continued

TEST	ACTION	APPLICABILITY
6	**NOTE: The fuel level must be below 85%, or the ORVR control valve will seal the tank.** Turn the ignition off. Install the Miller #8382 gas cap adaptor. Attach the gas cap to the adapter. Connect a hand-held vacuum pump to the gas cap adapter. **NOTE: At 1″ in Hg the NVLD switch should close. Using a manometer (Miller #6872A) connected to the service port can aid in properly reading the system vacuum.** Slowly apply vacuum while monitoring the NVLD Switch State on the DRBIII®. Do not exceed 2″ in Hg while performing this step. **NOTE: The NVLD Switch reads normally open. When the vacuum is applied and 1″ in Hg is reached the switch state should be in the closed position. Once the vacuum has been released the Switch state should return to the open position.** Did the NVLD Switch operate as described above? Yes → Go To 7 No → Replace the NVLD Assembly. Perform POWERTRAIN VERIFICATION TEST VER - 6 - NGC.	All
7	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Review the DRBIII® Freeze Frame information. If possible, try to duplicate the conditions under which the DTC was set. Refer to any Technical Service Bulletins (TSB) that may apply. **NOTE: A loose gas cap could have caused this DTC to set. Make sure gas cap is tight and in good condition. Ensure the gas cap meets OEM specifications.** Perform a visual and physical inspection of the entire Evaporative Emission system. Check for the following conditions: - Holes or cracks - Loose seal points - Evidence of damaged components - Incorrect routing of hoses and tubes - Fuel Cap gasket seal Were any of the above conditions found? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 6 - NGC. No → Test Complete.	All

Symptom:

P0443-EVAP PURGE SOLENOID CIRCUIT

When Monitored and Set Condition:

P0443-EVAP PURGE SOLENOID CIRCUIT

When Monitored: The ignition on or engine running. Battery voltage greater than 10 volts.

Set Condition: The PCM will set a trouble code if the actual state of the solenoid does not match the intended state.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
EVAP PURGE SOLENOID OPERATION
(K52) EVAP PURGE SOL CONTROL CIRCUIT OPEN
(K52) EVAP PURGE SOLENOID CONTROL CIRCUIT SHORTED TO GROUND
(K108) EVAP PURGE SOL RETURN CIRCUIT OPEN
(K108) EVAP PURGE SOL RETURN CIRCUIT SHORTED TO GROUND
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the EVAP Purge Solenoid harness connector. Ignition on, engine not running. Using a 12-volt test light, jumper across the EVAP Purge Solenoid harness connector. With the DRBIII®, actuate the EVAP Purge Solenoid. Does the test light flash on and off? Yes → Replace the EVAP Purge Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All

P0443-EVAP PURGE SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Evap Purge Solenoid harness connector. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K52) Evap Purge Solenoid Control circuit from the Evap Purge Solenoid harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the open in the (K52) Evap Purge Sol Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
4	Turn the ignition off. Disconnect the Evap Purge Solenoid harness connector. Disconnect the PCM harness connectors. Measure the resistance between ground and the (K52) Evap Purge Sol Control circuit at the Evap Purge Solenoid harness connector. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (K52) Evap Purge Solenoid Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the Evap Purge Solenoid harness connector. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K108) Evap Purge Sol Return circuit from the Evap Purge Solenoid harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K108) Evap Purge Sol Return circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	Turn the ignition off. Disconnect the Evap Purge Solenoid harness connector. Disconnect the PCM harness connectors. Measure the resistance between ground and the (K108) Evap Purge Sol Return circuit at the Evap Purge Solenoid harness connector. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (K108) Evap Purge Solenoid Return circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 7	All

P0443-EVAP PURGE SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0452-NVLD PRESSURE SWITCH SENSE CIRCUIT LOW

When Monitored and Set Condition:

P0452-NVLD PRESSURE SWITCH SENSE CIRCUIT LOW

When Monitored: Immediately after engine start up.

Set Condition: The PCM activates the NLVD Solenoid. If PCM does not see NVLD switch open, an error is detected. One Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
NVLD SWITCH OPERATION
NVLD ASSEMBLY
(K52) EVAP PURGE SOL CONTROL CIRCUIT SHORTED TO GROUND
(K107) NVLD SWITCH SIGNAL CIRCUIT SHORTED TO GROUND
EVAP PURGE SOLENOID LEAKS/STUCK OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the EVAP Purge Solenoid harness connector. Ignition on, engine not running. Using a 12-volt test light, jumper across the EVAP Purge Solenoid harness connector. With the DRBIII®, actuate the EVAP Purge Solenoid. Does the test light flash on and off? Yes → Go To 3 No → Go To 7	All

P0452-NVLD PRESSURE SWITCH SENSE CIRCUIT LOW — Continued

TEST	ACTION	APPLICABILITY
3	**NOTE: After disconnecting the Evap Purge Solenoid vacuum connections, inspect the lines and solenoid for any signs of contamination from the EVAP Canister. This may indicate a faulty rollover valve. Replace/repair as necessary.** Turn the ignition off. Disconnect the vacuum hoses at the Evap Purge Solenoid. Using a hand vacuum pump, apply 10 in Hg to the ″CAN″ of the EVAP Purge Solenoid. **NOTE: Monitor the vacuum gauge for at least 15 seconds.** Does the EVAP Purge Solenoid hold vacuum? Yes → Go To 4 No → Replace the Evap Purge Solenoid. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
4	Ignition on, engine not running. Using the DRBIII®, monitor the NVLD Switch State. Does the DRBIII® display the NVLD state OPEN? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Turn the ignition on. Using the DRBIII®, monitor the NVLD Switch State. Disconnect the NVLD electrical connector. Does the Switch change from CLOSED to OPEN? Yes → Replace the NVLD Assembly. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	Turn the ignition off. Disconnect the NVLD electrical harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K107) NVLD Switch Signal circuit in the NVLD Assembly harness connector. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (K107) NVLD Switch Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0452-NVLD PRESSURE SWITCH SENSE CIRCUIT LOW — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Disconnect the EVAP Purge Solenoid harness connector. Disconnect the Powertrain Control Module harness connectors. Measure the resistance between ground and the (K52) EVAP Purge Sol Control circuit at the EVAP Purge Solenoid harness connector. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (K52) EVAP Purge Sol Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0453-NVLD PRESSURE SWITCH SENSE CIRCUIT HIGH

When Monitored and Set Condition:

P0453-NVLD PRESSURE SWITCH SENSE CIRCUIT HIGH

When Monitored: Engine Running.

Set Condition: If the PCM does not see the NVLD swtich close during test an error is detected. One Trip Fault.

POSSIBLE CAUSES
NVLD SWITCH OPERATION
(K107) NVLD SWITCH SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
(K107) NVLD SWITCH SIGNAL CIRCUIT SHORTED TO (K106) NVLD SOL CONTROL CIRCUIT
NVLD ASSEMBLY
(Z1) GROUND CIRCUIT OPEN
(K107) NVLD SWITCH SIGNAL CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Start the engine. Allow the engine to idle. Using the DRBIII®, perform the NVLD FORCED MONITOR TEST. Monitor the NVLD Switch state. **NOTE: As the test runs, the NVLD Switch should go from an OPEN state to a CLOSED state and then return to OPEN when the test is complete.** Did the NVLD Switch operate as described above? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 2	All
2	Turn the ignition off. Disconnect the NVLD electrical harness connector. Ignition on, engine not running. Measure the voltage on the (K107) NVLD Switch Signal circuit in the NVLD electrical harness connector. Is the voltage above 5.5 volts? Yes → Repair short to battery voltage in the (K107) NVLD Switch Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All

P0453-NVLD PRESSURE SWITCH SENSE CIRCUIT HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the NVLD electrical harness connector. Measure the resistance between the (K107) NVLD Switch Signal circuit and (K106) NVLD Sol Control circuit in the NVLD electrical harness connector. Is the resistance below 5.0 ohms? Yes → Repair the (K107) NVLD Switch Signal circuit shorted to the (K106) NVLD Sol Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the NVLD electrical harness connector. Using a jumper wire, jumper across the NVLD Switch Signal circuit and the Ground circuit. Monitor the NVLD Switch state on the DRBIII®. Does the Switch change from OPEN to CLOSED? Yes → Replace the NVLD Assembly. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the NVLD electrical harness connector. Measure the resistance between the (Z1) Ground circuit and ground. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (Z1) Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	Turn the ignition off. Disconnect the NVLD electrical harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K107) NVLD Switch Signal circuit from the NVLD electrical harness connector to the appropriate terminal of special tool # 8815. Is the resistance below 5.0 ohms? Yes → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Repair the open in the (K107) NVLD Switch Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0456-EVAP SYSTEM SMALL LEAK

When Monitored and Set Condition:

P0456-EVAP SYSTEM SMALL LEAK

When Monitored: Ignition off. Fuel Level less than 88%. Ambient Temperature between 4°C to 43°C (39°F to 109°F)

Set Condition: Due to temperature changes a vacuum is created in the fuel tank and EVAP system. With the EVAP system sealed, the PCM monitors the NVLD switch. If the NVLD switch does not close within a calibrated amount of time an error is detected.

POSSIBLE CAUSES
INTERMITTENT CONDITION
VISUAL AND PHYSICAL INSPECTION
EVAPORATIVE EMISSION LEAK DETECTION

TEST	ACTION	APPLICABILITY
1	**NOTE: The difference in ambient temperature, outside temp VS shop temp, may conceal a leak, it is best to perform this test after the vehicle's temperature has stabilized in the work area.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Go To 4	All
2	Perform a visual and physical inspection of the entire Evaporative Emission system. Check for the following conditions: - Holes or cracks - Loose seal points - Evidence of damaged components - Incorrect routing of hoses and tubes - Fuel Cap gasket seal Were any of the above conditions found? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All

P0456-EVAP SYSTEM SMALL LEAK — Continued

TEST	ACTION	APPLICABILITY
3	**NOTE: A thorough visual inspection of the Evap system hoses, tubes, and connections may save time in your diagnosis. Look for any physical damage or signs of wetness at connections. The strong smell of fuel vapors may aid diagnosis also.** Use the Miller Tool #8404 Evaporative Emissions Leak Detector (EELD). Connect the SMOKE supply tip (black hose) to the service port. Set the smoke/air control switch to SMOKE. Block the vent hose of the EVAP Canister. **NOTE: The flow meter indicator ball will not move at this point.** Press the remote smoke/air start button. **NOTE: Ensure that smoke has filled the EVAP system by continuing to press the remote smoke/air start button, remove the vehicle fuel cap, and wait for the smoke to exit. Once smoke is indicated reinstall the fuel cap.** **NOTE: For optimal performance, introduce smoke into the system for an additional 60 seconds; continue introducing smoke at 15 second intervals, as necessary.** While still holding the remote smoke/air start button, use the white light (#8404-CLL) to follow the EVAP system path, and look for the source of the leak indicated by exiting smoke. If a leak is concealed from view (i.e., top of fuel tank), release the remote smoke/air start button, and use the ultraviolet (UV) black light #8404-UVL and the yellow goggles 8404-20 to look for residual traces of dye that are left behind by the smoke. The exiting smoke deposits a residual fluid that is either bright green or bright yellow in color when viewed with a UV light. **NOTE: Carefully inspect the vent side of the EVAP Canister. Due to the filtering system in the canister the smoke or dye may or may not be visual. Introducing smoke into the filtered side of the canister may assist in locating the leak.** Was a leak found? Yes → Repair or replace the leaking component as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Review the DRBIII® Freeze Frame information. If possible, try to duplicate the conditions under which the DTC was set. Refer to any Technical Service Bulletins (TSB) that may apply. **NOTE: A loose gas cap could have caused this DTC to set. Make sure gas cap is tight and in good condition. Ensure the gas cap meets OEM specifications.** Perform a visual and physical inspection of the entire Evaporative Emission system. Check for the following conditions: - Holes or cracks - Loose seal points - Evidence of damaged components - Incorrect routing of hoses and tubes - Fuel Cap gasket seal Were any of the above conditions found? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Test Complete.	All

Symptom:

P0461-FUEL LEVEL SENSOR #1 PERFORMANCE

When Monitored and Set Condition:

P0461-FUEL LEVEL SENSOR #1 PERFORMANCE

When Monitored: TEST #1: With the ignition on, the fuel level is compared to the previous key down after a 20 second delay. TEST #2: The PCM monitors the fuel level at ignition on.

Set Condition: TEST #1: If the PCM does not see a difference in fuel level of greater than 0.1 volt the test will fail. TEST #2: If the PCM does not see a change in the fuel level of .1765 over a set amount of miles the test will fail. Two Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
VISUALLY INSPECT FUEL TANK
(G4) FUEL LEVEL SIGNAL CIRCUIT SHORTED TO GROUND
(G4) FUEL LEVEL SIGNAL CIRCUIT OPEN
(Z2) GROUND CIRCUIT OPEN
INTERNAL INSPECTION OF THE FUEL TANK
FUEL LEVEL SENSOR

TEST	ACTION	APPLICABILITY
1	**NOTE: Diagnose P0462 or P0463 first, if set along with P0461.** **NOTE: Inspect the Fuel Pump Module harness connector for any corrosion or damage.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Visually inspect the Fuel Tank for damage that may restrict the Fuel Sending Unit float from moving. Is the Fuel Tank OK? Yes → Go To 3 No → Replace the Fuel Tank as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0461-FUEL LEVEL SENSOR #1 PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Fuel Pump Module harness connector. Measure the resistance between ground and the (G4) Fuel Level Signal circuit at the Fuel Pump Module harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (G4) Fuel Level Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the Fuel Pump Module harness connector. Disconnect the Instrument Cluster harness connector. Measure the resistance of the (G4) Fuel Level Signal circuit from the Fuel Pump Module harness connector to the BCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the (G4) Fuel Level Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Disconnect the Fuel Pump Module harness connector. Measure the resistance of the (Z2) Ground circuit from the Fuel Pump Module harness connector to ground. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (Z2) Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	**WARNING: The fuel system is under a constant pressure even with the engine off. Before opening the fuel system the fuel pressure must be release. Relieve the fuel pressure in accordance with the service information.** Remove the Fuel Tank in accordance with the Service Information. Remove the Fuel Pump Module. Visually inspect the inside of the Fuel Tank for any obstructions or deformities. Inspect the Fuel Pump Module Float arm for damage. Were any problems found? Yes → Repair or replace as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Fuel Level Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0462-FUEL LEVEL SENSOR #1 LOW
P0463-FUEL LEVEL SENSOR #1 HIGH

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0462-FUEL LEVEL SENSOR #1 LOW.

When Monitored and Set Condition:

P0462-FUEL LEVEL SENSOR #1 LOW

When Monitored: Ignition on and battery voltage above 10.4 volts.

Set Condition: The fuel level sensor signal voltage goes below 0.1961 volts for more than 5 seconds. One Trip Fault.

P0463-FUEL LEVEL SENSOR #1 HIGH

When Monitored: Ignition on and battery voltage above 10.4 volts.

Set Condition: The fuel level sensor signal voltage at the PCM goes above 4.7 volts for more than 5 seconds. One Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
INTERMITTENT CONDITION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Is the Good Trip displayed and equal to zero? Yes → Refer to the Instrument Cluster Category and perform the appropriate symptoms. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0480-LOW SPEED FAN CONTROL RELAY CIRCUIT

When Monitored and Set Condition:

P0480-LOW SPEED FAN CONTROL RELAY CIRCUIT

When Monitored: With the ignition on. Battery voltage greater than 10 volts.

Set Condition: An open or shorted circuit is detected in the radiator fan relay control circuit. One Trip Fault.

POSSIBLE CAUSES
RADIATOR FAN RELAY INTERMITTENT OPERATION
INTERMITTENT CONDITION
GROUND CIRCUIT
FUSED B+ OUTPUT CIRCUIT
POWERTRAIN CONTROL MODULE
RADIATOR FAN RELAY CONTROL CIRCUIT SHORT TO GROUND
RADIATOR FAN RELAY CONTROL CIRCUIT OPEN (IPM)
RADIATOR FAN RELAY CONTROL CIRCUIT OPEN (PCM)
RADIATOR FAN RELAY CONTROL CIRCUIT SHORTED TO GROUND (IPM)
RADIATOR FAN RELAY CONTROL CIRCUIT SHORT TO GROUND (PCM)
INTEGRATED POWER MODULE (OPEN)
INTEGRATED POWER MODULE (SHORD)

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, actuate the Radiator Fan Relay. Are both Radiator Fan operating? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition on. With the DRBIII®, actuate the Radiator Fan Relay. Wiggle the wiring harness from the Radiator Fan Relay to the PCM while the relay is actuating. Did the Radiator Fan Relay stop when wiggling the wiring harness? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0480-LOW SPEED FAN CONTROL RELAY CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Radiator Fan Relay harness connector. Using a 12-volt test light connected to 12-volts, probe the Ground circuit in the Radiator Fan Relay harness connector. Does the test light illuminate? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	**NOTE: Inspect the Radiator Fan fuse located in the IPM.** Turn the ignition off. Disconnect the Radiator Fan Relay harness connector. Measure the voltage of the Fused B+ Output circuit in the Radiator Fan harness connector. Is the voltage above 11.0 volts? Yes → Go To 5 No → Repair the Fused B+ circuit. Check and replace any open fuses. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	**NOTE: Ensure the Radiator Fan Relay harness connector is connected.** Turn the ignition off. Disconnect the PCM harness connector. Turn the ignition on. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Using a jumper wire, momentarily jumper the Radiator Fan Relay Control circuit in the appropriate terminal of special tool # 8815 to ground. Did the Radiator Fans operate? Yes → Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	Turn the ignition off. Disconnect the Radiator Fan Relay harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Radiator Fan Relay Control circuit between the Radiator Fan Relay harness connector and the appropriate terminal of special tool # 8815. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Go To 10	All

P0480-LOW SPEED FAN CONTROL RELAY CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Disconnect the Radiator Fan Relay harness connector. Disconnect the PCM harness connector. Measure the resistance of the Radiator Fan Relay Control circuit in the Radiator Fan Relay harness connector to ground. Is the resistance below 5.0 ohms? Yes → Go To 8 No → Replace Radiator Fan Relay. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
8	Turn the ignition off. Disconnect the Radiator Fan Relay harness connector. Disconnect the IPM C2 harness connector. Measure the resistance of the Radiator Fan Relay Control circuit in the Radiator Fan Relay harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the Radiator Fan Relay Control circuit for a short to ground between the Radiator Fan Relay harness connector and the IPM harness connector. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 9	All
9	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the IPM C3 harness connector. Measure the resistance of the Radiator Fan Relay Control circuit in the PCM harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the Radiator Fan Relay Control circuit for a short to ground between PCM harness connector and the IPM harness connector. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
10	Turn the ignition off. Disconnect the Radiator Fan Relay harness connector. Disconnect the IPM C2 harness connector. Measure the resistance of the Radiator Fan Relay Control circuit between the IPM harness connector and the Radiator Fan Relay harness connector. Is the resistance below 5.0 ohms. Yes → Go To 11 No → Repair the Radiator Fan Relay Control circuit for an open between the Radiator Fan Relay harness connector and the IPM harness connector. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0480-LOW SPEED FAN CONTROL RELAY CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the IPM C3 harness connector. Measure the resistance of the Radiator Fan Relay Control circuit between the IPM harness connector and the PCM harness connector. Is the resistance below 5.0 ohms. Yes → Replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Repair the Radiator Fan Relay Control circuit for an open between PCM harness connector and the IPM harness connector. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0498-NVLD CANISTER VENT VALVE SOLENOID CIRCUIT LOW

When Monitored and Set Condition:

P0498-NVLD CANISTER VENT VALVE SOLENOID CIRCUIT LOW

When Monitored: Engine Running.

Set Condition: The PCM detects a short in the NVLD Canister vent solenoid circuits. One trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
NVLD SOLENOID
(K106) NVLD SOLENOID CONTROL CIRCUIT SHORT TO GROUND
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the NVLD electrical harness connector. Measure the resistance of the NVLD Solenoid coil. Is the resistance between 7.5 to 8.5 ohms? Yes → Go To 3 No → Replace the NVLD Assembly. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
3	Turn the ignition off. Disconnect the NVLD electrical harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K106) NVLD Sol Control circuit at the NVLD electrical harness connector. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (K106) NVLD Solenoid Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0499-NVLD CANISTER VENT VALVE SOLENOID CIRCUIT HIGH

When Monitored and Set Condition:

P0499-NVLD CANISTER VENT VALVE SOLENOID CIRCUIT HIGH

When Monitored: Engine Running.

Set Condition: The PCM detects an open in the NVLD Canister vent solenoid circuits. One trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
NVLD SOLENOID
(K106) NVLD SOL CONTROL CIRCUIT SHORT TO BATTERY VOLTAGE
(K106) NVLD SOL CONTROL CIRCUIT OPEN
(Z1) GROUND CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the NVLD Assembly harness connector. Measure the resistance of the NVLD Solenoid coil. Is the resistance between 7.5 to 8.5 ohms? Yes → Go To 3 No → Replace the NVLD Assembly. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0499-NVLD CANISTER VENT VALVE SOLENOID CIRCUIT HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the NVLD Assembly harness connector. Disconnect the PCM harness connector. Turn the ignition on. Measure the voltage on the (K106) NVLD Sol Control circuit in the NVLD Assembly harness connector. Is the voltage above 1.0 volt? Yes → Repair the short to battery voltage in the (K106) NVLD Sol Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the NVLD Assembly harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K106) NVLD Sol Control circuit from the NVLD Assembly harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the (K106) NVLD Sol Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Disconnect the NVLD Assembly harness connector. Measure the resistance between the (Z1) Ground circuit and ground. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (Z1) Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0501-VEHICLE SPEED SENSOR #1 PERFORMANCE (AUTO TRANS)

When Monitored and Set Condition:

P0501-VEHICLE SPEED SENSOR #1 PERFORMANCE (AUTO TRANS)

When Monitored: Engine running. Transmission not in park or neutral. Brakes not applied. Engine run time greater than 10 seconds.

Set Condition: The PCM does not see vehicle speed signal from the transmission control side of the PCM. Two Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
TRANSMISSION DTC(S)
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure that the Pinion Factor has been programmed and the correct tire size has been programmed in before continuing.** Ignition on, engine not running. With the DRBIII®, read PCM DTCs and record the related Freeze Frame data. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition on. With the DRBIII®, check the Transmission DTCs. Are there any Transmission DTCs present? Yes → Refer to the appropriate Transmission DTC in the Transmission category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0501-VEHICLE SPEED SENSOR #1 PERFORMANCE (MANUAL TRANS)

When Monitored and Set Condition:

P0501-VEHICLE SPEED SENSOR #1 PERFORMANCE (MANUAL TRANS)

When Monitored: With the engine running. Clutch not depressed. Engine rpm greater than 1500.

Set Condition: The PCM does not receive a vehicle speed sensor signal for more than 11 seconds. 2 consecutive trips.

POSSIBLE CAUSES
VEHICLE SPEED SENSOR OPERATION
(K7) 5 VOLT SUPPLY CIRCUIT OPEN
(G7) VSS SIGNAL CIRCUIT SHORTED TO GROUND
(G7) VSS SIGNAL CIRCUIT OPEN
PCM VSS SIGNAL
(K4) SENSOR GROUND CIRCUIT OPEN
VEHICLE SPEED SENSOR

TEST	ACTION	APPLICABILITY
1	Raise the drive wheels off the ground. **WARNING: BE SURE TO KEEP HANDS AND FEET CLEAR OF ROTATING WHEELS.** Start the engine. With the DRBIII®, monitor the Vehicle Speed Sensor Place the transmission in any forward gear. Allow the wheels to rotate. Does the DRBIII® display vehicle speed above 0 MPH/KMH? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 2	All
2	Turn the ignition off. Disconnect the Vehicle Speed Sensor harness connector. Turn the ignition on. Measure the voltage of the (K7) 5 Volt Supply circuit in the VSS harness connector. Is the voltage above 4.6 volts? Yes → Go To 3 No → Repair the (K7) 5 Volt Supply circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0501-VEHICLE SPEED SENSOR #1 PERFORMANCE (MANUAL TRANS)

— Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Vehicle Speed Sensor harness connector. Turn the ignition on. Measure the voltage of the (G7) VSS Signal circuit in the VSS harness connector. Is the voltage between 4.5 to 5.0 volts? Yes → Go To 4 No → Go To 5	All
4	Turn the ignition off. Disconnect the Vehicle Speed Sensor harness connector. Measure the resistance of the (K4) Sensor ground circuit between the VSS harness connector and ground. Is the resistance below 5.0 ohms? Yes → Remove and inspect the Pinion Gear. If OK, replace the Vehicle Speed Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Repair the (K4) Sensor ground circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Disconnect the Vehicle Speed Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance of the (G7) Vehicle Speed Sensor Signal circuit in the VSS harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the (G7) VSS Signal circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	Turn the ignition off. Disconnect the Vehicle Speed Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (G7) VSS Signal circuit between the VSS harness connector and to the appropriate terminal of special tool #8815. Is the resistance below 5 ohms? Yes → Go To 7 No → Repair the (G7) VSS Signal circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair, Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0506-IDLE SPEED LOW PERFORMANCE
P0507-IDLE SPEED HIGH PERFORMANCE
P0519-IDLE SPEED PERFORMANCE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0506-IDLE SPEED LOW PERFORMANCE.

When Monitored and Set Condition:

P0506-IDLE SPEED LOW PERFORMANCE

When Monitored: Engine Running. During an idle condition.

Set Condition: If the engine RPM does not come within a calibratable low limit of the target idle speed, a failure timer will increment. When the appropriate failure timer reaches its maximum threshold without sign of RPM trending towards control, a soft fail is generated. When a calibratable number of the soft fails is reached, a I trip fault is set. When two 1 trip faults occur in a row, a the DTC is set and the MIL illuminates.

P0507-IDLE SPEED HIGH PERFORMANCE

When Monitored: Engine Running. During an idle condition.

Set Condition: If the engine RPM does not come within a calibratable high limit of the target idle speed, a failure timer will increment. When the appropriate failure timer reaches its maximum threshold without sign of RPM trending towards control, a soft fail is generated. When a calibratable number of the soft fails is reached, a I trip fault is set. When two 1 trip faults occur in a row, a the DTC is set and the MIL illuminates.

P0519-IDLE SPEED PERFORMANCE

When Monitored: With the engine idling and the transmission in drive, if automatic. There must not be a MAP sensor trouble code or a Throttle Position Sensor trouble code.

Set Condition: The engine idle is not within 200 rpm above or 100 rpm below the target idle for 40 seconds. Two trip fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
IAC MOTOR PASSAGES
VACUUM LEAKS
AIR INDUCTION SYSTEM
THROTTLE BODY AND THROTTLE LINKAGE

P0506-IDLE SPEED LOW PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Remove the IAC Motor. Inspect the IAC Motor and passages for any obstructions or damage to motor. Were any problems found? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Start the engine. Inspect the vehicle for external vacuum leaks. Inspect the engine for internal vacuum leaks. Were any vacuum leaks found? Yes → Repair the vacuum leak as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Inspect the Air Induction System for the following problems. Restrictions: Dirty Air Cleaner, Foreign material trapped in the air intake tube, etc. Leaks: Air Intake tube connection, Air Cleaner housing, etc. Were any problems found? Yes → Repair or replace as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Inspect the throttle body plate carbon build up or other restrictions. Inspect the throttle linkage for binding and smooth operation. Ensure the throttle plate is resting on the stop at idle. Were any problems found? Yes → Repair or replace as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Test Complete.	All

Symptom:

P0508-IAC VALVE SENSE CIRCUIT LOW

When Monitored and Set Condition:

P0508-IAC VALVE SENSE CIRCUIT LOW

When Monitored: Engine running. Battery voltage greater than 10 volts.

Set Condition: The IAC sense circuit is less than 175 mA. One Trip Fault.

POSSIBLE CAUSES
IAC MOTOR OPERATION
IAC MOTOR
(K39) IAC MOTOR CONTROL CIRCUIT SHORTED TO GROUND
(K60) IAC SIGNAL CIRCUIT OPEN
(K60) IAC SIGNAL CIRCUIT SHORTED TO GROUND
(K39) IAC MOTOR CONTROL CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: If the engine will not idle, maintain an engine speed between 800 and 1500 RPM.** Start the engine. Allow the engine to idle. With the DRBIII®, read the IAC Current. Is the IAC Current below 146 mA? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the IAC Motor harness connector. Remove the IAC Motor. **NOTE: Inspect the IAC air passages for restriction and damage to the IAC valve.** Measure the resistance across the IAC Motor pin terminals (component). Is the resistance 9.7 +/- 1.0 ohms? Yes → Go To 3 No → Replace the IAC Motor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0508-IAC VALVE SENSE CIRCUIT LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the IAC Motor harness connector. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K60) IAC Signal circuit from the IAC Motor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the open in the (K60) IAC Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
4	Turn the ignition off. Disconnect the IAC Motor harness connector. Disconnect the PCM harness connectors. Measure the resistance between ground and the (K60) IAC Signal in the IAC Motor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K60) IAC Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the IAC Motor harness connector. Disconnect the PCM harness connectors. Measure the resistance between ground and the (K39) IAC Motor Control circuit in the IAC Motor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K39) IAC Motor Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	Turn the ignition off. Disconnect the IAC Motor harness connector. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K39) IAC Return circuit from the IAC Motor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the open in the (K39) IAC Motor Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

P0508-IAC VALVE SENSE CIRCUIT LOW — Continued

TEST	ACTION	APPLICABILITY
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0509-IAC VALVE SENSE CIRCUIT HIGH

When Monitored and Set Condition:

P0509-IAC VALVE SENSE CIRCUIT HIGH

When Monitored: Engine running. Battery voltage greater than 10 volts.

Set Condition: The IAC sense circuit is greater than 980 mA. One Trip Fault.

POSSIBLE CAUSES
IAC MOTOR OPERATION
IAC MOTOR
(K60) IAC SIGNAL CIRCUIT SHORTED TO VOLTAGE
(K39) IAC MOTOR CONTROL CIRCUIT SHORTED TO VOLTAGE
(K60) IAC SIGNAL CIRCUIT SHORTED TO (K39) IAC MOTOR CONTROL CIRCUIT
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: If the engine will not idle, maintain an engine speed between 800 and 1500 RPM.** Start the engine. Allow the engine to idle. With the DRBIII®, read the IAC Current. Is the IAC Current above 999 mA? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the IAC Motor harness connector. With the DRBIII®, monitor the IAC Current. Turn the ignition on. Does the DRBIII® display IAC Current at 0mA? Yes → Replace the IAC Motor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All

P0509-IAC VALVE SENSE CIRCUIT HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the IAC Motor harness connector. Turn the ignition on. With the DRBIII®, actuate the ASD Relay. Measure the voltage of the (K60) IAC Signal circuit in the IAC Motor harness connector. Is the voltage above 0.5 of a volt? Yes → Repair the short to voltage in the (K60) IAC Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the IAC Motor harness connector. Turn the ignition on. With the DRBIII®, actuate the ASD Relay. Measure the voltage of the (K39) IAC Motor Driver circuit in the IAC Motor harness connector. Is the voltage above 0.5 of a volt? Yes → Repair the short to voltage in the (K39) IAC Motor Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the IAC Motor harness connector. Measure the resistance across the IAC Motor harness connector. Is the resistance below 5.0 ohms? Yes → Repair the (K60) IAC Motor Signal circuit short to the (K39) IAC Motor Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0513-INVALID SKIM KEY

When Monitored and Set Condition:

P0513-INVALID SKIM KEY

When Monitored: Ignition on.

Set Condition: The PCM detects an invalid SKIM key.

POSSIBLE CAUSES
INCORRECT VIN IN PCM
INVALID SKIM KEY NOT PRESENT
NO COMMUNICATION WITH SKIM
NO VIN PROGRAMMED IN THE PCM
PCM
SKIM TROUBLE CODES SET

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read the PCM DTCs. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Go To 7	All
2	With the DRBIII®, attempt to communicate with the SKIM. Turn the ignition on. Can the DRBIII® communicate with the SKIM? Yes → Go To 3 No → Refer to the No Communication category. Perform SKIS VERIFICATION.	All
3	Turn the ignition on. With the DRBIII®, check for SKIM DTCs. Are any DTCs present in the SKIM? Yes → Refer to SKIM category for the related symptom(s). Perform SKIS VERIFICATION. No → Go To 4	All
4	Turn the ignition on. With the DRBIII®, display the VIN that is programmed in the PCM. Has a VIN been programmed into the PCM? Yes → Go To 5 No → Program the correct VIN into the PCM and retest. Perform SKIS VERIFICATION.	All

P0513-INVALID SKIM KEY — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition on. With the DRBIII®, display the VIN that is programmed in the PCM. Was the correct VIN programmed into the PCM? Yes → Go To 6 No → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform SKIS VERIFICATION.	All
6	Turn the ignition off. Replace and program the Sentry Key Immobilizer Module in accordance with the Service Information. Turn the ignition on. With the DRBIII®, erase all SKIM and PCM DTCs. Attempt to start and idle the engine. With the DRBIII®, read the PCM DTCs. Does the DRBIII® display this code? Yes → NOTE: Before continuing, check the PCM harness connector termnals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform SKIS VERIFICATION. No → Test Complete.	All
7	**NOTE: You must obtain the SKIM pin number.** **NOTE: This DTC could have been set if the SKIM harness connector was disconnected, or if the SKIM was replaced recently.** **NOTE: All keys that the customer uses for this vehicle must be tested to verify they are operating properly.** Turn the ignition on. Verify the correct VIN is programmed into the PCM and SKIM. Turn the ignition off. With the next customer key turn the ignition key on and crank the engine to start. With the DRBIII®, read the PCM DTCs. Look for P0513. Is the Good Trip Counter for DTC P0513 displayed and equal to 0? Yes → Replace the Ignition Key. Perform SKIS VERIFICATION. No → Test Complete. **NOTE: If this DTC cannot be reset, it could have been an actual theft attempt.**	All

Symptom:

P0516-BATTERY TEMPERATURE SENSOR LOW

When Monitored and Set Condition:

P0516-BATTERY TEMPERATURE SENSOR LOW

When Monitored: Ignition on.

Set Condition: Battery temperature sensor voltage below 0.5 of a volt.

POSSIBLE CAUSES
BATTERY TEMP SENSOR VOLTAGE BELOW 0.5 VOLTS
BATTERY TEMP SENSOR INTERNAL FAILURE
BATTERY TEMP SIGNAL SHORTED TO GROUND
BATTERY TEMP SIGNAL SHORTED TO SENSOR GROUND CIRCUIT
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read the Battery Temp Sensor voltage. Is the voltage below 0.5 volt? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the Battery Temp Sensor harness connector. Ignition on, engine not running. With the DRBIII®, read Battery Temp Sensor voltage. Does the Battery Temp Sensor voltage read approximately 5.0 volts? Yes → Replace the Battery Temperature Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Turn the ignition off. Disconnect the Battery Temp Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the Battery Temp Signal circuit in the Battery Temp Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the Battery Temp Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All

P0516-BATTERY TEMPERATURE SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Battery Temp Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the Battery Temp Signal circuit and the Sensor ground circuit in the Battery Temp Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the Sensor ground shorted to the Battery Temp Sensor Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 5	All
5	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0517-BATTERY TEMPERATURE SENSOR HIGH

When Monitored and Set Condition:

P0517-BATTERY TEMPERATURE SENSOR HIGH

When Monitored: Ignition on.

Set Condition: Battery temperature voltage above 4.8 volts.

POSSIBLE CAUSES
BATTERY TEMP VOLTAGE ABOVE 4.8 VOLTS
BATTERY TEMP SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
BATTERY TEMP SENSOR INTERNAL FAILURE
BATTERY TEMP SIGNAL CIRCUIT OPEN
SENSOR GROUND CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read the Battery Temp Sensor voltage. Is the voltage above 4.8 volts? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the Battery Temp Sensor harness connector. Ignition on, engine not running. Measure the voltage of the Battery Temp Signal circuit in the Battery Temp Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the short to battery voltage in the Battery Temp Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All

P0517-BATTERY TEMPERATURE SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Battery Temp harness connector. Connect a jumper wire between the Battery Temp Signal circuit and the Sensor ground circuit in the Battery Temp harness connector. Ignition on, engine not running. With the DRBIII®, read the Battery Temp Sensor voltage. Is the voltage below 1.0 volt? Yes → Replace the Battery Temp Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the Battery Temp Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Battery Temp Signal circuit from the Battery Temp Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the Battery Temp Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Disconnect the Battery Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Sensor ground circuit from the Battery Temp Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0522 PRESSURE SENSOR LOW

When Monitored and Set Condition:

P0522 PRESSURE SENSOR LOW

When Monitored: Engine running and battery voltage above 10.4 volts.

Set Condition: The oil pressure sensor voltage at PCM goes below 0.1 of a volt for 0.5 of a second.

POSSIBLE CAUSES
OIL PRESSURE SENSOR VOLTAGE BELOW 0.1 VOLTS
OIL PRESSURE SENSOR INTERNAL FAILURE
(G6) OIL PRESS SIGNAL SHORTED TO GROUND
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the engine oil pressure is at the correct pressure before continuing.** Ignition on, engine not running. With the DRBIII®, read the Oil Pressure Sensor voltage. Is the voltage below 0.1 volt? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition off. Disconnect the Oil Pressure Sensor harness connector. Ignition on, engine not running. With the DRBIII®, read Oil Pressure Sensor voltage. Does the Oil Pressure Sensor voltage read approximately 5.0 volts? Yes → Replace the Oil Pressure Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All
3	Turn the ignition off. Disconnect the Oil Pressure Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (G6) Oil Press Signal circuit in the Oil Pressure Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the ground shorted to the (G6) Oil Press Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P0532-A/C PRESSURE SENSOR LOW

When Monitored and Set Condition:

P0532-A/C PRESSURE SENSOR LOW

When Monitored: The engine running. The A/C relay energized.

Set Condition: The A/C pressure sensor signal voltage at the PCM goes below 0.58 volts for 2.6 seconds. One Trip Fault.

POSSIBLE CAUSES
A/C PRESSURE SENSOR VOLTAGE BELOW 0.6 VOLTS
(K7) 5 VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(K7) 5 VOLT SUPPLY CIRCUIT OPEN
A/C PRESSURE SENSOR INTERNAL FAILURE
(C18) A/C PRESSURE SIGNAL CIRCUIT SHORTED TO GROUND
(C18) A/C PRESSURE SIGNAL CIRCUIT SHORTED TO (K4) SENSOR GROUND CIRCUIT
PCM (K7) 5 VOLT SUPPLY CIRCUIT
PCM A/C PRESSURE SENSOR SIGNAL

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the A/C refrigerant System is properly charged per the Service Information.** Start the engine. With the DRBIII®, read the A/C Pressure Sensor voltage. Is the voltage below 0.6 of a volt? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All
2	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Turn the ignition on. Measure the voltage of the (K7) 5 Volt Supply circuit in the A/C Pressure Sensor harness connector. Is the voltage between 4.5 to 5.2 volts? Yes → Go To 3 No → Go To 7	All

P0532-A/C PRESSURE SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. With the DRBIII®, monitor the A/C Pressure Sensor voltage. Turn the ignition on. Is the voltage above 0.6 of a volt? Yes → Replace the A/C Pressure Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (C18) A/C Pressure Signal circuit in the A/C Pressure Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (C18) A/C Pressure Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (C18) A/C Pressure Sensor Signal circuit and the (K4) Sensor ground circuit in the A/C Pressure Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to the (K4) Sensor ground circuit in the (C18) A/C Pressure Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Go To 6	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All
7	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K7) 5 Volt Supply circuit in the A/C Pressure Sensor harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K7) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Go To 8	All

P0532-A/C PRESSURE SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K7) 5 Volt Supply circuit from the A/C Pressure Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the open in the (K7) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All
9	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All

Symptom:

P0533-A/C PRESSURE SENSOR HIGH

When Monitored and Set Condition:

P0533-A/C PRESSURE SENSOR HIGH

When Monitored: The engine running. The A/C relay energized.

Set Condition: The A/C pressure sensor signal at the PCM goes above 4.92 volts. One trip Fault.

POSSIBLE CAUSES
A/C PRESSURE SENSOR VOLTAGE ABOVE 4.6 VOLTS
(C18) A/C PRESSURE SIGNAL CIRCUIT SHORTED TO (K7) 5 VOLT SUPPLY CIRCUIT
(C18) A/C PRESSURE SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
A/C PRESSURE SENSOR INTERNAL FAILURE
(C18) A/C PRESSURE SIGNAL CIRCUIT OPEN
(K4) SENSOR GROUND CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the A/C refrigerant System is properly charged per the Service Information.** Start the engine. With the DRBIII®, read the A/C Pressure Sensor voltage. Is the voltage above 4.6 volts? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All
2	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Disconnect the PCM harness connector. Measure the resistance between the (C18) A/C Pressure Signal circuit and the (K7) 5 Volt Supply circuit in the A/C Pressure Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Repair the (C18) A/C Pressure Signal circuit for a short to the (K7) 5 Volt Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Go To 3	All

P0533-A/C PRESSURE SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Turn the ignition on. Measure the voltage on the (C18) A/C Pressure Sensor Signal circuit at the A/C Pressure Sensor harness connector. Is the voltage above 5.2 volts? Yes → Repair the (C18) A/C Pressure Signal circuit for a short to battery voltage. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Connect a jumper wire between the (C18) A/C Pressure Signal circuit and the (K4) Sensor ground circuit. With the DRBIII®, monitor the A/C Pressure Sensor voltage. Turn the ignition on. Is the voltage below 1.0 volt? Yes → Replace the A/C Pressure Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (C18) A/C Pressure Sensor Signal circuit from the A/C Pressure Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the (C18) A/C Pressure Signal circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All
6	Turn the ignition off. Disconnect the A/C Pressure Sensor harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor ground circuit from the A/C Pressure Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the (K4) Sensor ground circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All

P0533-A/C PRESSURE SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All

Symptom:
P0551-POWER STEERING SWITCH PERFORMANCE

When Monitored and Set Condition:

P0551-POWER STEERING SWITCH PERFORMANCE

When Monitored: With the ignition key on and engine running.

Set Condition: With the vehicle above 80 KMH (50 MPH) for over 30 seconds, the power steering pressure switch remains open.

POSSIBLE CAUSES
GOOD TRIP COUNTER = 0
POWER STEERING PRESSURE SWITCH (Z1) GROUND CIRCUIT OPEN
(K10) PSP SWITCH SIGNAL CIRCUIT SHORTED TO GROUND
(K10) PSP SWITCH SIGNAL CIRCUIT OPEN
POWER STEERING PRESSURE SWITCH
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All
2	Turn the ignition off. Disconnect the Power Steering Pressure Switch harness connector. Measure the resistance between Ground and the PSP Switch (Z1) ground circuit at the Power Steering Pressure Switch connector. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Repair the open in the PSP Switch (Z1) ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All
3	Turn the ignition off. Disconnect the Power Steering Pressure Switch harness connector. Disconnect the PCM harness connector(s). Measure the resistance between ground and the (K10) PSP Switch Signal circuit at the Switch connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (K10) PSP Switch Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Go To 4	All

P0551-POWER STEERING SWITCH PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Power Steering Pressure Switch harness connector. Disconnect the PCM harness connector(s). **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure resistance of Power Steering PSP Switch Signal circuit from the Power Steering Pressure Sensor harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open in the (K10) PSP Switch Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All
5	Turn the ignition off. Disconnect the Power Steering Pressure Switch harness connector. Ignition on, engine not running. Connect a Jumper Wire to the (K10) PSP Switch Signal circuit at harness connector. Using the DRBIII®, while monitoring the Power Steering Pressure Switch. Touch the Jumper Wire to the Ground circuit at the Power Steering Pressure Switch harness connector several times. Did the Power Steering Pressure Switch status change from Hi to Low? Yes → Replace the Power Steering Pressure Switch. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Go To 6	All
6	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All

Symptom:

P0562-BATTERY VOLTAGE LOW

When Monitored and Set Condition:

P0562-BATTERY VOLTAGE LOW

When Monitored: The engine running. The engine speed greater than 1150 RPM.

Set Condition: The battery sensed voltage is 1 volt below the charging goal for 13.47 seconds. The PCM senses the battery voltage turns off the field driver and senses the battery voltage again. If the voltages are the same, the code is set. One trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
B+ CIRCUIT HIGH RESISTANCE
GENERATOR GROUND HIGH RESISTANCE
GENERATOR OPERATION
(Z1) GENERATOR FIELD GROUND CIRCUIT OPEN
(K20) GEN FIELD CONTROL CIRCUIT SHORTED TO GROUND
(K20) GEN FIELD CONTROL CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the Battery is in good condition. Using the Midtronics Battery Tester, test the Battery before continuing.** **NOTE: Inspect the vehicle for aftermarket accessories that may exceed the Generator System output.** Turn the ignition off. **NOTE: Ensure the generator drive belt is in good operating condition.** **NOTE: Inspect the fuses in the PDC. If a fuse is found to be open use the wiring diagram/schematic as a guide, inspect the wiring and connectors for damage.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC.	All

P0562-BATTERY VOLTAGE LOW — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Ignition on, engine not running. **NOTE: Ensure all wires are clear of the engine's moving parts.** Measure the voltage between the Generator B+ Terminal and the Battery+ Post. Start the engine. Is the voltage above 0.4 of a volt? Yes → Repair the B+ circuit for high resistance between the Generator and Battery. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 3	All
3	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Allow the engine to reach normal operating temperature. **NOTE: Ensure all wires are clear of the engine's moving parts.** Measure the voltage between the Generator case and Battery ground post. Is the voltage above 0.1 of a volt? Yes → Repair Generator Ground for high resistance, Generator Case to Battery ground side. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the Generator Field harness connector. Using a 12-volt test light, jumper it across the Generator Field harness connector. Ignition on, engine not running. With the DRBIII®, actuate the Generator Field Driver circuit. Does the test light illuminate brightly and flash on and off? Yes → Replace the Generator. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the Generator Field harness connector. Using a 12-volt test connected to battery voltage, probe the Generator (Z1) Ground circuit in the Generator Field harness connector. Does the test light illuminate brightly? Yes → Go To 6 No → Repair the open in the (Z1) Generator Field Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC.	All

P0562-BATTERY VOLTAGE LOW — Continued

TEST	ACTION	APPLICABILITY
6	Ignition on, engine not running. Disconnect the Generator Field harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K20) Gen Field Control circuit in the Generator Field harness connector. Is the resistance below 100 ohms? Yes → Repair the (K20) Gen Field Control circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 7	All
7	Turn the ignition off. Disconnect the Generator Field harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K20) Gen Field Control circuit from the Generator Field harness connector to the appropriate terminal of the special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 8 No → Repair the open in the (K20) Gen Field Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC.	All
8	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC.	All

Symptom:

P0563-BATTERY VOLTAGE HIGH

When Monitored and Set Condition:

P0563-BATTERY VOLTAGE HIGH

When Monitored: With the ignition on. Engine RPM greater than 380 RPM.

Set Condition: Battery voltage is 1 volt greater than desired system voltage. One Trip Fault

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
GENERATOR OPERATION
(K20) GEN FIELD CONTROL CIRCUIT SHORTED TO BATTERY VOLTAGE
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the Battery is in good condition. Using the Midtronics Battery Tester, test the Battery before continuing.** **NOTE: Inspect the vehicle for aftermarket accessories that may exceed the Generator System output.** Turn the ignition off. **NOTE: Ensure the generator drive belt is in good operating condition.** **NOTE: Inspect the fuses in the PDC. If a fuse is found to be open use the wiring diagram/schematic as a guide, inspect the wiring and connectors for damage.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC.	All
2	Turn the ignition off. Disconnect the Generator Field harness connector. Using a 12-volt test light, jumper it across the Generator Field harness connector. Ignition on, engine not running. With the DRBIII®, actuate the Generator Field Driver circuit. Does the test light illuminate brightly and flash on and off? Yes → Go To 4 No → Go To 3	All

P0563-BATTERY VOLTAGE HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Generator Field harness connector. Disconnect the PCM harness connector. Measure the voltage on the (K20) Gen Field Control circuit at the Generator Field harness connector. Is the voltage above 1.0 volt? Yes → Repair the short to voltage in the (K20) Gen Field Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 4	All
4	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC.	All

Symptom:

P0579-SPEED CONTROL SWITCH #1 PERFORMANCE

POSSIBLE CAUSES
SPEED CONTROL SWITCH STATUS
SPEED CONTROL SWITCHES
(V37) S/C SWITCH SIGNAL CIRCUIT SHORTED TO SENSOR GROUND
(V37) S/C SWITCH SIGNAL CIRCUIT SHORTED TO GROUND
(V37) S/C SWITCH SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
(V37) S/C SWITCH SIGNAL CIRCUIT OPEN
(K4) SENSOR GROUND OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, monitor each switch function for the Speed Control Switches. Press and release each Speed Control Button. - Resume/Accel - Cancel - Decel (Coast) - On/Off - Set Does each switch function change status when pressing and then depressing each switch? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 2	All
2	Turn the ignition off. Remove the Speed Control Switches from the steering wheel. Measure the resistance across each Switch Control Switch. Monitor the ohmmeter while pressing each function button on each switch. Resume/Accel - 15,400 ohms Cancel - 909 +/- 9 ohms Decel (Coast) - 2940 +/- 30 ohms On/Off - 0 ohms Set - 6650 +/- 66 ohms Does the function on the Speed Control Switches have the correct ohm value? Yes → Go To 3 No → Replace the Speed Control Switch that had the incorrect resistance value. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All

P0579-SPEED CONTROL SWITCH #1 PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Speed Control On/Off Switch harness connector. Disconnect the Speed Control Resume/Accel Switch harness connector. Disconnect the PCM harness connector. Measure the resistance between the (V37) S/C Switch Signal circuit and the (K4) Sensor ground circuit in the Speed Control harness connector. Is the resistance below 5.0 ohms? Yes → Repair the (V37) S/C Switch Signal circuit shorted to the (K4) Sensor Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the Speed Control On/Off Switch harness connector. Disconnect the Speed Control Resume/Accel Switch harness connector. Disconnect the PCM harness connector. Measure the voltage of the (V37) Speed Control Switch Signal circuit at the Speed Control harness connector. Is the is the voltage above 5.0 volts? Yes → Repair the (V37) S/C Switch Signal circuit shorted to the battery voltage. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the Speed Control On/Off Switch harness connector. Disconnect the Speed Control Resume/Accel Switch harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (V37) S/C Switch Signal circuit at the Speed Control harness connector. Is the resistance below 100 ohms? Yes → Repair the (V37) Speed Control Switch Signal circuit shorted to the ground. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 6	All
6	**NOTE: The measurement must be taken from both Speed Control Switch harness connectors.** Turn the ignition off. Disconnect the Speed Control On/Off Switch harness connector. Disconnect the Speed Control Resume/Accel Switch harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (V37) S/C Switch Signal circuit from the Speed Control harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms for both measurements? Yes → Go To 7 No → Repair the (V37) Speed Control Switch Signal circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All

P0579-SPEED CONTROL SWITCH #1 PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
7	**NOTE: The measurement must be taken from both Speed Control Switch harness connector.** Turn the ignition off. Disconnect the Speed Control On/Off Switch harness connector. Disconnect the Speed Control Resume/Accel Switch harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor Ground circuit from the Speed Control harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms for both measurement? Yes → Go To 8 No → Repair the (K4) Sensor Ground circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All
8	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All

Symptom:

P0580-SPEED CONTROL SWITCH #1 LOW

When Monitored and Set Condition:

P0580-SPEED CONTROL SWITCH #1 LOW

When Monitored: With the ignition key on. Battery voltage above 10 volts.

Set Condition: The PCM detects the Speed Control Switch Signal circuit voltage is less than 0.43. One Trip Fault.

POSSIBLE CAUSES
SPEED CONTROL SWITCH VOLTAGE LOW
SPEED CONTROL ON/OFF SWITCH
SPEED CONTROL RESUME/ACCEL SWITCH
(V37) S/C SWITCH SIGNAL CIRCUIT SHORTED TO (K4) SENSOR GROUND
(V37) S/C SWITCH SIGNAL CIRCUIT SHORTED TO GROUND
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Do not press any of the Speed Control Switch buttons.** Ignition on, engine not running. With the DRBIII®, read the Speed Control voltage. Is the Speed Control voltage below 1.0 volt? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All
2	Ignition on, engine not running. With the DRBIII®, monitor the Speed Control Switch voltage. Disconnect the Speed Control On/Off Switch harness connector. Did the voltage change to above 4.7 volts? Yes → Replace the Speed Control On/Off Switch. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 3	All
3	Ignition on, engine not running. With the DRBIII®, monitor the Speed Control Switch voltage. Disconnect the Speed Control Resume/Accel Switch harness connector. Did the volt change to above 4.7 volts? Yes → Replace the Speed Control Resume/Accel Switch. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 4	All

P0580-SPEED CONTROL SWITCH #1 LOW — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Speed Control On/Off Switch harness connector. Disconnect the Speed Control Resume/Accel Switch harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between the (K4) Sensor ground circuit and the (V37) S/C Switch Signal circuit at the Speed Control Switch. Is the resistance below 5.0 ohms? Yes → Repair the (V37) S/C Switch Signal circuit short to (K4) Sensor ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the Speed Control On/Off Switch harness connector. Disconnect the Speed Control Resume/Accel Switch harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the (V37) S/C Switch Signal circuit to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (V37) S/C Switch Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 6	All
6	**NOTE: Before continuing, disconnect the PCM harness connector and check the related wiring terminals for corrosion, damage or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All

Symptom:

P0581-SPEED CONTROL SWITCH #1 HIGH

When Monitored and Set Condition:

P0581-SPEED CONTROL SWITCH #1 HIGH

When Monitored: With the ignition key on. Battery voltage above 10 volts.

Set Condition: The PCM detects an open or short to voltage in the Speed Control Switch Signal circuit. One Trip Fault.

POSSIBLE CAUSES
SPEED CONTROL SWITCH VOLTAGE HIGH
SPEED CONTROL SWITCHES
(V37) S/C SWITCH SIGNAL CIRCUIT SHORTED TO BATTERY VOLTAGE
(K4) SENSOR GROUND OPEN
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Do not press any of the Speed Control Switch buttons.** Ignition on, engine not running. With the DRBIII®, read the Speed Control voltage. Is the Speed Control voltage above 4.8 volt? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All
2	Turn the ignition off. Remove the Speed Control Switches from the steering wheel. Measure the resistance across each Speed Control Switch. Monitor the ohmmeter while pressing each function button on each switch. Resume/Accel - 15,400 ohms Cancel - 909 +/- 9 ohms Decel (Coast) - 2940 +/- 30 ohms On/Off - 0 ohms Set - 6650 +/- 66 ohms Does the function on the Speed Control Switches have the correct ohm value? Yes → Go To 3 No → Replace the Speed Control Switch that had the incorrect resistance value. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All

P0581-SPEED CONTROL SWITCH #1 HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Speed Control On/Off Switch harness connector. Disconnect the Speed Control Resume/Accel Switch harness connector. Disconnect the PCM harness connector. Measure the voltage of the (V37) S/C Switch Signal circuit at the Speed Control harness connector. Is the is the voltage above 5.0 volts? Yes → Repair the (V37) S/C Switch Signal circuit shorted to the battery voltage. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 4	All
4	**NOTE: The measurement must be taken from both Speed Control Switch harness connector.** Turn the ignition off. Disconnect the Speed Control On/Off Switch harness connector. Disconnect the Speed Control Resume/Accel Switch harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K4) Sensor Ground circuit from the Speed Control harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms for both measurement? Yes → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage or terminal push out. Repair as necessary. Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Repair the (K4) Sensor Ground circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All

Symptom:

P0582-SPEED CONTROL VACUUM SOLENOID CIRCUIT

When Monitored and Set Condition:

P0582-SPEED CONTROL VACUUM SOLENOID CIRCUIT

When Monitored: Ignition on. Speed Control active.

Set Condition: The PCM detects an open or short to voltage in the Speed Control Vacuum Control circuit. One Trip Fault.

POSSIBLE CAUSES
SPEED CONTROL SOLENOID OPERATION
SPEED CONTROL VACUUM SOLENOID
(V36) S/C VACUUM SOL CONTROL CIRCUIT SHORTED TO GROUND
(V36) S/C VACUUM SOL CONTROL CIRCUIT OPEN
PCM (VACUUM SOLENOID)

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. With the DRBIII®, actuate the Speed Control Vacuum Solenoid and note operation. Does the Speed Control Vacuum Solenoid actuate properly? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 2	All
2	Turn the ignition off. Disconnect the Speed Control Servo harness connector. Ignition on, engine not running. With the DRBIII®, actuate the Speed Control Vacuum Solenoid. Using a 12-volt test light connected to ground, probe the S/C Vacuum Control circuit. Does the test light illuminate brightly and flash? Yes → Replace the Speed Control Servo. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 3	All

P0582-SPEED CONTROL VACUUM SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the S/C Servo harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (V36) S/C Vacuum Sol Control circuit from the Speed Control Servo harness connector to the appropriate terminal of special tool # 8815. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the open/high resistance in the (V36) S/C Vacuum Sol Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All
4	Turn the ignition off. Disconnect the S/C Servo harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (V36) S/C Vacuum Solenoid Control circuit at the Speed Control Servo harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (V36) S/C Vacuum Sol Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 5	All
5	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If the there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All

Symptom:

P0586-SPEED CONTROL VENT SOLENOID CIRCUIT

When Monitored and Set Condition:

P0586-SPEED CONTROL VENT SOLENOID CIRCUIT

When Monitored: Ignition on. Speed Control active.

Set Condition: The PCM detects an open or short to voltage in the Speed Control Vent Control circuit. One Trip Fault.

POSSIBLE CAUSES
SPEED CONTROL SOLENOID OPERATION
SPEED CONTROL VENT SOLENOID
(V35) S/C VENT SOL CONTROL CIRCUIT OPEN
(V35) S/C VENT SOL CONTROL CIRCUIT SHORTED TO GROUND
PCM (VENT SOLENOID)

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. With the DRBIII®, actuate the Speed Control Vent Solenoid and note operation. Does the Speed Control Vent Solenoid acutate properly? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 2	All
2	Turn the ignition off. Disconnect the Speed Control Servo harness connector. Ignition on, engine not running. With the DRBIII®, actuate the Speed Control Vent Solenoid. Using a 12-volt test light connected to ground, probe the (V35) Speed Control Vent Solenoid Control circuit in the Speed Control Servo harness connector. Does the test light illuminate brightly and flash? Yes → Replace the Speed Control Servo. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 3	All

P0586-SPEED CONTROL VENT SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the S/C Servo harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (V35) S/C Vent Sol Control circuit from the Speed Control Servo harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the open/high resistance in the (V35) S/C Vent Sol Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All
4	Turn the ignition off. Disconnect the S/C Servo harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (V35) S/C Vent Sol Control circuit at the Speed Control Servo harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (V35) Speed Control Vent Solenoid Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 5	All
5	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If the there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All

Symptom:

P0594-SPEED CONTROL SERVO POWER CIRCUIT

When Monitored and Set Condition:

P0594-SPEED CONTROL SERVO POWER CIRCUIT

When Monitored: With the ignition key on. The speed control switched on.

Set Condition: The PCM detects a open or short in the Speed Control Power Supply circuit. One Trip Fault.

POSSIBLE CAUSES
(V40) S/C BRAKE SWITCH OUTPUT CIRCUIT
(V32) S/C POWER SUPPLY CIRCUIT
(V32) S/C POWER SUPPLY CIRCUIT SHORTED TO GROUND
(V40) S/C BRAKE SWITCH OUTPUT CIRCUIT SHORTEDTO GROUND
(V40) S/C BRAKE SWITCH OUTPUT CIRCUIT OPEN
BRAKE LAMP SWITCH
PCM (S/C SOURCE CIRCUIT)

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Speed Control Servo harness connector. Ignition on, engine not running. **NOTE: It is necessary to PRESS and HOLD the Speed Control Switch in the ON position while checking for voltage.** Using a 12-volt test light connected to ground, probe the (V40) S/C Brake Switch Output terminal in the Servo Harness connector. Does the test light illuminate brightly? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 2	All

P0594-SPEED CONTROL SERVO POWER CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the Brake Lamp Switch harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (V32) S/C Power Supply circuit from the Brake Lamp Switch harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Repair the open/high resistance in the (V32) S/C Power Supply circuit between the PCM and Brake Switch. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
3	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the Brake Switch harness connector. Measure the resistance between ground and the (V32) S/C Power Supply circuit in the Brake Switch harness connector. Is the resistance below 100 ohms? Yes → Go To 4 No → Repair the short to ground in the (V32) S/C Power Supply circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
4	Turn the ignition off. Disconnect the S/C Servo harness connector. Disconnect the Brake Switch harness connector. Measure the resistance of the (V40) S/C Brake Switch Output circuit from the Brake Switch harness connector to the S/C Servo harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open/high resistance in the (V40) S/C Brake Switch Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Disconnect the Speed Control Servo harness connector. Disconnect the Brake Switch harness connector. Measure the resistance between ground and the (V40) S/C Brake Switch Output circuit at the Speed Control Servo harness connector. Is the resistance below 100 ohms? Yes → Repair the short to ground in the (V40) S/C Brake Switch Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 6	All

P0594-SPEED CONTROL SERVO POWER CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
6	Disconnect the Brake Lamp Switch harness connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, probe the (V32) Speed Control Power Supply circuit in the Brake Lamp Switch harness connector. **NOTE: It is necessary to HOLD the Cruise Control Switch in the ON position to get an accurate reading.** Does the test light illuminate brightly? Yes → Replace the Brake Lamp Switch. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 7	All
7	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom List:

P0600-SERIAL COMMUNICATION LINK
P0601-INTERNAL MEMORY CHECKSUM INVALID

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0600-SERIAL COMMUNICATION LINK.

When Monitored and Set Condition:

P0600-SERIAL COMMUNICATION LINK

When Monitored: With the ignition on.

Set Condition: Internal Bus communication failure between processors.

P0601-INTERNAL MEMORY CHECKSUM INVALID

When Monitored: With the ignition on.

Set Condition: Internal checksum for software failed, does not match calculated value.

POSSIBLE CAUSES
PCM INTERNAL OR SPI

TEST	ACTION	APPLICABILITY
1	The Powertrain Control Module is reporting internal errors, view repair to continue. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom:

P0622-GENERATOR FIELD CONTROL CIRCUIT

When Monitored and Set Condition:

P0622-GENERATOR FIELD CONTROL CIRCUIT

When Monitored: With the ignition on. Engine running.

Set Condition: When the PCM tries to regulate the generator field with no result during monitoring. One Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
GENERATOR OPERATION
(Z1) GEN FIELD GROUND CIRCUIT OPEN
(K20) GEN FIELD CONTROL CIRCUIT SHORTED TO BATTERY VOLTAGE
(K20) GEN FIELD CONTROL CIRCUIT SHORTED TO GROUND
(K20) GEN FIELD CONTROL CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 2	All
2	Turn the ignition off. Disconnect the Generator Field harness connector. Using a 12-volt test light, jumper it across the Generator Field harness connector. Ignition on, engine not running. With the DRBIII®, actuate the Generator Field Driver circuit. Does the test light illuminate brightly and flash on and off? Yes → Replace the Generator. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 3	All

P0622-GENERATOR FIELD CONTROL CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Generator Field harness connector. Using a 12-volt test connected to battery voltage, probe the (Z1) Gen Ground circuit in the Generator Field harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the open in the (Z1) Gen Field Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC.	All
4	Turn the ignition off. Disconnect the Generator Field harness connector. Disconnect the PCM harness connector. Measure the voltage on the (K20) Gen Field Control circuit in the Generator Field harness connector. Is the voltage above 1.0 volts? Yes → Repair the short to voltage in the (K20) Gen Field Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 5	All
5	Turn the ignition on. Disconnect the Generator Field harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K20) Gen Field Control circuit in the Generator Field harness connector. Is the resistance below 100 ohms? Yes → Repair the (K20) Gen Field Control circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 6	All
6	Turn the ignition off. Disconnect the Generator Field harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K20) Gen Field Control circuit from the Generator Field harness connector to the appropriate terminal of the special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the open in the (K20) Gen Field Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC.	All
7	**NOTE: Before continuing, check the PCM connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC.	All

Symptom:

P0627-FUEL PUMP RELAY CIRCUIT

When Monitored and Set Condition:

P0627-FUEL PUMP RELAY CIRCUIT

When Monitored: With the ignition on. Battery voltage greater than 10.4 volts.

Set Condition: An open or shorted condition is detected in the fuel pump relay control circuit. One Trip Fault.

POSSIBLE CAUSES
FUEL PUMP RELAY INTERMITTENT OPERATION
INTERMITTENT CONDITION
FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
INTEGRATED POWER MODULE
FUEL PUMP RELAY
IPM FUSE & RELAY CENTER
FUEL PUMP RELAY CONTROL CIRCUIT OPEN
FUEL PUMP RELAY CONTROL CIRCUIT SHORT TO GROUND
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, actuate the Fuel Pump Relay. Is the Fuel Pump Relay operating? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition on. With the DRBIII®, actuate the Fuel Pump Relay. Wiggle the wiring harness from the Fuel Pump Relay to the PCM while the relay is actuating. Did the Fuel Pump Relay stop when wiggling the wiring harness? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0627-FUEL PUMP RELAY CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Remove the Fuel Pump Relay from the IPM. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch circuit in the IPM. Does the test light illuminate? Yes → Go To 4 No → Go To 9	All
4	Turn the ignition off. Remove the Fuel Pump Relay from the IPM. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the Fuel Pump Relay Control circuit in the IPM. With the DRBIII®, actuate the Fuel Pump Relay. Does the test light flash on and off? Yes → Replace the Fuel Pump Relay. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the IPM C3 harness connector. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the Fuel Pump Relay Control circuit in the IPM harness connector.. With the DRBIII®, actuate the Fuel Pump Relay. Does the test light flash on and off? Yes → Replace the IPM Fused & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	Turn the ignition off. Disconnect the IPM C3 harness connector. Disconnect the PCM harness connector. Measure the resistance of the Fuel Pump Relay Control circuit between the IPM C3 harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the Fuel Pump Relay Control circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
7	Turn the ignition off. Disconnect the IPM C3 harness connector. Disconnect the PCM harness connector. Measure the resistance of the Fuel Pump Relay Control circuit in the IPM C3 harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the Fuel Pump Relay Control circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 8	All

P0627-FUEL PUMP RELAY CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
8	If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
9	Turn the ignition off. Disconnect the IPM C9 harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch circuit in the IPM harness connector. Does the test light illuminate? Yes → Test Complete. No → Repair the Fused Ignition Switch Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0630-VIN NOT PROGRAMMED IN PCM

When Monitored and Set Condition:

P0630-VIN NOT PROGRAMMED IN PCM

When Monitored: Ignition on.

Set Condition: The VIN has not been programmed into the PCM.

POSSIBLE CAUSES
PROGRAMMING VIN INTO PCM
VERIFY PCM PROGRAMMING
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, erase DTCs. Using the DRBIII®, program VIN into the PCM. Start the engine. **NOTE: If the engine will not start, crank the engine over for 15 seconds. Crank at least 2 times with the ignition switch returning to the off position each time.** Allow the engine to reach normal operating temperature. With the DRBIII®, read DTCs. Does the DTC reset? Yes → Go To 2 No → The VIN has been successfully programmed into the PCM. Test is complete. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
2	**NOTE: The ignition switch must be left in the off position for a minimum of 10 seconds.** Cycle the ignition switch to the off position and then back to run. Attempt to program the PCM with the applicable information. Start the vehicle and allow it to reach normal operating temperatures. With the DRBIII®, read DTCs. Does the DTC reset? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → The VIN has been successfully programmed into the PCM. Test is complete. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom:

P0632-ODOMETER NOT PROGRAMMED IN PCM

When Monitored and Set Condition:

P0632-ODOMETER NOT PROGRAMMED IN PCM

When Monitored: Ignition on.

Set Condition: The mileage has not been programmed into the PCM.

POSSIBLE CAUSES
PROGRAMMING MILEAGE INTO PCM
VERIFY PCM PROGRAMMING
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, erase DTCs. Using the DRBIII®, program the mileage into the PCM. Start the engine. Allow the engine to reach normal operating temperature. With the DRBIII®, read DTCs. Does the DTC reset? Yes → Go To 2 No → The mileage has been succcessfully programmed into the PCM. Test is complete. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
2	**NOTE: The ignition switch must be left in the off position for a minimum of 10 seconds.** Cycle the ignition switch to the off position and then back to run. Attempt to program the PCM with the applicable information. Start the vehicle and allow it to reach normal operating temperatures. With the DRBIII®, read DTCs. Does the DTC reset? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → The mileage has been successfully programmed into the PCM. Test is complete. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom:

P0633-SKIM KEY NOT PROGRAMMED IN PCM

When Monitored and Set Condition:

P0633-SKIM KEY NOT PROGRAMMED IN PCM

When Monitored: Ignition on.

Set Condition: The SKIM Key information has not been programmed into the PCM.

POSSIBLE CAUSES
PROGRAMMING SKIM KEY INTO PCM
VERIFY PCM PROGRAMMING
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, erase DTCs. Using the DRBIII®, program the SKIM Key information into the PCM. Start the engine. **NOTE: If the engine will not start, crank the engine over for 15 seconds. Crank at least 2 times with the ignition switch returning to the off position each time.** Allow the engine to reach normal operating temperature. With the DRBIII®, read DTCs. Does the DTC reset? Yes → Go To 2 No → The SKIM KEY information has been succcessfully programmed into the PCM. Test is complete. Perform SKIS VERIFICATION.	All
2	**NOTE: The ignition switch must be left in the off position for a minimum of 10 seconds.** Cycle the ignition switch to the off position and then back to run. Attempt to program the PCM with the applicable information. Start the vehicle and allow it to reach normal operating temperatures. With the DRBIII®, read DTCs. Does the DTC reset? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform SKIS VERIFICATION. No → The SKIM Key Information has been successfully programmed into the PCM. Test is complete. Perform SKIS VERIFICATION.	All

Symptom:

P0645-A/C CLUTCH RELAY CIRCUIT

When Monitored and Set Condition:

P0645-A/C CLUTCH RELAY CIRCUIT

When Monitored: With the ignition on. Battery voltage greater than 10 volts. A/C Switch on.

Set Condition: An open or shorted condition is detected in the A/C clutch relay control circuit. One Trip Fault.

POSSIBLE CAUSES
A/C CLUTCH RELAY INTERMITTENT OPERATION
INTERMITTENT CONDITION
FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
INTEGRATED POWER MODULE
A/C CLUTCH RELAY
IPM FUSE & RELAY CENTER
A/C CLUTCH RELAY CONTROL CKT OPEN
A/C CLUTCH RELAY CONTROL CIRCUIT SHORT TO GROUND
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, actuate the A/C Clutch Relay. Is the A/C Clutch Relay operating? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition on. With the DRBIII®, actuate the A/C Clutch Relay. Wiggle the wiring harness from the A/C Clutch Relay to the PCM while the relay is actuating. Did the A/C Clutch Relay stop when wiggling the wiring harness? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0645-A/C CLUTCH RELAY CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Remove the A/C Clutch Relay from the IPM. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch circuit in the IPM. Does the test light illuminate? Yes → Go To 4 No → Go To 9	All
4	Turn the ignition off. Remove the A/C Clutch Relay from the IPM. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the A/C Clutch Relay circuit in the IPM. With the DRBIII®, actuate the A/C Clutch Relay. Does the test light flash on and off? Yes → Replace the A/C Clutch Relay. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the IPM C3 harness connector. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the A/C Clutch Relay Control circuit in the IPM harness connector. With the DRBIII®, actuate the A/C Clutch Relay. Does the test light flash on and off? Yes → Replace the IPM Fused & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	Turn the ignition off. Disconnect the IPM C3 harness connector. Disconnect the PCM harness connector. Measure the resistance of the A/C Clutch Relay Control circuit between the IPM C3 harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the A/C Clutch Relay Control circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
7	Turn the ignition off. Disconnect the IPM C3 harness connector. Disconnect the PCM harness connector. Measure the resistance of the A/C Clutch Relay Control circuit in the IPM C3 harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the A/C Clutch Relay Control circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 8	All

P0645-A/C CLUTCH RELAY CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
8	If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
9	Turn the ignition off. Disconnect the IPM C3 harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch circuit in the IPM harness connector. Does the test light illuminate? Yes → Replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Repair the Fused Ignition Switch Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0685-ASD RELAY CONTROL CIRCUIT

When Monitored and Set Condition:

P0685-ASD RELAY CONTROL CIRCUIT

When Monitored: With ignition on. Battery voltage above 10 volts.

Set Condition: An open or shorted condition is detected in the ASD relay control circuit. One trip Fault.

POSSIBLE CAUSES
ASD RELAY INTERMITTENT OPERATION
INTERMITTENT CONDITION
FUSED B+ OUTPUT CIRCUIT
ASD RELAY
IPM FUSE & RELAY CENTER
ASD RELAY CONTROL CIRCUIT OPEN
ASD RELAY CONTROL CIRCUIT SHORT TO GROUND
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, actuate the ASD Relay. Is the ASD Relay operating? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition on. With the DRBIII®, actuate the ASD Relay. Wiggle the wiring harness from the ASD Relay to the PCM while the relay is actuating. Did the ASD Relay stop when wiggling the wiring harness? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0685-ASD RELAY CONTROL CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	**NOTE: Inspect the ASD Relay fuse located in the IPM. If the ASD Relay fuse is open, repair the cause of the open first before continuing. Inspect the ASD Relay Output circuit for a short to ground for the cause of the open fuse.** Turn the ignition off. Remove the ASD Relay from the IPM. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused B+ circuit in the IPM. Does the test light illuminate? Yes → Go To 4 No → Replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	Turn the ignition off. Remove the ASD Relay from the IPM. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the ASD Relay Control circuit in the IPM. With the DRBIII®, actuate the ASD Relay. Does the test light flash on and off? Yes → Replace the ASD Relay. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 5	All
5	Turn the ignition off. Disconnect the IPM C3 harness connector. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the ASD Relay Control circuit in the IPM harness connector. With the DRBIII®, actuate the ASD Relay. Does the test light flash on and off? Yes → Replace the IPM Fused & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	All
6	Turn the ignition off. Disconnect the IPM C3 harness connector. Disconnect the PCM harness connector. Measure the resistance of the ASD Relay Control circuit between the IPM C3 harness connector and the PCM harness connector. Is the resistance below 5.0 ohms. Yes → Go To 7 No → Repair the ASD Relay Control circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0685-ASD RELAY CONTROL CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Disconnect the IPM C3 harness connector. Disconnect the PCM harness connector. Measure the resistance of the ASD Relay Control circuit in the IPM C3 harness connector to ground. Is the resistance below 5.0 ohms. Yes → Repair the ASD Relay Control circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 8	All
8	If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0688-ASD RELAY SENSE CIRCUIT LOW

When Monitored and Set Condition:

P0688-ASD RELAY SENSE CIRCUIT LOW

When Monitored: With ignition key on. Battery voltage greater than 10 volts.

Set Condition: No voltage sensed at the PCM when the ASD relay is energized. One Trip Fault.

POSSIBLE CAUSES
INTERMITTENT CONDITION
ASD RELAY
FUSED B+ CIRCUIT
ASD RELAY OUTPUT CIRCUIT OPEN (NO START)
IPM FUSE & RELAY CENTER
IPM FUSE & RELAY CENTER
ASD RELAY OUTPUT CIRCUIT OPEN
PCM START
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Inspect the ASD Relay fuse located in the IPM. If the ASD Relay fuse is open, repair the cause of the open first before continuing. Inspect the ASD Relay Output circuit for a short to ground for the cause of the open fuse.** **NOTE: Diagnose P685 - Auto Shutdown Relay Control Circuit first if set along with this DTC.** With the DRBIII®, erase the DTC. Attempt to start the engine. If the engine will not start, crank the engine for at least 15 seconds. It may be necessary to repeat several times. Does the DTC reset. Yes → Go To 2 No → Repair as necessary Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
2	Attempt to start the engine. Does the engine start. Yes → Go To 3 No → Go To 5	All

P0688-ASD RELAY SENSE CIRCUIT LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the IPM C4 harness connector Measure the resistance of the ASD Output circuit between the IPM harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the ASD Relay Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
4	If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
5	Turn the ignition off. Install a substitute relay in place of the ASD Relay. With the DRBIII®, erase DTCs. Attempt to start the engine. With the DRBIII®, read DTCs. Does the DTC reset? Yes → Go To 6 No → Replace the ASD Relay. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
6	Turn the ignition off. Remove the ASD Relay from the IPM. Using a 12-volt test light connected to ground, probe the Fused B+ circuit in the IPM. Does the test light illuminate? Yes → Go To 7 No → Replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All
7	Turn the ignition off. Remove the ASD Relay from the IPM. Disconnect the PCM harness connector. Disconnect the IPM C4 harness connector. Measure the resistance of the ASD Relay Output circuit between the IPM harness connector and the PCM harness connector. Is the resistance below 5.0 ohms. Yes → Go To 8 No → Repair the ASD Relay Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

P0688-ASD RELAY SENSE CIRCUIT LOW — Continued

TEST	ACTION	APPLICABILITY
8	**NOTE: Ensure the IPM C4 harness connector is connected to the IPM.** Turn the ignition off. Disconnect the PCM harness connector. Measure the resistance of the ASD Relay Output circuit between the IPM and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 5.	All

Symptom:

P0700-TRANSMISSION CONTROL SYSTEM/READ TRANSMISSION DTCS ON THE DRBIII®

TEST	ACTION	APPLICABILITY
1	This is an informational DTC letting you know that a DTC(s) is stored in the Transmission Control Module. Erase this DTC from the PCM after all Transmission DTC(s) have been repaired. Using the DRBIII®, read the Transmission Controller DTC and refer to the Transmission Category and perform the appropriate symptom. PCM Diagnostic Information complete. Continue Test Complete.	All

Symptom:

P0703-BRAKE SWITCH #2 CIRCUIT

When Monitored and Set Condition:

P0703-BRAKE SWITCH #2 CIRCUIT

When Monitored: TEST #1: Vehicle speed greater than 20 MPH to enable. TEST #2: Speed must be 0 and brake switch indicates on.

Set Condition: TEST #1: If vehicle speed goes to 0 MPH without brake input. Condition must be repeated 15 times to set fault. Two trip fault. TEST #2: If vehicle speed goes above 20 MHP for more than 6.0 seconds without a change in brake state. Condition must be repeat 15 times to set fault. Two Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
(F32) FUSED B+ CIRCUIT
(K29) BRAKE SWITCH SIGNAL CIRCUIT SHORTED TO VOLTAGE
(K29) BRAKE SWITCH SIGNAL SHORTED TO GROUND
(K29) BRAKE SWITCH SIGNAL CIRCUIT OPEN
(Z1) GROUND CIRCUIT OPEN
BRAKE LAMP SWITCH OPERATION
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the Brake Switch is adjusted properly before continuing.** Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All
2	Turn the ignition off. Disconnect the Brake Lamp Switch harness connector. Using a 12-volt test light connected to ground, check the (F32) Fused B+ circuit in the Brake Lamp Switch harness connector. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the (F32) Fused B+ circuit. Inspect the related fuse and repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All

P0703-BRAKE SWITCH #2 CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Brake Lamp Switch harness connector. Disconnect the PCM harness connector. Turn the ignition on. Measure the voltage of the (K29) Brake Switch Signal circuit in the Brake Lamp Switch harness connector. Is the voltage above 1.0 volts? Yes → Repair the short to voltage in the (K29) Brake Switch Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the Brake Lamp Switch harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K29) Brake Switch Signal circuit at the Brake Lamp Switch harness connector. Is the resistance below 5.0 ohms? Yes → Repair the short to ground in the (K29) Brake Switch Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the Brake Lamp Switch harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K29) Brake Switch Signal circuit from the Brake Lamp Switch harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open in the (K29) Brake Switch Signal circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All
6	Turn the ignition off. Disconnect the Brake Lamp Switch harness connector. Measure the resistance between ground and the (Z1) Ground circuit at the Brake Lamp Switch harness connector. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the open in the (Z1) Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All

P0703-BRAKE SWITCH #2 CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Disconnect the Brake Lamp Switch harness connector. Measure the resistance between the Ground circuit terminal and the Brake Switch Sense terminal in the Brake Lamp Switch. Apply and release the brake pedal while monitoring the ohmmeter. Does the resistance change from below 5.0 ohms to open circuit? Yes → Go To 8 No → Replace the Brake Lamp Switch. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All
8	**NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.** If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 4 - NGC.	All

Symptom:

P0833-CLUTCH RELEASED SWITCH CIRCUIT

When Monitored and Set Condition:

P0833-CLUTCH RELEASED SWITCH CIRCUIT

When Monitored: During crank or when engine speed is between 1500-2880 RPM and vehicle speed is greater than 25 MPH.

Set Condition: A short to ground is detected during startup. An open circuit is detected when engine Speed is between 1500-2880 RPM, vehicle speed is >25 MPH, and delta throttle is >1.1 volts for 4 seconds. This cycle must repeat 5 times per trip for 2 trips.

POSSIBLE CAUSES
CLUTCH PEDAL POSITION SWITCH OPERATION
CLUTCH PEDAL POSITION SWITCH
CLUTCH UPSTOP SIGNAL CIRCUIT OPEN
CLUTCH UPSTOP SIGNAL CIRCUIT SHORTED TO GROUND
GROUND CIRCUIT
PCM

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, monitor the Clutch Upstop Switch. Depress the Clutch Pedal completely to the floor and release all the way up several times. Did the Clutch Upstop Switch state change open to closed? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 2	All
2	Disconnect the Clutch Pedal Position Switch harness connector. Connect a jumper wire between the Ground circuit and the Clutch Upstop Switch Signal circuit in the Clutch Pedal Position Switch harness connector. With the DRBIII®, monitor the Clutch Upstop Switch status. Did the Clutch Upstop Switch status change from Open to Closed? Yes → Replace the Clutch Pedal Position Switch. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 3	All

P0833-CLUTCH RELEASED SWITCH CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Clutch Pedal Position Switch harness connector. Disconnect the PCM harness connector. Measure the resistance of the Clutch Upstop Signal circuit in the Clutch Pedal Position Switch harness connector to ground. Is the resistance below 100 ohms? Yes → Repair the Clutch Upstop circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the Clutch Pedal Position Switch harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Clutch Upstop Signal circuit between the Clutch Pedal Position Switch harness connector and the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Clutch Upstop Signal circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
5	Turn the ignition off. Disconnect Clutch Pedal Position Switch harness connector. Using a 12-volt test light connected to 12-volts, probe the ground circuit in the Clutch Pedal Position Switch harness connector. Does the test light illuminate brightly? Yes → Go To 6 No → Repair the ground circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
6	If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:
P0850-PARK/NEUTRAL SWITCH PERFORMANCE

When Monitored and Set Condition:

P0850-PARK/NEUTRAL SWITCH PERFORMANCE

When Monitored: Continuously with the transmission in Park, Neutral, or Drive and NOT in Limp-in mode.

Set Condition: The PCM detects an incorrect Park/Neutral switch state for a given mode of vehicle operation. Two Trip Fault.

POSSIBLE CAUSES
GOOD TRIP EQUAL TO ZERO
TRANSMISSION DTC(S)
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. **NOTE: Before continuing, ensure that communication can be established with the TCM. If the DRBIII® can not communicate with the TCM refer to the Communication Category and preform the appropriate symptom.** With the DRBIII®, read PCM DTCs and record the related Freeze Frame data. Is the Good Trip displayed and equal to zero? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All
2	Turn the ignition on. With the DRBIII®, check the Transmission DTCs. Are there any Transmission DTCs present? Yes → Refer to the appropriate Transmission DTC in the Transmission category. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC. No → NOTE: Before continuing, check the PCM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary. Replace and program the Powertrain Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5 - NGC.	All

Symptom:

P1602-PCM NOT PROGRAMMED

When Monitored and Set Condition:

P1602-PCM NOT PROGRAMMED

When Monitored: Ignition on.

Set Condition: The PCM has not been programmed.

POSSIBLE CAUSES
PCM NOT PROGRAMMED
VERIFY PCM PROGRAMMING
PCM

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, erase DTCs. With the DRBIII® program the PCM. Start the engine. Allow the engine to reach normal operating temperature. With the DRBIII®, read DTCs. Does the DTC reset? Yes → Go To 2 No → The PCM has been successfully programmed. Test is complete. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
2	**NOTE: The ignition switch must be left in the off position for a minimum of 10 seconds.** Cycle the ignition switch to the off position and then back to run. Attempt to program the PCM. Start the vehicle and allow it to reach normal operating temperatures. With the DRBIII®, read DTCs. Does the DTC reset? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → The PCM has been successfully programmed into the PCM. Test is complete. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom List:

P1603-PCM INTERNAL DUAL-PORT RAM COMMUNICATION
P1604-PCM INTERNAL DUAL-PORT RAM READ/WRITE INTEGRITY FAILURE
P1607-PCM INTERNAL SHUTDOWN TIMER RATIONALITY

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P1603-PCM INTERNAL DUAL-PORT RAM COMMUNICATION.

When Monitored and Set Condition:

P1607-PCM INTERNAL SHUTDOWN TIMER RATIONALITY

When Monitored: During cold start.

Set Condition: Compares shut down time to coolant temperature.

POSSIBLE CAUSES
FUSED IGNITION SWITCH OUTPUT (OFF-RUN-START)
PCM INTERNAL FAULURE

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Turn the ignition to run. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch Output (Off-Run-Start) cavity C1-12 circuit at the appropriate terminal of the special tool #8815. **NOTE: If the test light illuminates, wiggle the wiring harness to ensure that the problem is not an intermittent wiring problem.** Does the test light illuminate brightly? Yes → Replace the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Check all related fuses. Repair the Fused Ignition Switch Output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom:
P1681-NO FUEL LEVEL BUS MESSAGE

When Monitored and Set Condition:

P1681-NO FUEL LEVEL BUS MESSAGE

When Monitored: Ignition on.

Set Condition: No fuel level BUS messages received by the PCM for 20 seconds.

POSSIBLE CAUSES
DTC RESET
COMMUNICATE WITH BCM
FUEL LEVEL BUS MESSAGE
PCI BUS CIRCUIT OPEN FROM PCM TO BCM
BCM

TEST	ACTION	APPLICABILITY
1	**NOTE: If a fuel level circuit or performance DTC is set along with P1681, diagnose the circuit/performance DTC before continuing.** Turn the ignition on. With the DRBIII®, erase DTCs. Start the engine on and off several times. Leave the engine running for at least 20 second each time. With the DRBIII®, read DTCs. Does the DTC reset? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
2	Ignition on, engine not running. With the DRBIII®, attempt to communicate with the BCM. Can communication be established with the BCM? Yes → Go To 3 No → Refer to the Communication Category and perform the appropriate symptom related to no communication with BCM. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
3	Turn the ignition on. Using the DRBIII®, read the Fuel Level parameter in the PCM. Does the DRBIII® display a fuel level value? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Go To 4	All

P1681-NO FUEL LEVEL BUS MESSAGE — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the PCM harness connectors. Disconnect the BCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the PCI Bus circuit from the BCM harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Replace BCM in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Repair the PCI Bus circuit between the PCM and the BCM for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom:

P1686-NO SKIM BUS MESSAGES

When Monitored and Set Condition:

P1686-NO SKIM BUS MESSAGES

When Monitored: Ignition on or Engine Running.

Set Condition: No BUS messages are received from the SKIM for 20 seconds.

POSSIBLE CAUSES
INTERMITTENT CONDITION
PCI BUS CIRCUIT OPEN FROM PCM TO SKIM
LOSS OF SKIM COMMUNICATION
SKIM/PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read the DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition on. With the DRB III, attempt to communicate with the SKIM. **NOTE: This test will indicate if the Bus is operational from the DLC to the SKIM.** Was the DRB III able to communicate with the SKIM? Yes → Go To 3 No → Refer to symptom BUS +/- SIGNAL OPEN FROM SKIM in the COMMUNICATION category. Perform SKIS VERIFICATION.	All
3	Turn the ignition off. Disconnect the PCM harness connectors. Disconnect the SKIM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the PCI Bus circuit from the SKIM harness connector to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the PCI Bus circuit between the PCM and the SKIM for an open. Perform SKIS VERIFICATION.	All

P1686-NO SKIM BUS MESSAGES — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Replace the Sentry Key Immobilizer Module in accordance with the Service Information. Turn the ignition on. Display and erase all PCM and SKIM DTCs. Perform 5 ignition key cycles leaving the ignition key on for 90 seconds per cycle. With the DRB, display PCM DTCs. Does the DRB display the same DTC? Yes → Replace and program the PCM in accordance with the Service Information. Perform SKIS VERIFICATION. No → Test Complete.	All
5	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running and at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wire harness. Look for parameter values to change and/or a DTC to set. Review the DTC When Monitored and Set Conditions. If possible, try to duplicate the conditions under which the DTC was set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wire harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary. Perform SKIS VERIFICATION. No → Test Complete.	All

Symptom:

P1687-NO CLUSTER BUS MESSAGE

When Monitored and Set Condition:

P1687-NO CLUSTER BUS MESSAGE

When Monitored: Engine Running.

Set Condition: No BUS messages received from the MIC (Instrument Cluster) for 20 seconds.

POSSIBLE CAUSES
DTC RESET
COMMUNICATE WITH CLUSTER
INSTRUMENT CLUSTER OPERATION
PCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase DTCs. Start the engine on and off several times. Leave the engine running for at least 20 second each time. With the DRBIII®, read DTCs. Does the DTC reset? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
2	Ignition on, engine not running. With the DRBIII®, attempt to communicate with the Instrument cluster. Can communication be established with the Instrument Cluster? Yes → Go To 3 No → Refer to the Communication Category and perform the appropriate symptom related to no communication with cluster. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
3	Start the engine Allow the engine to idle. Is the correct engine speed display (Tachometer) in the instrument cluster? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Refer to the Instrument Category and perform the appropriate symptom. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom List:

P1696-EEPROM MEMORY WRITE DENIED/INVALID
P1697-EMR (SRI) MILEAGE NOT STORED

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P1696-EEPROM MEMORY WRITE DENIED/INVALID.

When Monitored and Set Condition:

P1696-EEPROM MEMORY WRITE DENIED/INVALID

When Monitored: Ignition key on continuous.

Set Condition: An attempt to program/write to the internal EEPROM failed. Also checks at powerdown.

P1697-EMR (SRI) MILEAGE NOT STORED

When Monitored: Ignition key on continuous.

Set Condition: An attempt to program/write to the internal EEPROM failed. Also checks at powerdown.

POSSIBLE CAUSES
DRB DISPLAYS WRITE FAILURE
DRB DISPLAYS WRITE REFUSED 2ND TIME
DRB DISPLAYS SRI MILEAGE INVALID
COMPARE SRI MILEAGE WITH ODOMETER

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, perform the SRI Memory Test. Does the DRBIII® display Write Failure? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Go To 2	All
2	With the DRBIII®, perform the SRI Memory Test. Does the DRBIII® display Write Refused? Yes → Go To 3 No → Go To 4	All

P1696-EEPROM MEMORY WRITE DENIED/INVALID — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII®, perform the SRI Memory Test a second time. **NOTE: Retest the SRI Memory two more times.** Does the DRBIII® display Write Refused again? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Test Complete.	All
4	With the DRBIII®, perform the SRI Memory Test. Does the DRBIII® display SRI Mileage Invalid? Yes → Update the mileage and retest the SRI Memory. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Go To 5	All
5	Compare the SRI Mileage stored with the Instrument Panel Odometer. Is the mileage within the specified range displayed on the DRBIII®? Yes → Test Complete. No → Update the mileage and retest the SRI Memory. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom:

P1698-NO TRANSMISSION BUS MESSAGE

When Monitored and Set Condition:

P1698-NO TRANSMISSION BUS MESSAGE

When Monitored: Equipped with automatic transmission. Engine Running Battery voltage greater than 10 volts.

Set Condition: No bus messages are received from the TCM for 20 seconds, two trips required.

POSSIBLE CAUSES
PCI BUS UNABLE TO COMMUNICATE WITH DRBIII®
(F12) FUSED IGNITION SWITCH OUTPUT (OFF-RUN-START)
INTERMITTENT CONDITION
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: If P1603 or P1604 are set along with this DTC, diagnose them first before continuing with P1698.** **NOTE: Before continuing, inspect all fuses and ensure that all power and ground circuits are operating properly.** **NOTE: Check all powers and grounds to the PCM before continuing.** Turn the ignition on. With the DRBIII®, erase DTCs. Start the engine, allow the engine to run for at least 20 seconds with the gear selector in Drive. Repeat at least 2 times. With the DRBIII®, read DTC's. Does the DTC reset? Yes → Go To 2 No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

P1698-NO TRANSMISSION BUS MESSAGE — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Turn the ignition to run. Using a 12-volt test light connected to ground, probe the (F12) Fused Ignition Switch Output (Off-Run-Start) cavity C1-12 circuit at the appropriate terminal of the special tool #8815. **NOTE: If the test light illuminates, wiggle the wiring harness to ensure that the problem is not an intermittent wiring problem.** Does the test light illuminate brightly? Yes → Go To 3 No → Check all related fuses. Repair the (F12) Fused Ignition Switch Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
3	**Note: Determine which modules this vehicle is equipped with before beginning.** **Note: When attempting to communicate with any of the modules on this vehicle, the DRB will display 1 of 2 different communication errors: a NO RESPONSE message or a BUS +/- SIGNALS OPEN message.** Turn the ignition on. Using the DRB, attempt to communicate with the following control modules: Body Control Module (BCM) Instrument Cluster (MIC) Controller Antilock Brake (CAB) Was the DRB able to communicate with one or more Module(s)? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Refer to the Communication category and perform the PCI BUS COMMUNICATION FAILURE symptom. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom List:

P2302-IGNITION COIL #1 SECONDARY CIRCUIT-INSUFFICIENT IONIZATION
P2305-IGNITION COIL #2 SECONDARY CIRCUIT-INSUFFICIENT IONIZATION

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P2302-IGNITION COIL #1 SECONDARY CIRCUIT-INSUFFICIENT IONIZATION.

When Monitored and Set Condition:

P2302-IGNITION COIL #1 SECONDARY CIRCUIT-INSUFFICIENT IONIZATION

When Monitored: Engine Running.

Set Condition: If PCM detects that the secondary ignition burn time is incorrect or not present an error is detected. One Trip Fault.

P2305-IGNITION COIL #2 SECONDARY CIRCUIT-INSUFFICIENT IONIZATION

When Monitored: Engine Running.

Set Condition: If PCM detects that the secondary ignition burn time is incorrect or not present an error is detected. One Trip Fault

POSSIBLE CAUSES
INTERMITTENT CONDITION
SPARK PLUG
IGNITION WIRE
IGNITION COIL OPERATION
IGNITION COIL

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read DTCs and record the related Freeze Frame data. Is the Good Trip Counter displayed and equal to zero? Yes → Go To 2 No → Go To 4	All

P2302-IGNITION COIL #1 SECONDARY CIRCUIT-INSUFFICIENT ION-IZATION — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. Remove the ignition wire. Measure the resistance of the ignition wire. Is the resistance below 10K ohms? Yes → Go To 3 No → Replace the Ignition Wire. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All
3	Turn the ignition off. Disconnect the Ignition Coil harness connector. Remove the ignition coil. **NOTE: Before continuing inspect the Ignition Coil for damage or carbon tracking coil or the spark plug insulator boot. If a problem is found, replace the ignition coil.** Install a spark tester to the Ignition Coil. Reconnect the Ignition Coil harness connector to the Ignition Coil. While cranking the engine observe the spark coming from the spark tester. **NOTE: The Ignition Coil should generate a crisp blue spark that is able to jumper the gap of the spark tester.** Does the Ignition Coil generate a good spark. Yes → Replace the Spark Plug. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Replace the Ignition Coil. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All
4	Turn the ignition off. Remove the Spark Plug. Inspect the Spark Plug for the following conditions. - Cracks - Carbon Tracking - Foreign Material - Gap size out of specifications - Loose or broke electrode **NOTE: Lightly tap the bottom of the spark plug on a solid surface. The electrode in the spark plug should not move.** Were any of the above condition present? Yes → Replace the Spark Plug. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All

Symptom:
P2503-CHARGING SYSTEM VOLTAGE LOW

When Monitored and Set Condition:

P2503-CHARGING SYSTEM VOLTAGE LOW

When Monitored: The engine running. The engine speed greater than 1157 RPM.

Set Condition: The battery sensed voltage is 1 volt below the charging goal for 13.47 seconds. The PCM senses the battery voltage turns off the field driver and senses the battery voltage again. If the voltages are the same, the code is set.

POSSIBLE CAUSES
CHARGING VOLTAGE BELOW 15.1 VOLTS
(A11) B+ CIRCUIT HIGH RESISTANCE
GENERATOR GROUND HIGH RESISTANCE
GENERATOR OPERATION
(Z1) GEN FIELD GROUND CIRCUIT OPEN
(K20) GEN FIELD CONTROL CIRCUIT SHORTED TO BATTERY VOLTAGE
(K20) GEN FIELD CONTROL CIRCUIT SHORTED TO GROUND
(K20) GEN FIELD CONTROL CIRCUIT OPEN
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Inspect the vehicle for aftermarket accessories that may exceed the Generator System output.** Turn the ignition off. **NOTE: The battery must be fully charged.** **NOTE: The Generator belt tension and condition must be checked before continuing.** Start the engine. Allow the idle to stabilize. With the DRBIII®, read the Target Charging Voltage. Is the Target Charging Voltage above 15.1 volts? Yes → Refer to the INTERMITTENT CONDITION symptom in the Driveability category. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 2	All

P2503-CHARGING SYSTEM VOLTAGE LOW — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Ignition on, engine not running. **NOTE: Ensure all wires are clear of the engine's moving parts.** Start the engine. Measure the voltage between the (A11) Generator B+ Terminal and the Battery+ Post. Is the voltage above 0.4 of a volt? Yes → Repair the (A11) B+ circuit for high resistance between the Generator and Battery. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 3	All
3	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** Start the engine. Warm the engine to operating temperature. **NOTE: Ensure all wires are clear of the engine's moving parts.** Measure the voltage between the Generator case and Battery ground post. Is the voltage above 0.1 of a volt? Yes → Repair Generator Ground for high resistance, Generator Case to Battery ground side. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 4	All
4	Turn the ignition off. Disconnect the Generator Field harness connector. Using a 12-volt test light, jumper it across the Generator Field harness connector. Ignition on, engine not running. With the DRBIII®, actuate the Gen Field Control circuit. Does the test light illuminate brightly and flash on and off? Yes → Replace the Generator. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the Generator Field harness connector. Using a 12-volt test connected to battery voltage, probe the (Z1) Gen Field Ground circuit in the Generator Field harness connector. Does the test light illuminate brightly? Yes → Go To 6 No → Repair the open in the (Z1) Gen Field Ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC.	All

P2503-CHARGING SYSTEM VOLTAGE LOW — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the Generator Field harness connector. Disconnect the PCM harness connector. Measure the voltage on the (K20) Gen Field Control circuit at the Generator Field harness connector. Is the voltage above 1.0 volt? Yes → Repair the short to voltage in the (K20) Gen Field Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 7	All
7	Turn the ignition on. Disconnect the Generator Field harness connector. Disconnect the PCM harness connector. Measure the resistance between ground and the (K20) Gen Field Control circuit in the Generator Field harness connector. Is the resistance below 100 ohms? Yes → Repair the (K20) Gen Field Control circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC. No → Go To 8	All
8	Turn the ignition off. Disconnect the Generator Field harness connector. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the (K20) Gen Field Control circuit from the Generator Field harness connector to the appropriate terminal of the special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the open in the (K20) Generator Field Control circuit. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC.	All
9	If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 3 - NGC.	All

Symptom:
*CHECKING PCM POWER AND GROUND CIRCUITS

POSSIBLE CAUSES
(A14) PCM FUSED B+ CIRCUIT
(A41) PCM FUSED IGNITION SWITCH OUTPUT CIRCUIT
(Z12) PCM GROUND CIRCUITS

TEST	ACTION	APPLICABILITY
1	**NOTE: The battery must be fully charged before continuing.** Turn the ignition off. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Using a 12-volt test light connected to ground, probe the (A14) PCM Fused B+ circuit in the Pinout Box. Does the test light illuminate brightly? Yes → Go To 2 No → Repair the (A14) Fused B+ circuit. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
2	Turn the ignition off. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Turn the ignition on. Using a 12-volt test light connected to ground, probe the (A41) PCM Fused Ignition Switch Output circuit in the Pinout Box. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the (A41) Ignition Switch Output circuit Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
3	Turn the ignition off. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Using a 12-volt test light connected to battery voltage, probe the (Z12) PCM ground circuits in the Pinout Box. Does the test light illuminate brightly? Yes → Test Complete. No → Repair the (Z12) PCM ground circuits. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom:

*CHECKING THE A/C RELAY OUTPUT

POSSIBLE CAUSES
A/C CLUTCH RELAY OPERATION
GROUND CIRCUIT OPEN
A/C CLUTCH
(A17) FUSED B+ CIRCUIT
(C3) A/C CLUTCH OUTPUT CIRCUIT
A/C CLUTCH RELAY

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure that the refrigerant system is properly charged. Refer to the appropriate Service Information.** Turn the ignition on. With the DRBIII®, actuate the A/C Clutch Relay. Is the A/C Clutch actuating? Yes → The A/C Clutch System operating properly at this time. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Go To 2	All
2	Turn the ignition off. Disconnect the A/C Clutch harness connector. Measure the Ground circuit in the A/C Clutch harness connector to ground. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All
3	Disconnect the A/C Clutch harness connector. Turn the ignition on. With the DRBIII®, actuate the A/C Clutch Relay. Measure the voltage of the A/C Clutch Relay Output circuit in the A/C Clutch harness connector. Is the voltage above 11.0 volts? Yes → Replace the A/C Clutch. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Go To 4	All
4	Turn the ignition off. Remove the A/C Clutch Relay from the PDC. Using a 12-volt test light connected to ground, probe the (A17) Fused B+ circuit in the PDC. Does the test light illuminate brightly? Yes → Go To 5 No → Repair the (A17) Fused B+ circuit. Inspect fuses and replace as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All

*CHECKING THE A/C RELAY OUTPUT — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect the A/C Clutch Relay from the PDC. Disconnect the A/C Clutch harness connector. Measure the resistance of the (C3) A/C Clutch Relay Output circuit between the PDC and the A/C Clutch harness connector. Is the resistance below 5.0 ohms? Yes → Replace the A/C Clutch Relay. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Repair the (C3) A/C Clutch Relay Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All

Symptom List:

ANTENNA FAILURE
COP FAILURE
EEPROM FAILURE
INTERNAL FAULT
RAM FAILURE
SERIAL LINK INTERNAL FAULT
STACK OVERFLOW FAILURE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be ANTENNA FAILURE.

When Monitored and Set Condition:

ANTENNA FAILURE

When Monitored: Every 250 milliseconds with the ignition on.

Set Condition: The SKIM's microcontroller determines that an antenna circuit fault has occurred for 2.0 consecutive seconds.

COP FAILURE

When Monitored: With the ignition on.

Set Condition: The COP timer is not reset by the micro controller every 65.5 milliseconds.

EEPROM FAILURE

When Monitored: With the ignition on.

Set Condition: When the value written to EEPROM memory does not equal the value read back after the write operation.

INTERNAL FAULT

When Monitored: With the ignition on.

Set Condition: The SKIM has detected a fault during an internal self test.

RAM FAILURE

When Monitored: With the ignition on.

Set Condition: The RAM fails a test that checks the RAM's ability to retain memory.

SERIAL LINK INTERNAL FAULT

When Monitored: With the ignition on.

Set Condition: The SKIM fails an internal J1850 communication self test.

STACK OVERFLOW FAILURE

When Monitored: With the ignition on.

Set Condition: The micro controller has exceeded its stack space limit.

ANTENNA FAILURE — Continued

POSSIBLE CAUSES
SKIM INTERNAL DTC FAILURE

TEST	ACTION	APPLICABILITY
1	**Note: This trouble code indicates an internal SKIM fault.** With the DRBIII®, read and record the SKIM DTCs and then erase the SKIM DTCs Perform 10 ignition key cycles, leaving the ignition key on for a minimum of 90 seconds per cycle. With the DRBIII® , read the SKIM DTCs. Did the same SKIM DTC return? Yes → Replace and program the Sentry Key Immobilizer Module in accordance with the Service Information. Perform SKIS VERIFICATION. No → Test Complete.	All

Symptom List:

PCM STATUS FAILURE
SERIAL LINK EXTERNAL FAULT

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be PCM STATUS FAILURE.

When Monitored and Set Condition:

PCM STATUS FAILURE

When Monitored: With the ignition on.

Set Condition: This DTC exists when a PCM STATUS message was not received from the PCM for at least 20.0 consecutive seconds.

SERIAL LINK EXTERNAL FAULT

When Monitored: At ignition on, after ignition on during any rolling code handshake that occurs with the PCM due to a SKIM reset, or during SECRET KEY transfers to the PCM.

Set Condition: When the SKIM does not receive an expected PCI BUS message transmission acknowledgement from the PCM after 3 transmit attempts.

POSSIBLE CAUSES
INTERMITTENT WIRING HARNESS PROBLEM
WIRING HARNESS INSPECTION
SKIM/PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the PCM has proper power and ground connections before continuing.** With the DRBIII®, read and record the SKIM DTCs then erase the SKIM DTCs. Turn the ignition off. Wait 2 minutes. Turn the ignition on. With the DRBIII®, read the SKIM DTCs. Does the DRBIII® display the DTC that was previously erased? Yes → Go To 2 No → Go To 4	All

PCM STATUS FAILURE — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. **NOTE: Visually inspect the related wiring harness and CCD/PCI Bus (whichever applicable) circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform SKIS VERIFICATION. No → Go To 3	All
3	**NOTE: Before proceeding it will be necessary to obtain the SKIM PIN.** Turn the ignition on. With the DRBIII®, display and erase all PCM and SKIM DTC's. Perform 5 ignition key cycles, leaving the ignition key on for a minimum of 90 seconds per cycle. With the DRBIII®, read the SKIM DTCs. Does the code appear? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform SKIS VERIFICATION. No → Test Complete.	All
4	Turn the ignition off. **Note: Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair wiring harness/connectors as necessary. Perform SKIS VERIFICATION. No → Test Complete.	All

Symptom List:

ROLLING CODE FAILURE
VIN MISMATCH

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be ROLLING CODE FAILURE.

When Monitored and Set Condition:

ROLLING CODE FAILURE

When Monitored: At ignition on, after ignition on during any rolling code handshake that occurs with the PCM due to a SKIM or PCM reset.

Set Condition: When a PCM STATUS message with a Valid Key status is not received by the SKIM within 3.5 seconds of transmitting the last Valid Key Code message to the PCM.

VIN MISMATCH

When Monitored: With the ignition on.

Set Condition: When the VIN received from the PCM does not match the VIN stored in the SKIM's EEPROM.

POSSIBLE CAUSES
VERIFYING PCM VIN
REPLACE SKIM AND CHECK DTC'S
INTERMITTENT WIRING HARNESS PROBLEM
PCM

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the SKIM DTCs. Turn the ignition off. Wait 10 seconds. Turn the ignition on and wait 2 minutes. With the DRBIII®, read the SKIM DTCs. Does the DRBIII® display the DTC that was previously erased? Yes → Go To 2 No → Go To 4	All

ROLLING CODE FAILURE — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition on. With the DRBIII®, select Engine system from the main menu. Display and record the Vehicle Identification Number. **NOTE: Ensure that a VIN has been programmed into the PCM. If a VIN is not displayed, attempt to program the PCM with the correct vehicle VIN before continuing.** Does the VIN recorded from the PCM match the VIN of the vehicle? Yes → Go To 3 No → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform SKIS VERIFICATION.	All
3	Turn the ignition off. Replace and program the Sentry Key Immobilizer Module in accordance with the Service Information. Turn the ignition on. With the DRBIII®, display and clear all PCM and SKIM DTC's. Perform 5 ignition key cycles leaving the ignition key on for 90 seconds per cycle. With the DRBIII®, check for SKIM DTCs. Does the DRBIII® display the same DTC? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform SKIS VERIFICATION. No → The repair is complete. Perform SKIS VERIFICATION.	All
4	Turn the ignition off. **Note: Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair wiring harness/connectors as necessary. Perform SKIS VERIFICATION. No → Test Complete.	All

Symptom List:

TRANSPONDER COMMUNICATION FAILURE
TRANSPONDER CYCLIC REDUNDANCY CHECK (CRC) FAILURE
TRANSPONDER ID MISMATCH
TRANSPONDER RESPONSE MISMATCH

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be TRANSPONDER COMMUNICATION FAILURE.

When Monitored and Set Condition:

TRANSPONDER COMMUNICATION FAILURE

When Monitored: At ignition on and during Key Programming Mode.

Set Condition: When the SKIM does not receive a transponder response after 8 consecutive transponder read attempts within 2.0 seconds.

TRANSPONDER CYCLIC REDUNDANCY CHECK (CRC) FAILURE

When Monitored: At ignition on and during Key Programming Mode.

Set Condition: When 5 consecutive transponder signal transmissions are sent to the SKIM with the correct message format but with invalid data.

TRANSPONDER ID MISMATCH

When Monitored: At ignition on and during Key Programming Mode.

Set Condition: When the transponder ID read by the SKIM does not match any of the transponder ID's stored in the SKIM's memory.

TRANSPONDER RESPONSE MISMATCH

When Monitored: At ignition on and during Key Programming Mode.

Set Condition: When the transponder's crypto algorithm result fails to match the SKIM's result.

POSSIBLE CAUSES
CHECKING MULTIPLE KEY OPERATION
SKIM
INTERMITTENT WIRING HARNESS PROBLEM
REPLACE IGNITION KEY

TRANSPONDER COMMUNICATION FAILURE — Continued

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, read and record the SKIM DTCs. With the DRBIII®, erase the SKIM DTCs. **NOTE: Perform the following test several times to ensure the DTC is current.** Turn the ignition off. Wait 10 seconds. Turn the ignition on. With the DRBIII®, read the SKIM DTCs. Does the DRBIII® display the DTC that was previously erased? Yes → Go To 2 No → Go To 7	All
2	Are there multiple vehicle ignition keys available? Yes → Go To 3 No → Go To 4	All
3	**NOTE: Perform the following steps using one of the vehicle ignition keys. When finished, repeat the procedure using each of the other vehicle keys one at a time.** With the DRBIII®, erase the SKIM DTCs. Turn the ignition off. Wait 10 seconds. Turn the ignition on. With the DRBIII®, read the SKIM DTCs. Is the DTC present for all ignition keys? Yes → Replace and program the Sentry Key Immobilizer Module in accordance with the Service Information. Perform SKIS VERIFICATION. No → Replace the ignition key(s) that cause the SKIM DTC. Perform SKIS VERIFICATION.	All
4	With the DRBIII®, attempt to reprogram the ignition keys to the SKIM. With the DRBIII®, erase the SKIM DTCs. Wait 10 seconds. Turn the ignition on. With the DRBIII®, read the SKIM DTCs. Does the DTC set again? Yes → Go To 5 No → Test Complete.	All
5	Replace the ignition key with a new key. With the DRBIII®, program the new ignition key to the SKIM. With the DRBIII®, erase the SKIM DTCs. Turn the ignition off. Wait 10 seconds. Turn the ignition on. With the DRBIII®, read the SKIM DTCs. Does the DTC set again? Yes → Go To 6 No → Test Complete.	All

TRANSPONDER COMMUNICATION FAILURE — Continued

TEST	ACTION	APPLICABILITY
6	If there are no possible causes remaining, view repair. Repair Replace and program the Sentry Key Immobilizer Module in accordance with the Service Information. Perform SKIS VERIFICATION.	All
7	Turn the ignition off. **Note: Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair wiring harness/connectors as necessary. Perform SKIS VERIFICATION. No → Test Complete.	All

Symptom:
*CHECKING FUEL DELIVERY

POSSIBLE CAUSES
FUEL PUMP RELAY
FUEL PRESSURE OUT OF SPECS
RESTRICTED FUEL SUPPLY LINE
FUEL PUMP INLET STRAINER PLUGGED
FUEL PUMP MODULE
FUEL DELIVERY SYSTEM OPERATION
FUEL PUMP RELAY FUSED B+ CIRCUIT
(A141) FUEL PUMP RELAY OUTPUT CIRCUIT OPEN
(Z1) FUEL PUMP GROUND CIRCUIT OPEN/HIGH RESISTANCE
FUEL PUMP MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test. **Note: It may be necessary to use a mechanics stethoscope in the next step.** Listen for fuel pump operation at the fuel tank. Does the Fuel Pump operate? Yes → Go To 2 No → Go To 5 **Caution: Stop All Actuations.**	All
2	Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install a fuel gauge. Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Choose a conclusion that best matches your fuel pressure reading. Below Specification Go To 3 Within Specification The Fuel Delivery System is operating normally. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. Above Specification Replace the fuel filter/fuel pressure regulator. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. **Caution: Stop All Actuations.**	All

*CHECKING FUEL DELIVERY — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Raise vehicle on hoist, and disconnect the fuel pressure line at the fuel pump module. Install special 5/16 fuel line adapter tool #6539 between the disconnected fuel line and the fuel pump module. Attach a fuel pressure test gauge to the T fitting on the tool #6539 Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Is the fuel pressure within specification now? Yes → Repair/replace fuel supply line as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Go To 4 **Caution: Stop All Actuations.**	All
4	Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose,fitting or line, the fuel system pressure must be released.** Remove the Fuel Pump Module and inspect the Fuel Inlet Strainer. Is the Fuel Inlet Strainer plugged? Yes → Replace the Fuel Pump Inlet Strainer. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Replace the Fuel Pump Module. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
5	Turn the ignition off. Disconnect the fuel pump module harness connector. Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test. Using a 12 volt test light connected to ground, probe the (A141) Fuel Pump Relay Output circuit at the Fuel Pump Module harness connector. Does the test light illuminate brightly? Yes → Go To 6 No → Go To 8 **Caution: Stop All Actuations.**	All
6	Turn the ignition off. Disconnect the Fuel Pump Module harness connector. **Note: Check connectors - It is critical that the connector is free from any signs of corrosion or deformities - Clean/repair as necessary.** Using a test light connected to battery voltage, probe the (Z1) Fuel Pump ground circuit at the Fuel Pump Module harness connector. Does the test light illuminate brightly? Yes → Go To 7 No → Repair the open/high resistance in the (Z1) fuel pump ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

*CHECKING FUEL DELIVERY — Continued

TEST	ACTION	APPLICABILITY
7	If there are no possible causes remaining, view repair. Repair Replace the Fuel Pump Module. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
8	Turn the ignition off. Remove the Fuel Pump Relay from the PDC. With a 12 volt test light connected to ground, probe the Fuel Pump Relay Fused B+ circuit at the PDC. Does the test light illuminate? Yes → Go To 9 No → Repair the Fuel Pump Realy Fused B+ circuit. Check for open fuse in the PDC. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
9	Turn the ignition off. Remove the Fuel Pump Relay from the PDC. Disconnect the Fuel Pump Module harness connector. **NOTE: Check connectors - It is critical that the connector is free from any signs of corrosion or deformities** Measure the resistance of the (A141) Fuel Pump Relay Output circuit from the relay connector to the fuel pump module connector. Is the resistance below 5.0 ohms? Yes → Replace the Fuel Pump Relay. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Repair the (A141) Fuel Pump Relay Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom:
*CHECKING FUEL PRESSURE LEAK DOWN

POSSIBLE CAUSES
CHECKING FUEL PRESSURE
FUEL PUMP MODULE
CHECKING FUEL LEAK DOWN

TEST	ACTION	APPLICABILITY
1	**Warning: The fuel system is under a constant pressure (even with the engine off). Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install a fuel pressure gauge. Start the engine and observe the fuel pressure reading. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Turn the ignition off. Monitor the fuel pressure gauge for a minimum of 5 minutes. **NOTE: The pressure should not fall below 241 KPa (35 psi)** Does the fuel pressure gauge fall below the above specification? Yes → Go To 2 No → Fuel System is operating normally. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All
2	**NOTE: Before continuing visually and physically inspect the fuel delivery system for external leaks or damage. Repair /replace as necessary.** Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install special 5/16 fuel line adapter tool #6539. Attach a fuel pressure test gauge to the T fitting on the tool #6539 Start the engine and allow the fuel system to reach maximum pressure. Turn the ignition off. **NOTE: Fuel specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Using special tool #C4390, Hose Clamp Pliers, slowly clamp off the rubber hose on the Fuel Pressure adapter between the fuel pressure gauge and the engine. Monitor the fuel pressure gauge for a minimum of 5 minutes. **NOTE: The pressure should not fall below 241 KPa (35 psi)** Does the fuel pressure gauge fall below the above specification? Yes → Check the Fuel Delivery System between the fuel gauge and the fuel pump module. Inspect the seal points and the fuel lines for signs of fuel leakage. Repair/Replace as necessary. If OK, replace the Fuel Pump Module. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Check the Fuel Delivery System between the fuel gauge and the fuel pump module. Inspect the seal points and the fuel lines for signs of fuel leakage. Repair/Replace as necessary. If OK, replace the Fuel Pump Module. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All

Symptom:
*CHECKING HARD START (FUEL DELIVERY SYSTEM)

POSSIBLE CAUSES
RESTRICTED FUEL SUPPLY LINE
FUEL PUMP MODULE
FUEL PUMP INLET STRAINER PLUGGED
FUEL INJECTOR(S)
FUEL PUMP MODULE
FUEL CONTAMINATION

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install a fuel gauge. Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Choose a conclusion that best matches your fuel pressure reading. Below Specification Go To 2 Within Specification Go To 4	All
2	Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Raise vehicle on hoist, and disconnect the fuel supply line at the fuel pump module. Install special 5/16 fuel line adapter tool #6539 between the disconnected fuel line and the fuel pump module. Attach a fuel pressure test gauge to the T fitting on the tool #6539 Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Is the fuel pressure within specification? Yes → Visually and physically inspect the fuel supply lines between the fuel tank and the fuel rail. Repair/replace as necessary. If no problem is found replace the fuel filter. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Go To 3	All

*CHECKING HARD START (FUEL DELIVERY SYSTEM) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose,fitting or line, the fuel system pressure must be released.** Remove the Fuel Pump Module and inspect the Fuel Inlet Strainer. Is the Fuel Inlet Strainer plugged? Yes → Replace the Fuel Pump Inlet Strainer. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Replace the Fuel Pump Module. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All
4	Fuel pressure gauge still installed. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Ensure the fuel pressure is at maximum pressure. Monitor the fuel pressure gauge for a minimum of 5 minutes. **NOTE: The pressure should not fall below 241 KPa (35 psi)** Does the fuel pressure gauge fall below the above specification? Yes → Go To 5 No → Check the fuel for contaminants. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All
5	**NOTE: Before continuing visually and physically inspect the fuel delivery system for external leaks or damage. Repair /replace as necessary.** Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install special 5/16 fuel line adapter tool #6539. Attach a fuel pressure test gauge to the T fitting on the tool #6539 Start the engine and allow the fuel system to reach maximum pressure. Turn the ignition off. **NOTE: Fuel specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Using special tool #C4390, Hose Clamp Pliers, slowly clamp off the rubber hose on the Fuel Pressure adapter between the fuel pressure gauge and the engine. Monitor the fuel pressure gauge for a minimum of 5 minutes. **NOTE: The pressure should not fall below 241 KPa (35 psi)** Does the fuel pressure gauge fall below the above specification? Yes → Check the Fuel Delivery System between the fuel gauge and the fuel pump module. Inspect the seal points and the fuel lines for signs of fuel leakage. Repair/Replace as necessary. If OK, replace the Fuel Pump Module. Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC. No → Check the Fuel Delivery System between the fuel gauge and the fuel injectors. Inspect the seal points and the fuel lines for signs of fuel leakage. Repair/Replace as necessary. If OK, replace the leaking Fuel Injector(s). Perform POWERTRAIN VERIFICATION TEST VER - 2 - NGC.	All

Symptom:

***ENGINE CRANKS DOES NOT START**

POSSIBLE CAUSES
FUEL PUMP RELAY
NO START PRE-TEST
POWERTRAIN FUSES OPEN
FUEL PRESSURE OUT OF SPECS
RESTRICTED FUEL SUPPLY LINE
FUEL PUMP INLET STRAINER PLUGGED
FUEL PUMP MODULE
FUEL PUMP RELAY FUSED B+ CIRCUIT
OTHER POSSIBLE CAUSES FOR NO START
FUEL PUMP RELAY OUTPUT CIRCUIT OPEN
FUEL PUMP GROUND CIRCUIT OPEN/HIGH RESISTANCE
IPM FUSE & RELAY CENTER
FUEL PUMP MODULE

TEST	ACTION	APPLICABILITY
1	**Note: The following list of items must be checked before continuing with any no start tests.** The battery must be fully charged and pass a load test. A low charge battery may produce invalid test results. If the battery is low, charge the battery and then attempt to start the vehicle by cranking the engine for 15 seconds, 3 consecutive times. This will allow any DTC's to set that may have been erased due to a dead battery. Ensure the Battery, Ignition voltage and Ground to the PCM are ok. Make sure the PCM communicates with the DRBIII® and that there are no DTC's stored in the PCM memory. If the PCM reports a No Response condition, refer to the Communication category for the proper tests. Read the PCM DTC's with the DRBIII®. If any DTC's are present, they must be repaired before continuing with any other No Start diagnostic tests. Refer to the Symptom list for the related P-code that is reported by the PCM. Ensure that the PCI bus is functional. Attempt to communicate with the Instrument Cluster and SKIM, If you are unable to establish communicate refer to the Communication category for the proper symptoms. The Sentry Key Immobilizer System must be operating properly. Check for proper communication with the DRBIII® and check for DTC's that may be stored in the Sentry Key Immobilizer Module (SKIM). repair the DTC(s) before continuing. If no DTC's are found, using the DRBIII® select Clear PCM (Batt Disconnect). Crank the engine several times. Using the DRBIII®, read DTC's. If a DTC is present perform the DTC diagnostics before continuing. Were any problems found? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 2	All

*ENGINE CRANKS DOES NOT START — Continued

TEST	ACTION	APPLICABILITY
2	Check for any open fuses in the IPM that may be related to the No Start condition. Are any of the fuses open? Yes → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors, repair as necessary. Replace the Fuse. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 3	All
3	Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test. **Note: It may be necessary to use a mechanics stethoscope in the next step.** Listen for fuel pump operation at the fuel tank. Does the Fuel Pump operate? Yes → Go To 4 No → Go To 8 **Caution: Stop All Actuations.**	All
4	Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install a fuel pressure gauge. Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 kPa +/- 34 kPa (58 psi +/- 5 psi).** Choose a conclusion that best matches your fuel pressure reading. Below Specification Go To 5 Within Specification Go To 7 Above Specification Replace the fuel filter/fuel pressure regulator. Perform POWERTRAIN VERIFICATION TEST VER - 1. **Caution: Stop All Actuations.**	All

*ENGINE CRANKS DOES NOT START — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Raise vehicle on hoist, and disconnect the fuel pressure line at the fuel pump module. Install special 5/16 fuel line adapter tool #6539 between the disconnected fuel line and the fuel pump module. Attach a fuel pressure test gauge to the T fitting on the tool #6539 Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Is the fuel pressure within specification now? Yes → Repair/replace fuel supply line as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 6 **Caution: Stop All Actuations.**	All
6	Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose,fitting or line, the fuel system pressure must be released.** Remove the Fuel Pump Module and inspect the Fuel Inlet Strainer. Is the Fuel Inlet Strainer plugged? Yes → Replace the Fuel Pump Inlet Strainer. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Replace the Fuel Pump Module. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
7	The following items need to be checked as a possible cause for a no start condition. Refer to any Technical Service Bulletins that may apply to the symptom. The spark plugs must be free from fuel, oil, coolant and/or any foreign material or deposits. The fuel must be free from contamination. The exhaust may be free from restrictions. The engine compression must be within specifications. The engine valve timing must be within specifications. The engine must be free from vacuum leaks. Were any of the above conditions found? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Test Complete.	All

*ENGINE CRANKS DOES NOT START — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the fuel pump module harness connector. Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test. Using a 12 volt test light connected to ground, probe the Fuel Pump Relay Output circuit at the Fuel Pump Module harness connector. Does the test light illuminate brightly? Yes → Go To 9 No → Go To 11 **Caution: Stop All Actuations.**	All
9	Turn the ignition off. Disconnect the Fuel Pump Module harness connector. **Note: Check connectors - It is critical that the connector is free from any signs of corrosion or deformities - Clean/repair as necessary.** Using a 12 - volt test light connected to battery voltage, probe the Fuel Pump ground circuit at the Fuel Pump Module harness connector. Does the test light illuminate brightly? Yes → Go To 10 No → Repair the open/high resistance in the fuel pump ground circuit. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
10	If there are no possible causes remaining, view repair. Repair Replace the Fuel Pump Module. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
11	Turn the ignition off. Remove the Fuel Pump Relay from the IPM. With a 12 volt test light connected to ground, probe the Fuel Pump Relay Fused B+ circuit in the IPM. Does the test light illuminate? Yes → Go To 12 No → Check for an open Fuel Pump fuse, repair cause of open. If OK, replace the IPM Fuse & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
12	Turn the ignition off. Disconnect the IPM harness connector. Disconnect the Fuel Pump Module harness connector. Measure the resistance of the Fuel Pump Relay Output circuit between the IPM harness connector and the Fuel Pump Module connector. Is the resistance below 5.0 ohms? Yes → Go To 13 No → Repair the open fuel pump relay output circuit. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

*ENGINE CRANKS DOES NOT START — Continued

TEST	ACTION	APPLICABILITY
13	**NOTE: Ensure all IPM harness connector are connected.** Turn the ignition off. Disconnect the Fuel Pump Module harness connector. Remove the Fuel Pump Relay from the IPM. Measure the resistance of the Fuel Pump Relay Output circuit between the IPM and the Fuel Pump Module harness connector. Is the resistance below 5.0 ohms? Yes → Replace the Fuel Pump Relay. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Replace the IPM Fused & Relay Center. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

Symptom:
*NO CRANK CONDITION

POSSIBLE CAUSES
REPAIR MECHANICAL CONDITION
TRANSMISSION RANGE SENSOR
BATTERY CIRCUIT RESISTANCE TOO HIGH
IGNITION SWITCH OUTPUT CIRCUIT OPEN
STARTER RELAY CONTROL CIRCUIT OPEN
STARTER RELAY OUTPUT CIRCUIT OPEN
FUSED B(+) CIRCUIT OPEN
FUSED IGNITION SWITCH OUTPUT (START) CIRCUIT OPEN
STARTER
STARTER MOTOR RELAY
STARTER RELAY

TEST	ACTION	APPLICABILITY
1	**NOTE: Check all PCM powers and grounds before continuing.** **NOTE: Ensure that SKIS is operating properly. Check the SKIM for DTC. If a SKIM DTC(s) is present diagnose them first before continuing.** **WARNING: MAKE SURE THE BATTERY IS DISCONNECTED, THEN WAIT TWO MINUTES BEFORE PROCEEDING.** Turn the engine over by hand to ensure the engine is not seized. Is the engine able to turn over? Yes → Go To 2 No → Repair the mechanical condition preventing the starter motor from cranking. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
2	Turn the ignition off. Disconnect the PCM harness connectors. Move the Gear selector through all gear positions, from Park to 1st and back. While moving the gear selector through each gear, measure the resistance between ground and the P/N Position Switch Sense circuit. Did the resistance change from above 10.0 ohms to below 10.0 ohms? Yes → Go To 3 No → Replace the Transmission Range Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
3	Turn the ignition off. Check the Battery Cables for high resistance using the service information procedure. Did either Battery Cable have a voltage drop greater than 0.2 volt? Yes → Repair the Battery circuit for high resistance. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 4	All

*NO CRANK CONDITION — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the PCM harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Turn the ignition to the Start position. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch Output (Start) circuit in the appropriate terminal of special tool #8815. Does the test light illuminate brightly? Yes → Go To 5 No → Repair the Fused Ignition Switch (Start) circuit for an open or high resistance. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
5	Turn ignition off. Remove the Starter Relay from PDC. **WARNING: The Parking Brake must be engaged and the transmission must be in Park for a vehicle equipped with an automatic transmission.** **WARNING: The Starter may Engage in the next step. Keep away from moving engine parts.** Briefly connect a jumper wire between Starter Relay B+ circuit and the Starter Relay Output Circuits. Turn the ignition to the crank position. Did the Starter Motor crank the engine? Yes → Go To 6 No → Go To 9	All
6	Turn the ignition off. Remove the Starter Relay from the PDC. Turn the ignition on. Using a 12-volt test light, probe the Ignition Switch Output circuit in the Starter Relay connector. While observing 12-volt test light, hold ignition key in the start position. Does the test light illuminate brightly? Yes → Go To 7 No → Repair the Ignition Switch Output circuit for an open or high resistance. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
7	Turn the ignition off. Remove the Starter Relay from the PDC. Disconnect the PCM harness connector. Measure the Starter Relay Control circuit between the Relay terminal and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 8 No → Repair the Starter Relay Control circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

*NO CRANK CONDITION — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Install a substitute a Relay in the of the Starter Motor Relay. Attempt to start the vehicle. Does the engine crank over? Yes → Replace the Starter Motor Relay. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
9	Turn ignition off. Remove the Starter Relay from the PDC. Disconnect the Starter Relay Output connector from the Starter Solenoid. Measure the resistance of the Starter Relay Output circuit between the Relay and the Solenoid harness connector. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair Starter Relay Output circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
10	Turn the ignition off. Remove the Starter Relay from the PDC. Using a 12-volt test light connected to ground, probe the Fused B+ circuit at the Starter Relay terminal. Does the test light illuminate brightly? Yes → Go To 11 No → Repair the Fused B(+) Circuit for an open or high resistance. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
11	If there are no other possible causes remaining, review repair. Repair Replace the Starter. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

Symptom:

*NO RESPONSE FROM PCM WITH A NO START CONDITION

POSSIBLE CAUSES
PCM FUSED B+ CIRCUIT
PCM FUSED IGNITION SWITCH OUTPUT CIRCUIT
PCM GROUND CIRCUITS
PCM

TEST	ACTION	APPLICABILITY
1	**NOTE: The DRBIII® and cable must be operating properly for the results of this test to be valid.** **NOTE: Ensure the ignition switch was on when trying to communicate with the PCM.** Turn the ignition off. Disconnect the PCM harness connector. Using a 12-volt test light connected to ground, probe the PCM Fused B+ circuit in the PCM harness connector. Does the test light illuminate brightly? Yes → Go To 2 No → Repair the Fused B+ circuit. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
2	Turn the ignition off. Disconnect the PCM harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the PCM Fused Ignition Switch Output circuit in the PCM harness connector. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ignition Switch Output circuit Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
3	Turn the ignition off. Disconnect the PCM harness connector. Using a 12-volt test light connected to battery voltage, probe all the PCM ground circuits in the PCM harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the PCM ground circuits. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
4	If there is no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

Symptom:
*START AND STALL CONDITION

POSSIBLE CAUSES
CHECKING DTCS
CHECKING SKIM DTCS
FUEL PRESSURE OUT OF SPECS
TP SENSOR SWEEP
TP SENSOR VOLTAGE GREATER THAN 0.92 VOLTS WITH THROTTLE CLOSED
ECT SENSOR OPERATION
OTHER POSSIBLE CAUSES FOR START & STALL
RESTRICTED FUEL SUPPLY LINE
FUEL PUMP INLET STRAINER PLUGGED
FUEL PUMP MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. Are any DTCs present? Yes → Refer to the Driveability Category and perform the appropriate symptom. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 2	All
2	Turn the ignition on. **NOTE: If you are unable to communicate with the SKIM, refer to the Communication Category and perform the appropriate symptom.** With the DRBIII®, read the SKIM codes. Are there any SKIM DTCs? Yes → Refer to the Vehicle Theft category and perform the appropriate symptom. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 3	All

*START AND STALL CONDITION — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Install a fuel pressure gauge to the fuel rail test port. Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Choose a conclusion that best matches your fuel pressure reading. Below Specification Go To 4 Within Specification Go To 6 Above Specification Replace the fuel filter/fuel pressure regulator. Perform POWERTRAIN VERIFICATION TEST VER - 1. **Caution: Stop All Actuations.**	All
4	Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose, fitting or line, the fuel system pressure must be released.** Raise vehicle on hoist, and disconnect the fuel pressure line at the fuel pump module. Install special 5/16 fuel line adapter tool #6539 between the disconnected fuel line and the fuel pump module. Attach a fuel pressure test gauge to the ″T″ fitting on tool #6539. Turn the ignition on. With the DRBIII®, actuate the ASD Fuel System test and observe the fuel pressure gauge. **NOTE: Fuel pressure specification is 400 KPa +/- 34 KPa (58 psi +/- 5 psi).** Is the fuel pressure within specification now? Yes → Repair/replace fuel supply line as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 5 **Caution: Stop All Actuations.**	All
5	Turn the ignition off. **WARNING: The fuel system is under a constant pressure even with the engine off. Before testing or servicing any fuel system hose,fitting or line, the fuel system pressure must be released.** Remove the Fuel Pump Module and inspect the Fuel Inlet Strainer. Is the Fuel Inlet Strainer plugged? Yes → Replace the Fuel Pump Inlet Strainer. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Replace the Fuel Pump Module. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

*START AND STALL CONDITION — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition on. With the DRBIII®, read TPS VOLTS. While monitoring the DRBIII®, slowly open and close the Throttle. Is the voltage change smooth? Yes → Go To 7 No → Replace the Throttle Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
7	Turn the ignition on. With the DRBIII®, read Throttle Position voltage. Throttle must be against stop. Is the voltage 0.92 or less with the Throttle closed? Yes → Go To 8 No → Check for a binding throttle condition. If OK, replace the Throttle Position Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
8	**Note: For this test to be valid, the thermostat must be operating correctly.** **Note: This test works best if performed on a cold engine (cold soaked).** **NOTE: If the vehicle was allow to sit over night with no engine start, coolant temperature should be near ambient temperatures.** Turn the ignition on. With the DRBIII®, read the Engine Coolant Temperature value. **Note: If engine coolant temperature is above 82° C (180° F), allow the engine to cool until 65° C (150° F) is reached.** Start the engine. During engine warm-up, monitor the Engine Coolant Temperature value. The temperature value change should be a smooth transition from start up to normal operating temp 82° C (180° F). The value should reach at least 82° C (180° F). Did the Engine Temperature value increase smoothly and did it reach at least 82° C (180° F)? Yes → Go To 9 No → Replace the Engine Coolant Temperature Sensor. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
9	The following additional items should be checked as a possible cause for a start and stall condition. Refer to any Technical Service Bulletins (TSB's) that may apply to the symptom. Fuel must be free of contamination. The exhaust system must be free of any restrictions. The engine compression must be within specifications. The engine valve timing must be within specifications. The engine must be free from vacuum leaks. The throttle body must be free of carbon buildup and dirt. Do any of the above conditions exist? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Test Complete.	All

Verification Tests

41TE TRANSMISSION VERIFICATION TEST - VER 1.	APPLICABILITY
1. Connect the DRBIII® to the Data Link Connector (DLC). 2. Reconnect any disconnected components. 3. With the DRBIII®, erase all Transmission DTC's, also erase the PCM DTC's. 4. With the DRBIII®, display transmission temperature. Start and run the engine until the transmission temperature is HOT (above 110 deg. F). 5. Check the transmission fluid and adjust if necessary. Refer to the Service information for the Fluid Fill procedure. **6. NOTE: If the Transmission Control Module or torque converter has been replaced or if the transmission has been repaired or replaced it is necessary to perform the DRBIII® Quick Learn Procedure and reset the "Pinion Factor"** 7. Road test the vehicle. With the DRBIII®, monitor the engine RPM. Make 15 to 20 1-2, 2-3, 3-4 upshifts. Perform these shifts from a standing start to 45 MPH with a constant throttle opening of 20 to 25 degrees. 8. Below 25 MPH, make 5 to 8 wide open throttle kickdowns to 1st gear. Allow at least 5 seconds each in 2nd and 3rd gear between each kickdown. 9. For a specific DTC, drive the vehicle to the Symptom's When Monitored/When Set conditions to verify the DTC repair. 10. Check for Diagnostic Trouble Codes (DTC's) during the road test. If a DTC sets during the road test , return to the Symptom list and follow the path. **11. NOTE: Erase P0700 DTC in the PCM to turn the MIL light off after making transmission repairs. This will turn the MIL off.** Were any Trouble Codes set during the road test? Yes → Refer to the Symptom List for appropriate diagnostic tests. No → Repair is complete.	All

Verification Tests — Continued

BODY VERIFICATION TEST - VER 1	APPLICABILITY
1. Disconnect all jumper wires and reconnect all previously disconnected components and connectors. **2. NOTE: If the SKIM, PCM/ECM or FCM was replaced, refer to the service information for proper programming procedures.** 3. If the Body Control Module (BCM) was replaced, turn the ignition on for 15 seconds (to allow the new BCM to learn VIN) or engine may not start (if VTSS equipped). If the vehicle is equipped with VTSS, use the DRBIII® and enable VTSS. 4. Program all RKE transmitters and other options as necessary. 5. If any HVAC door actuator circuits were repaired, with the DRBIII® in HVAC, System Tests, select Actuator Circuit Test. (Manual Temp Control only). 6. If any actuators were replaced in the HVAC System, with the DRBIII® in HVAC, select System Tests then select HVAC Door Recalibration (Manual Temp Control only). 7. If any actuators were replaced in the ATC System, with the DRBIII® in Automatic Temp Control, select Miscellaneous then select Reset ATC Head. 8. For Three-Zone HVAC Systems, if HVAC Control/Rear Blower Rear Control was replaced/ Rear Blend Pot Circuit Open/Short DTC was set/any rear blend pot circuit was repaired, proceed to Number 9 & 10. 9. With DRBIII® in HVAC, select System Tests then select HVAC Door Recalibration. Door Recalibration must pass before proceeding to next step. 10. With DRBIII® in HVAC, select System Tests then select Reset Rear Blend Switch Span. Rotate Rear Blend/Mode control on Rear Blower Rear Control to full cold. Wait five seconds, then rotate control to full hot. 11. If any repairs were made to the power sliding door or power liftgate, use the DRBIII® and perform the open and close system tests. Observe the instructions on the DRBIII® screen. 12. Ensure that all accessories are turned off and the battery is fully charged. 13. With the DRBIII®, record and erase all DTCs from ALL modules. Start and run the engine for 2 minutes. Operate all functions of the system that caused the original concern. 14. Turn the ignition off and wait 5 seconds. Turn the ignition on and using the DRBIII®, read DTCs from ALL modules. Are any DTC's present or is the original condition still present? Yes → Repair is not complete, refer to the appropriate symptom. No → Repair is complete.	All

POWERTRAIN VERIFICATION TEST VER - 1 - SBEC	APPLICABILITY
1. NOTE: If the PCM has been replaced and the correct VIN and mileage have not been programmed, a DTC will be set in the ABS Module, Airbag Module and the SKIM. **2. NOTE: If the vehicle is equipped with a Sentry Key Immobilizer System, Secret Key data must be updated. Refer to the Service Information for the PCM, SKIM and the Transponder (ignition key) for programming information.** 3. Inspect the vehicle to ensure that all components related to the repair are connected properly. 4. Inspect the engine oil for fuel contamination. Replace the oil and filter as necessary. 5. Attempt to start the engine. 6. If the No Start condition is still present, refer to the symptom list and perform the diagnostic testing as necessary. refer to any Technical Service Bulletins that may apply. 7. Run the engine for one warm-up cycle to verify operation. 8. With the DRBIII®, confirm that no DTCs or Secondary Indicators are present and that all components are functioning properly. 9. If a DTC is present, refer to the appropriate category and select the corresponding symptom. Are any DTCs present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

Verification Tests — Continued

POWERTRAIN VERIFICATION TEST VER - 1 - NGC	APPLICABILITY
1. NOTE: After completing the Powertrain Verification Test the Transmission Verification Test must be performed. **2. NOTE: If the PCM has been replaced and the correct VIN and mileage have not been programmed, a DTC will be set in the ABS Module, Airbag Module and the SKIM.** **3. NOTE: If the vehicle is equipped with a Sentry Key Immobilizer System, Secret Key data must be updated. Refer to the Service Information for the PCM, SKIM and the Transponder (ignition key) for programming information.** 4. Inspect the vehicle to ensure that all components related to the repair are connected properly. 5. Inspect the engine oil for fuel contamination. Replace the oil and filter as necessary. 6. Attempt to start the engine. 7. If the No Start condition is still present, refer to the symptom list and perform the diagnostic testing as necessary. refer to and Technical Service Bulletins that may apply. 8. Run the engine for one warm-up cycle to verify operation. 9. With the DRBIII®, confirm that no DTCs or Secondary Indicators are present and that all components are functioning properly. 10. If a DTC is present, refer to the appropriate category and select the corresponding symptom. Are any DTCs present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

POWERTRAIN VERIFICATION TEST VER - 2 - SBEC	APPLICABILITY
1. NOTE: If the PCM has been replaced and the correct VIN and mileage have not been programmed, a DTC will be set in the ABS Module, Airbag Module and the SKIM. **2. NOTE: If the vehicle is equipped with a Sentry Key Immobilizer System, Secret Key data must be updated. Refer to the Service Information for the PCM, SKIM and the Transponder (ignition key) for programming information.** 3. Inspect the vehicle to ensure that all components related to the repair are connected properly. 4. With the DRBIII®, clear DTCs and Reset Memory all engine values. 5. Run the engine for one warm-up cycle to verify proper operation. 6. Road test the vehicle. Use all accessories that may be related to this repair. 7. With the DRBIII®, confirm that no DTC's or Secondary Indicators are present and that all components are functioning properly. 8. If this test is being performed after a No Trouble Code test, verify the symptom is no longer present. 9. If the symptom is still present, or any other symptom or DTC is present refer to the appropriate category and perform the corresponding symptom. 10. Refer to any Technical Service Bulletins that may apply. 11. If there are no DTCs present and all components are functional properly, the repair is complete. Are any DTCs present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

Verification Tests — Continued

POWERTRAIN VERIFICATION TEST VER - 2 - NGC	APPLICABILITY
1. NOTE: After completing the Powertrain Verification Test the Transmission Verification Test must be performed. **2. NOTE: If the PCM has been replaced and the correct VIN and mileage have not been programmed, a DTC will be set in the ABS Module, Airbag Module and the SKIM.** **3. NOTE: If the vehicle is equipped with a Sentry Key Immobilizer System, Secret Key data must be updated. Refer to the Service Information for the PCM, SKIM and the Transponder (ignition key) for programming information.** 4. Inspect the vehicle to ensure that all components related to the repair are connected properly. 5. With the DRBIII®, clear DTCs and Reset Memory all engine values. 6. Run the engine for one warm-up cycle to verify proper operation. 7. Road test the vehicle. Use all accessories that may be related to this repair. 8. With the DRBIII®, confirm that no DTC's or Secondary Indicators are present and that all components are functioning properly. 9. If this test is being performed after a No Trouble Code test, verify the symptom is no longer present. 10. If the symptom is still present, or any other symptom or DTC is present refer to the appropriate category and perform the corresponding symptom. 11. Refer to any Technical Service Bulletins that may apply. 12. If there are no DTCs present and all components are functional properly, the repair is complete. Are any DTCs present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

POWERTRAIN VERIFICATION TEST VER - 3 - SBEC	APPLICABILITY
1. NOTE: If the PCM has been replaced and the correct VIN and mileage have not been programmed, a DTC will be set in the ABS Module, Airbag Module and the SKIM. **2. NOTE: If the vehicle is equipped with a Sentry Key Immobilizer System, Secret Key data must be updated. Refer to the Service Information for the PCM, SKIM and the Transponder (ignition key) for programming information.** 3. Inspect the vehicle to ensure that all components related to the repair are connected properly. 4. With the DRBIII®, clear DTCs. 5. Perform generator output test. Refer to the appropriate service information as necessary. 6. Start the engine and set engine speed to 2000 RPM for at least thirty seconds. 7. Cycle the ignition key off and on. 8. With the DRBIII®, read the DTCs. If the DTC returns, or any other symptom or DTC is present, refer to the appropriate category and perform the corresponding symptom. 9. If there are no DTCs present and all components are functioning properly, the repair is complete. Are any DTCs present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

Verification Tests — Continued

POWERTRAIN VERIFICATION TEST VER - 3 - NGC	APPLICABILITY
1. NOTE: After completing the Powertrain Verification Test the Transmission Verification Test must be performed. **2. NOTE: If the PCM has been replaced and the correct VIN and mileage have not been programmed, a DTC will be set in the ABS Module, Airbag Module and the SKIM.** **3. NOTE: If the vehicle is equipped with a Sentry Key Immobilizer System, Secret Key data must be updated. Refer to the Service Information for the PCM, SKIM and the Transponder (ignition key) for programming information.** 4. Inspect the vehicle to ensure that all components related to the repair are connected properly. 5. With the DRBIII®, clear DTCs. 6. Perform generator output test. Refer to the appropriate service information as necessary. 7. Start the engine and set engine speed to 2000 RPM for at least thirty seconds. 8. Cycle the ignition key off and on. 9. With the DRBIII®, read the DTCs. If the DTC returns, or any other symptom or DTC is present, refer to the appropriate category and perform the corresponding symptom. 10. If there are no DTCs present and all components are functioning properly, the repair is complete. Are any DTCs present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

Verification Tests — Continued

POWERTRAIN VERIFICATION TEST VER - 4 - SBEC	APPLICABILITY
1. NOTE: If the PCM has been replaced and the correct VIN and mileage have not been programmed, a DTC will be set in the ABS Module, Airbag Module and the SKIM. **2. NOTE: If the vehicle is equipped with a Sentry Key Immobilizer System, Secret Key data must be updated. Refer to the Service Information for the PCM, SKIM and the Transponder (ignition key) for programming information.** 3. Inspect the vehicle to ensure that all engine components are properly installed and connected. 4. Connect the DRBIII® to the data link connector and erase all codes. 5. Turn the speed control ON (if equipped, cruise light will be on). 6. Press and release the SET switch. If the speed control did not engage, the repair is not complete. Check for TSBs that pertain to speed control problems and then, if necessary, return to the Symptom List. 7. Press and hold the RESUME/ACCEL Switch. If the vehicle speed did not increase by at least 2 mph, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 8. Press and hold the COAST switch. The vehicle speed should decrease. If it did not decrease, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 9. Using caution, press and release the brake pedal. If the speed control did not disengage, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 10. Bring the vehicle speed back up to 35 MPH. 11. Press the RESUME/ACCEL switch. If the speed control did not resume the previously set speed, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 12. Hold down the SET switch. If the vehicle did not decelerate, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 13. Ensure vehicle speed is greater than 35 mph and release the SET Switch. If vehicle did not adjust and set a new vehicle speed, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 14. Press and release the CANCEL switch. If the speed control did not disengage, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 15. Bring the vehicle speed back up above 35 mph and engage speed control. 16. Press the OFF switch to turn OFF, (Cruise light will be off). If the speed control did not disengage, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 17. If the vehicle successfully passed all of the previous tests, the speed control system is now functioning as designed. The repair is now complete. Did the Speed Control pass the above test? Yes → Repair is complete. No → Repair is not complete, refer to appropriate symptom.	All

Verification Tests — Continued

POWERTRAIN VERIFICATION TEST VER - 4 - NGC	APPLICABILITY
1. NOTE: After completing the Powertrain Verification Test the Transmission Verification Test must be performed. **2. NOTE: If the PCM has been replaced and the correct VIN and mileage have not been programmed, a DTC will be set in the ABS Module, Airbag Module and the SKIM.** **3. NOTE: If the vehicle is equipped with a Sentry Key Immobilizer System, Secret Key data must be updated. Refer to the Service Information for the PCM, SKIM and the Transponder (ignition key) for programming information.** 4. Inspect the vehicle to ensure that all engine components are properly installed and connected. 5. Connect the DRBIII® to the data link connector and erase all codes. 6. Turn the speed control ON (if equipped, cruise light will be on). 7. Press and release the SET Switch. If the speed control did not engage, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 8. Press and hold the RESUME/ACCEL Switch. If the vehicle speed did not increase by at least 2 mph, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 9. Press and hold the COAST switch. The vehicle speed should decrease. If it did not decrease, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 10. Using caution, press and release the brake pedal. If the speed control did not disengage, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 11. Bring the vehicle speed back up to 35 MPH. 12. Press the RESUME/ACCEL switch. If the speed control did not resume the previously set speed, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 13. Hold down the SET switch. If the vehicle did not decelerate, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 14. Ensure vehicle speed is greater than 35 mph and release the SET Switch. If vehicle did not adjust and set a new vehicle speed, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 15. Press and release the CANCEL switch. If the speed control did not disengage, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 16. Bring the vehicle speed back up above 35 mph and engage speed control. 17. Turn the Speed Control Off. (Cruise light will be off). If the speed control did not disengage, the repair is not complete. Check for TSBs that pertain to speed control problem and then, if necessary, return to Symptom List. 18. If the vehicle successfully passed all of the previous tests, the speed control system is now functioning as designed. The repair is now complete. Did the Speed Control pass the above test? Yes → Repair is complete. No → Repair is not complete, refer to appropriate symptom.	All

Verification Tests — Continued

POWERTRAIN VERIFICATION TEST VER - 5- SBEC	APPLICABILITY
1. NOTE: If the PCM has been replaced and the correct VIN and mileage have not been programmed, a DTC will be set in the ABS Module, Airbag Module and the SKIM. **2. NOTE: If the vehicle is equipped with a Sentry Key Immobilizer System, Secret Key data must be updated. Refer to the Service Information for the PCM, SKIM and the Transponder (ignition key) for programming information.** 3. Inspect the vehicle to ensure that all engine components are properly installed and connected. Reassemble and reconnect components as necessary. 4. Connect the DRBIII® to the data link connector. 5. Ensure the fuel tank has at least a quarter tank of fuel. Turn off all accessories. 6. If a Comprehensive Component DTC was repaired, perform steps 5 - 8. If a Major OBDII Monitor DTC was repaired skip those steps and continue verification. 7. After the ignition has been off for at least 10 seconds, restart the vehicle and run 2 minutes. 8. If the Good Trip counter changed to one or more and there are no new DTC's, the repair was successful and is now complete. Erase DTC's and disconnect the DRBIII®. 9. If the repaired DTC has reset, the repair is not complete. Check for any related TSB's or flash updates and return to the Symptom list. 10. If another DTC has set, return to the Symptom List and follow the path specified for that DTC. 11. With the DRBIII®, monitor the appropriate pre-test enabling conditions until all conditions have been met. Once the conditions have been met, switch screen to the appropriate OBDII monitor, (Audible beeps when the monitor is running). 12. If the monitor ran, and the Good Trip counter changed to one or more, the repair was successful and is now complete. Erase DTC's and disconnect the DRBIII®. 13. If the repaired OBDII trouble code has reset or was seen in the monitor while on the road test, the repair is not complete. Check for any related technical service bulletins or flash updates and return to Symptom List. 14. If another DTC has set, return to the Symptom List and follow the path specified for that DTC. Are any DTCs present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

Verification Tests — Continued

POWERTRAIN VERIFICATION TEST VER - 5 - NGC	APPLICABILITY
1. NOTE: After completing the Powertrain Verification Test the Transmission Verification Test must be performed. **2. NOTE: If the PCM has been replaced and the correct VIN and mileage have not been programmed, a DTC will be set in the ABS Module, Airbag Module and the SKIM.** **3. NOTE: If the vehicle is equipped with a Sentry Key Immobilizer System, Secret Key data must be updated. Refer to the Service Information for the PCM, SKIM and the Transponder (ignition key) for programming information.** 4. Inspect the vehicle to ensure that all engine components are properly installed and connected. Reassemble and reconnect components as necessary. 5. Connect the DRBIII® to the data link connector. 6. Ensure the fuel tank has at least a quarter tank of fuel. Turn off all accessories. 7. If a Comprehensive Component DTC was repaired, perform steps 5 - 8. If a Major OBDII Monitor DTC was repaired skip those steps and continue verification. 8. After the ignition has been off for at least 10 seconds, restart the vehicle and run 2 minutes. 9. If the Good Trip counter changed to one or more and there are no new DTC's, the repair was successful and is now complete. Erase DTC's and disconnect the DRBIII®. 10. If the repaired DTC has reset, the repair is not complete. Check for any related TSB's or flash updates and return to the Symptom list. 11. If another DTC has set, return to the Symptom List and follow the path specified for that DTC. 12. With the DRBIII®, monitor the appropriate pre-test enabling conditions until all conditions have been met. Once the conditions have been met, switch screen to the appropriate OBDII monitor, (Audible beeps when the monitor is running). 13. If the monitor ran, and the Good Trip counter changed to one or more, the repair was successful and is now complete. Erase DTC's and disconnect the DRBIII®. 14. If the repaired OBDII trouble code has reset or was seen in the monitor while on the road test, the repair is not complete. Check for any related technical service bulletins or flash updates and return to Symptom List. 15. If another DTC has set, return to the Symptom List and follow the path specified for that DTC. Are any DTCs present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

Verification Tests — Continued

POWERTRAIN VERIFICATION TEST VER - 6 - SBEC	APPLICABILITY
1. NOTE: If the PCM has been replaced and the correct VIN and mileage have not been programmed, a DTC will be set in the ABS Module, Airbag Module and the SKIM. **2. NOTE: If the vehicle is equipped with a Sentry Key Immobilizer System, Secret Key data must be updated. Refer to the Service Information for the PCM, SKIM and the Transponder (ignition key) for programming information.** 3. Inspect the vehicle to ensure that all engine components are properly installed and connected. Reassemble and reconnect components as necessary. 4. The LDP Monitor Test Mode has been added to the DRBIII® to verify repairs to the LDP System. A DRBIII® software program was written which causes the PCM to run the LDP Monitor as part of this test. Test failures will be indicated through a stored DTC. 5. LDP Monitor Test Mode is a useful way to run a total system performance test. Use this test to verify any type of LDP system repair. 6. Software program makes temporary changes to operating mode of PCM. For this reason, it is critical that test not be interrupted. PCM's left in this mode as result of interrupted test will illuminate the MIL for 8-10 mi of driving with no DTC's stored. 7. Erasing DTC's will not change this condition. 8. If a vehicle is found to be stuck in the mode described above, the LDP Dealer Test should be re-run in its entirety so that the software program in the DRBIII® can restore the PCM operating mode. 9. Note similarity to LDP Monitor screen found under OBDII Monitors. Failure modes are fewer in this System Test than OBDII LDP Monitor. 10. System Test failure may have been, for example, due to a large leak, but the PCM will set the Small Leak DTC to indicate failures that occurred as part of the system test. 11. Connect the DRBIII® to the data link connector. Engine running, turn off all accessories. 12. Note: While test is being performed, PCM must see RPM, minimum MAP, No Vehicle speed and minimum Throttle Position sensor (At idle, in park.) With DRBIII® in System Tests, perform the LDP Monitor Test and follow the instructions on the screen. 13. If the LDP Monitor Test failed and a .020 Leak DTC has set, the repair is not complete. Check for any related Technical Service Bulletins and return to Symptom List. 14. If any other trouble code has set, return to Symptom List and follow the path specified for that trouble code. If the LDP Monitor Test passed, the repair was successful and testing is now complete. Are any DTCs present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

Verification Tests — Continued

POWERTRAIN VERIFICATION TEST VER - 6 - NGC	APPLICABILITY
1. Install the Miller Tool #8404 Evaporative Emission Leak Detector (EELD). according to the instructions in the pervious DTC table. 2. Set the smoke/air control switch to AIR. 3. Insert the tester's AIR supply tip (clear hose) into the appropriate calibration orifice on the tester's control panel (based on DTC leak size). 4. Press the remote smoke/air start button. 5. Position the red flag on the air flow meter so it is aligned with the indicator ball. 6. When the calibration is complete, release the remote button. The EELD is now calibrated the flow meter in liters per minute to the size leak indicated by the DTC set in the PCM. 7. Install the service port adapter #8404-14 on the vehicle's service port. 8. Connect the Air supply hose from the EELD to the service port. 9. Press the remote button to activate AIR flow. **10. NOTE: Larger volume fuel tanks, lower fuel levels or if the vehicle is equipped with a Flow Management Valve may indicate high flow and will require 4 to 5 minutes to fill.** 11. Compare the flow meter indicator ball reading to the red flag. 12. ABOVE the red flag indicates a leak present. 13. BELOW the red flag indicates a sealed system. 14. If the indicator ball shows a leak present, perform the smoke test indicated in the previous test and identify the leak and repair. Perform this verification test when the repair is complete. Did the indicator ball indicate the a leak is present?? Yes → Repeat the DTC test to identify the leak and repair. No → Repair is complete.	All

SKIS VERIFICATION	APPLICABILITY
1. Reconnect all previously disconnected components and connectors. 2. Obtain the vehicle's unique Personal Identification Number (PIN) assigned to it's original SKIM. This number can be obtained from the vehicle's invoice or Chrysler's Customer Center (1-800-992-1997). **3. NOTE: When entering the PIN, care should be taken because the SKIM will only allow 3 consecutive attempts to enter the correct PIN. If 3 consecutive incorrect PIN's are entered the SKIM will Lock Out the DRB III for 1 hour.** 4. To exit Lock Out mode, the ignition key must remain in the Run position continually for 1 hour. Turn off all accessories and connect a battery charger if necessary. 5. With the DRB III, select Theft Alarm, SKIM and Miscellaneous. Then select desired procedure and follow the steps that will be displayed. 6. If the SKIM has been replaced, ensure all of the vehicle ignition keys are programmed to the new SKIM. **7. NOTE: Prior to returning vehicle to the costumer, perform a module scan to be sure that all DTC's are erased. Erase any DTC's that are found.** 8. With the DRB III erase all DTC's. Perform 5 ignition key cycles leaving the key on for at least 90 seconds per cycle. 9. With the DRB III, read the SKIM DTC's. Are there any SKIM DTC's? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

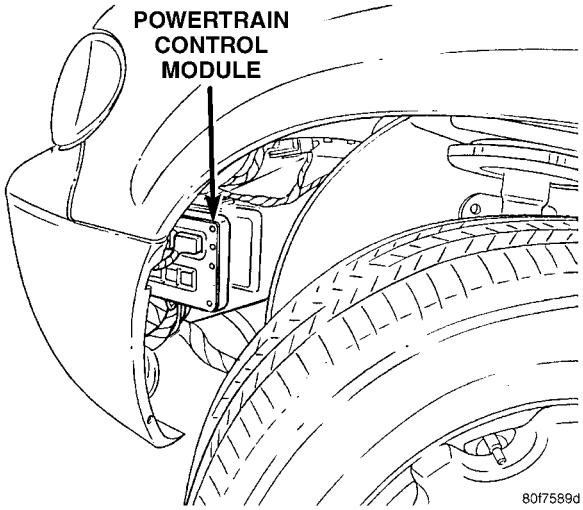
Verification Tests — Continued

SKIS VERIFICATION	APPLICABILITY
1. Reconnect all previously disconnected components and connectors. 2. Obtain the vehicle's unique Personal Identification Number (PIN) assigned to it's original SKIM. This number can be obtained from the vehicle's invoice or Chrysler's Customer Center (1-800-992-1997). **3. NOTE: When entering the PIN, care should be taken because the SKIM will only allow 3 consecutive attempts to enter the correct PIN. If 3 consecutive incorrect PINs are entered, the SKIM will Lock Out the DRBIII® for 1 hour.** 4. To exit Lock Out mode, the ignition key must remain in the Run position continually for 1 hour. Turn off all accessories and connect a battery charger if necessary. 5. With the DRBIII®, select Theft Alarm, SKIM and Miscellaneous. Then, select the desired procedure and follow the steps that will be displayed. 6. If the SKIM has been replaced, ensure all of the vehicle ignition keys are programmed to the new SKIM. **7. NOTE: Prior to returning vehicle to the customer, perform a module scan to be sure that all DTCs are erased. Erase any DTCs that are found.** 8. With the DRBIII®, erase all DTCs. Perform 5 ignition key cycles leaving the key on for at least 90 seconds per cycle. 9. With the DRBIII®, read the SKIM DTCs. Are there any SKIM DTCs? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

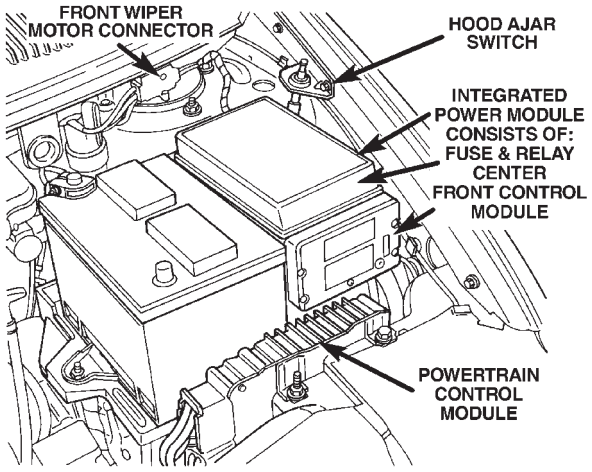
8.0 COMPONENT LOCATIONS

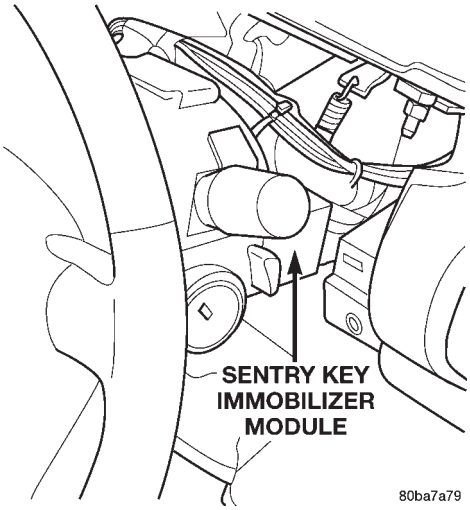
8.1 CONTROL MODULES AND FUSE & RELAY CENTER

2.4L



3.3L/3.8L





8.2 CONTROLS AND SOLENOID

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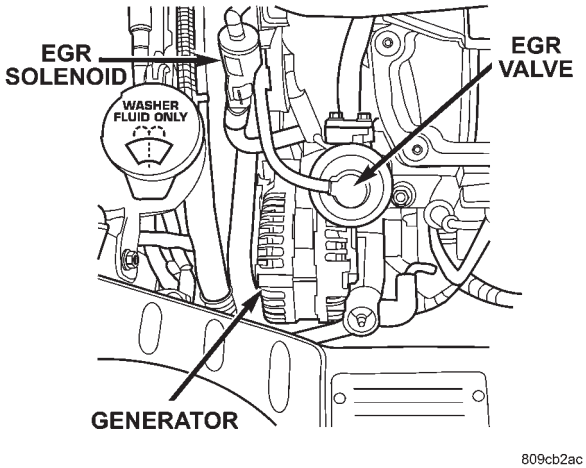

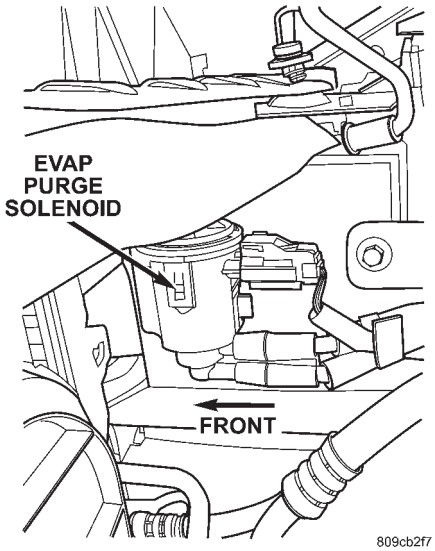

8.2 CONTROLS AND SOLENOID (Continued)

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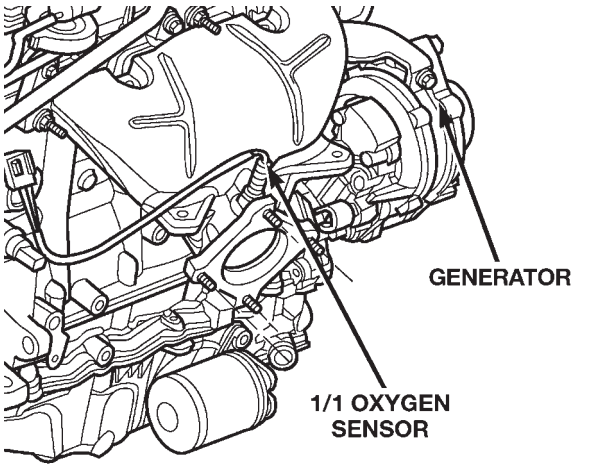

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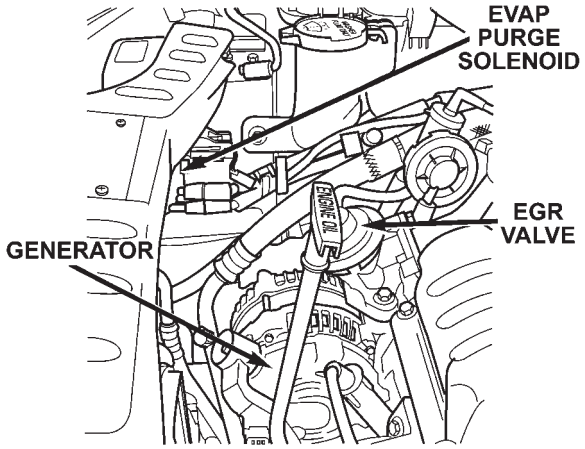

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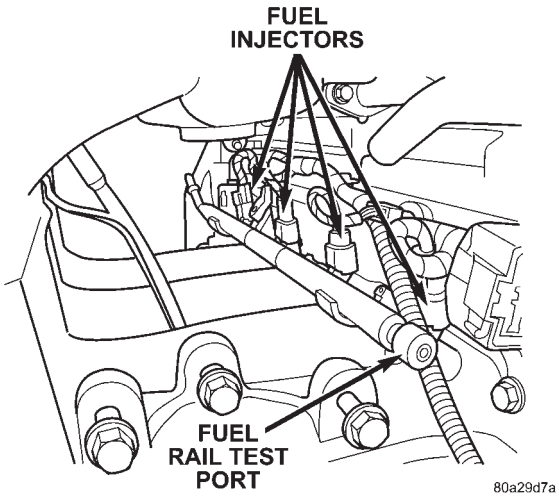

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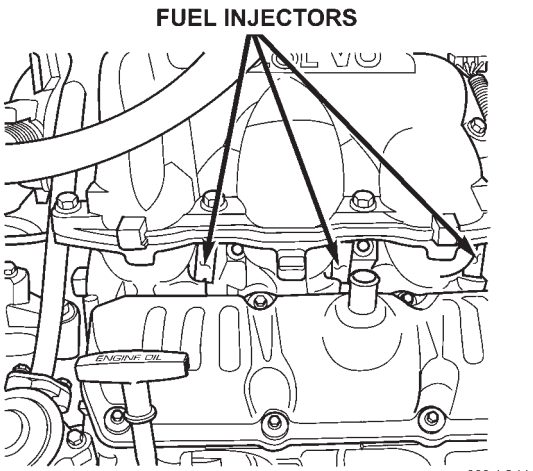

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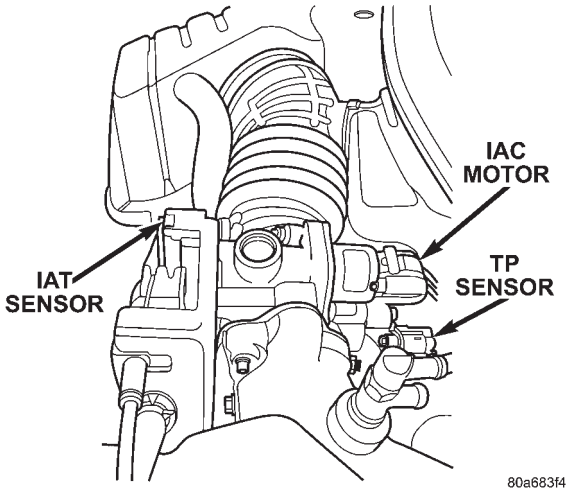

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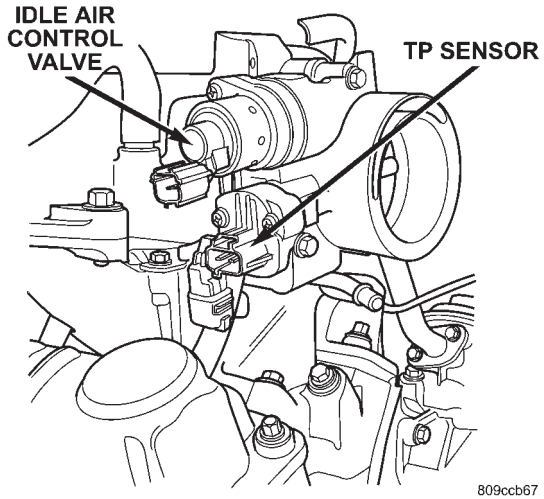

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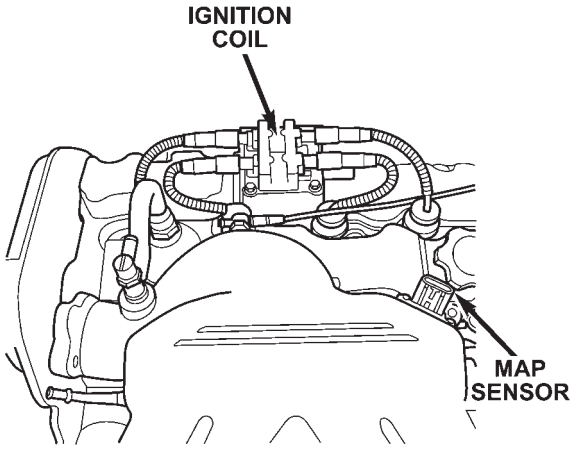

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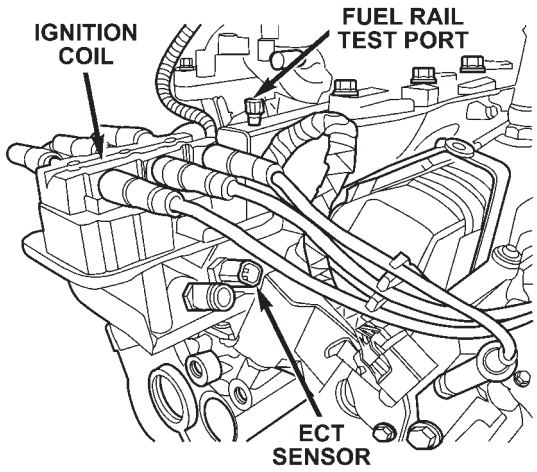

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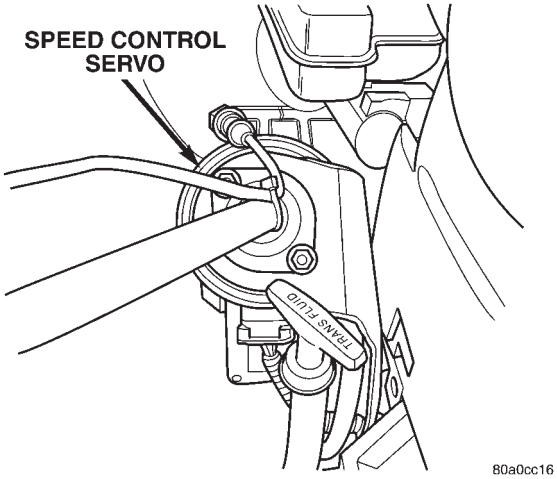

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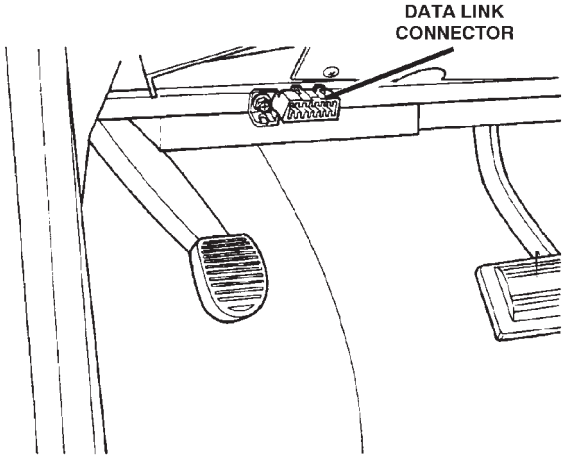
8.3 DATA LINK CONNECTOR



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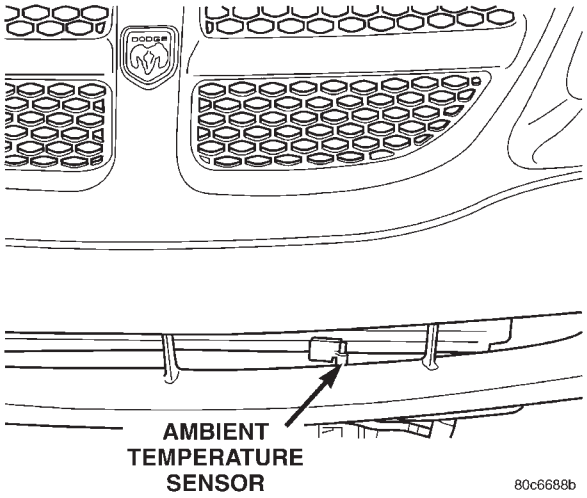
8.4 SENSORS



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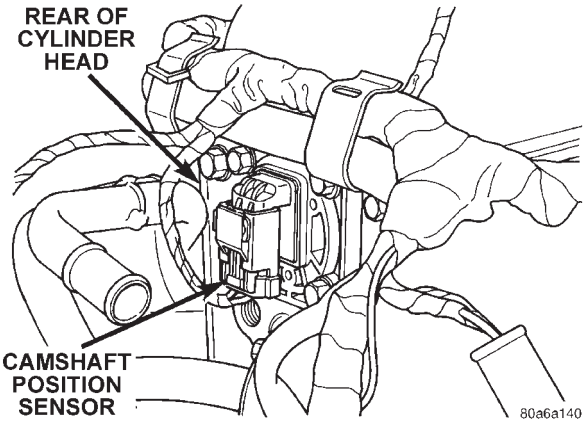

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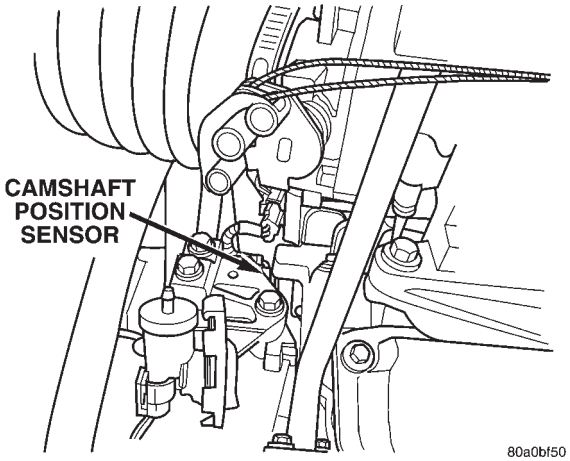

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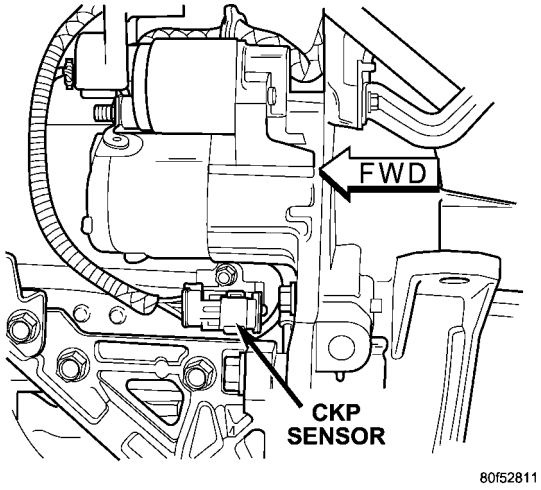

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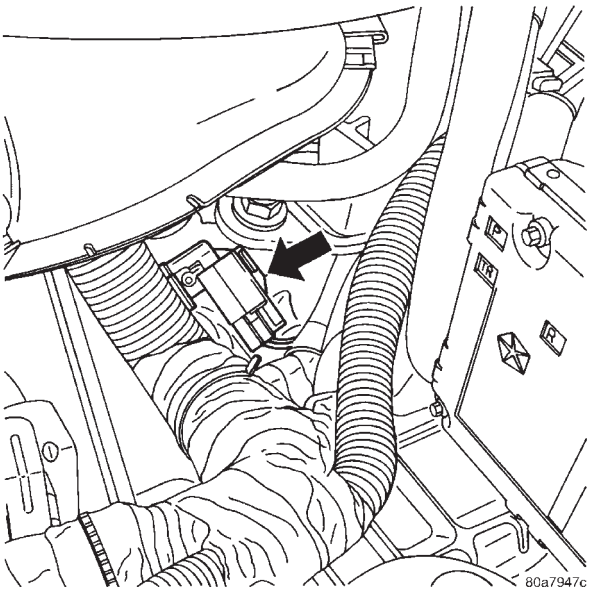

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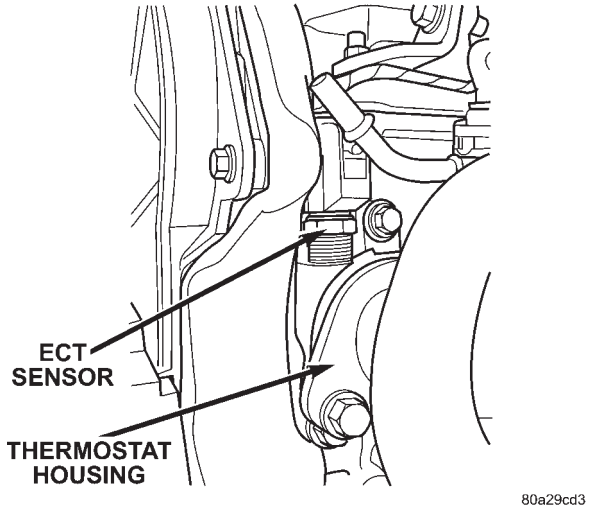

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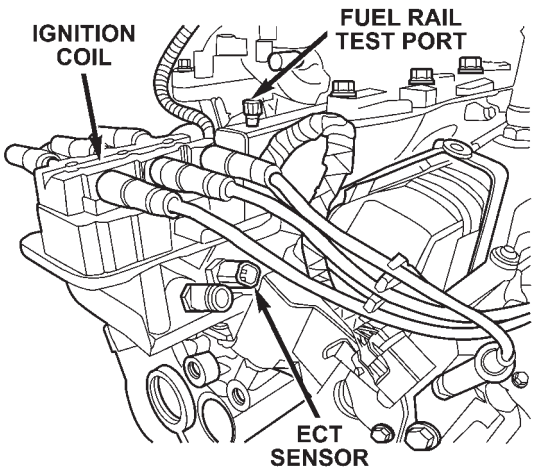

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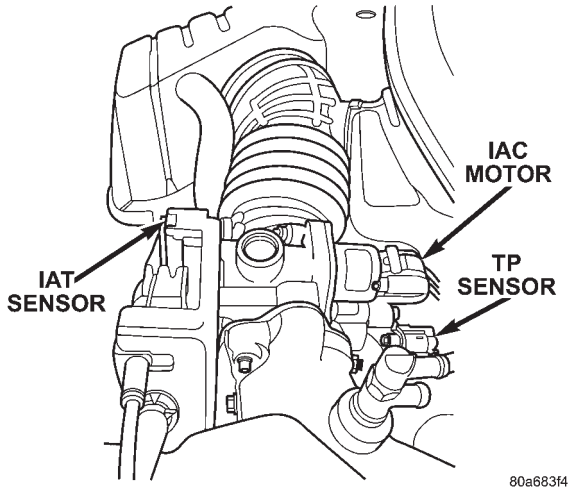

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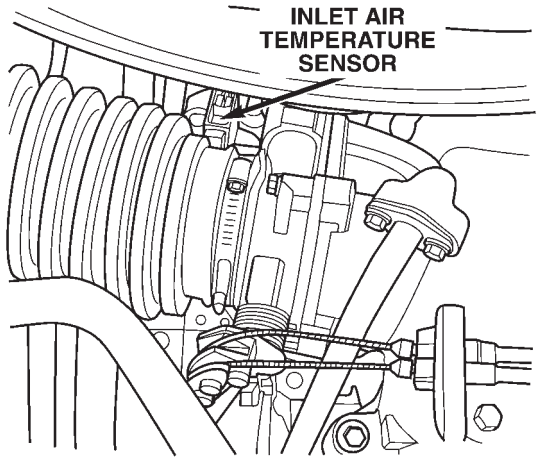

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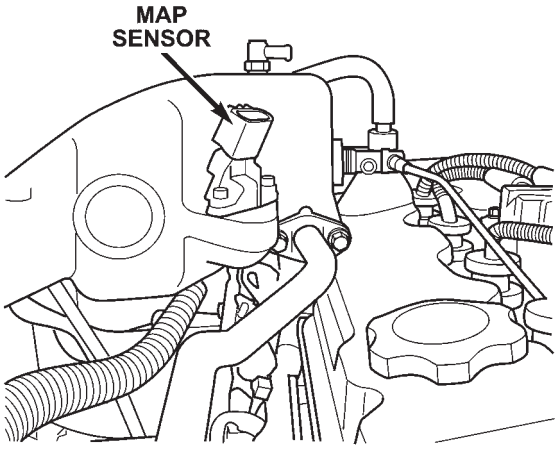

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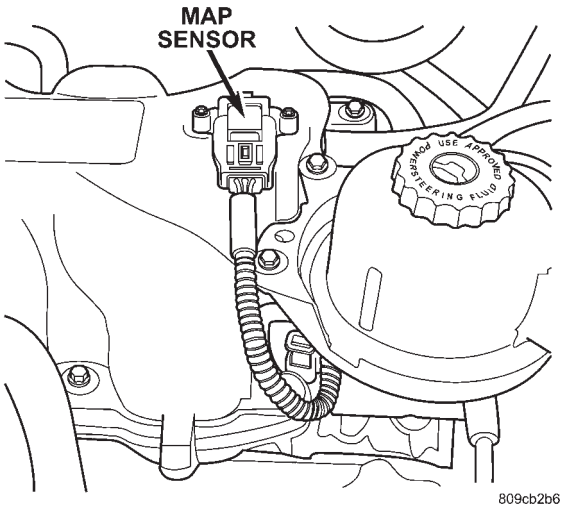

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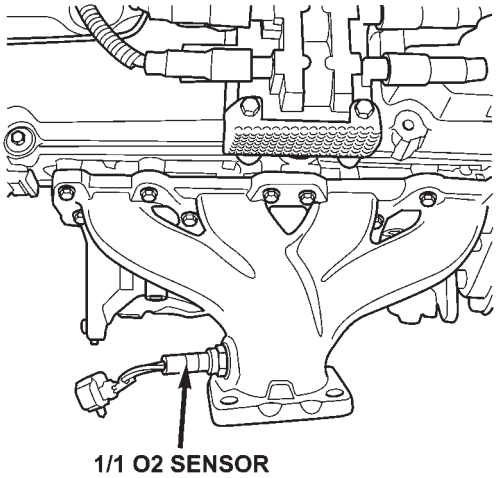

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8.4 SENSORS (Continued)

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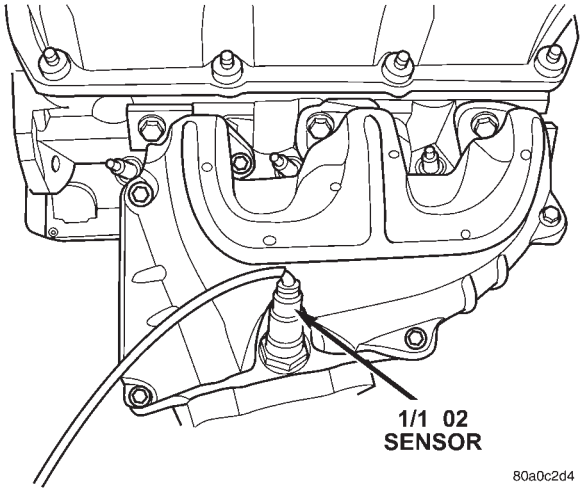

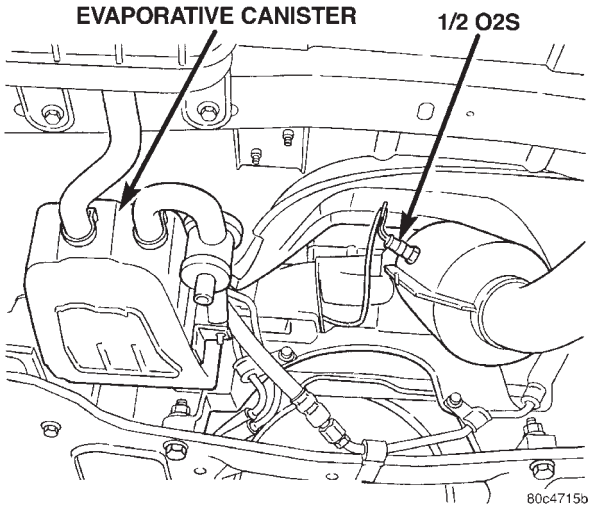

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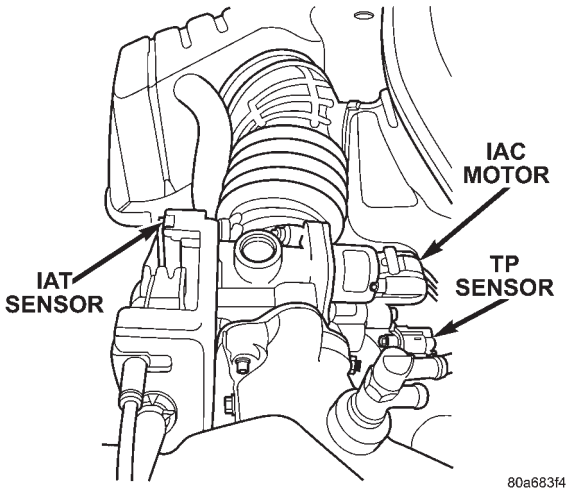
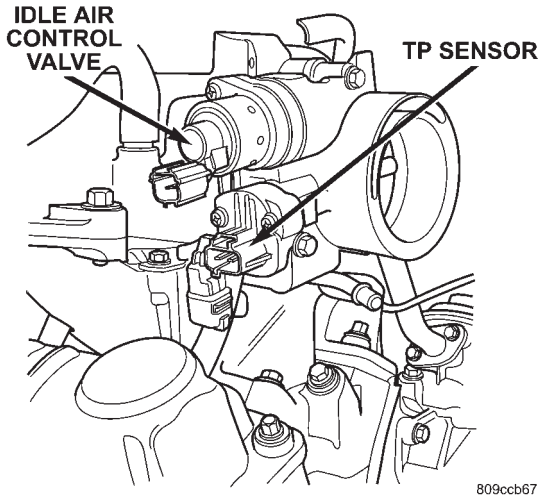
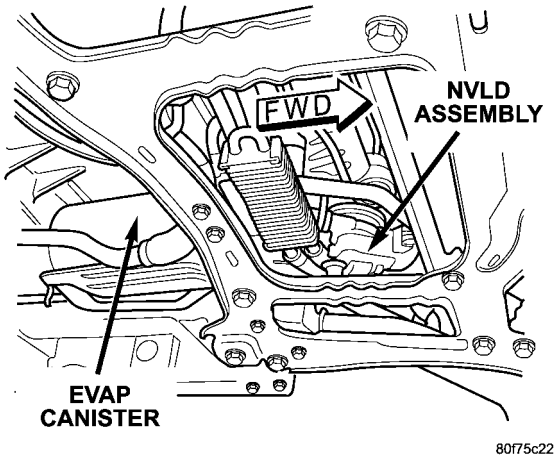


3.3L/3.8L



8.5 FUEL SYSTEM

2.4L



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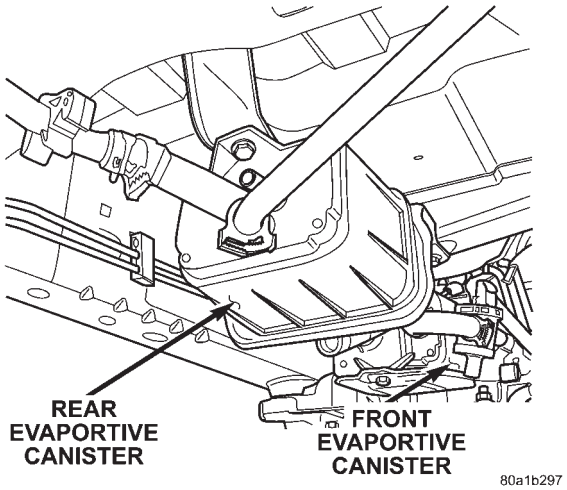

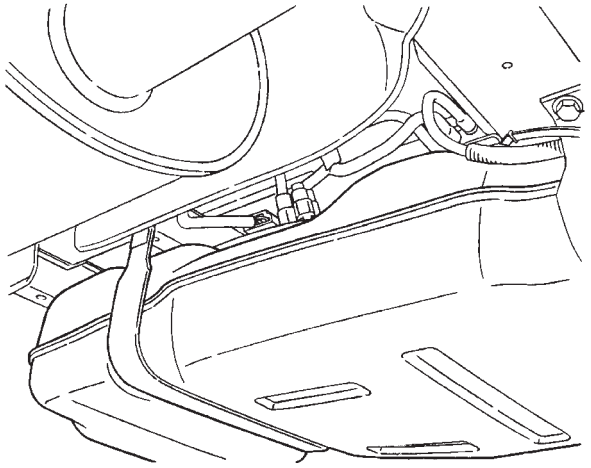

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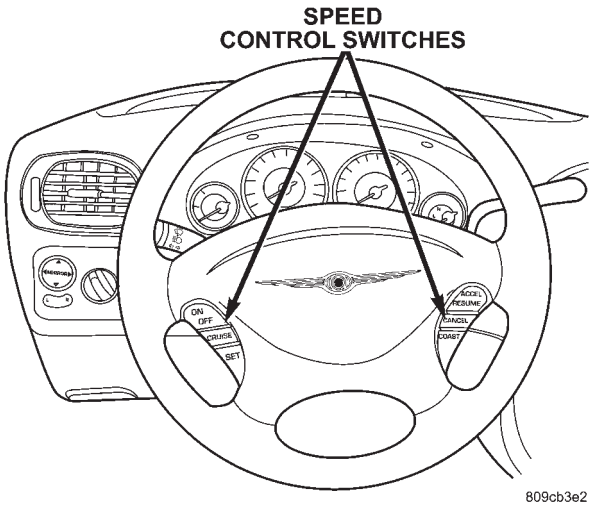
8.6 SWITCHES



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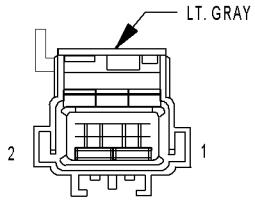
NOTES

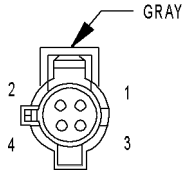
9.0 CONNECTOR PINOUTS



A/C COMPRESSOR CLUTCH

A/C COMPRESSOR CLUTCH

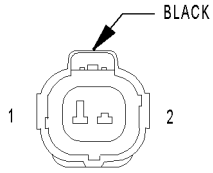
CAV	CIRCUIT	FUNCTION
1	C3 20DB/YL (2.4L)	A/C COMPRESSOR CLUTCH RELAY OUTPUT
1	C3 18DB/YL (3.3L/3.8L/ DIESEL)	A/C COMPRESSOR CLUTCH RELAY OUTPUT
2	Z153 18BK/GY	GROUND



A/C PRESSURE SENSOR

A/C PRESSURE SENSOR

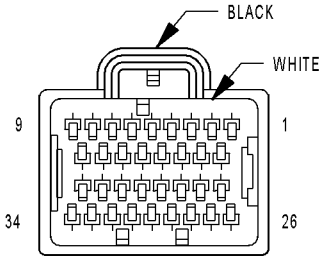
CAV	CIRCUIT	FUNCTION
1	K900 18DB/DG (GAS)	SENSOR GROUND
1	C918 20BK/LB (DIESEL)	A/C PRESSURE SENSOR GROUND
2	F855 20PK/YL (2.4L)	5 VOLT SUPPLY
2	F851 20LB/PK (DIESEL)	SENSOR REFERENCE VOLTAGE B
2	F855 18PK/YL (3.3L/3.8L)	5 VOLT SUPPLY
3	C18 18LB/BR (3.3L/3.8L)	A/C PRESSURE SENSOR SIGNAL
3	C18 20LB/BR (DIESEL)	A/C PRESSURE SENSOR SIGNAL
3	C18 18LB/BR (2.4L)	A/C PRESSURE SIGNAL
4	-	-



AMBIENT TEMPERATURE SENSOR (EXCEPT BASE)

AMBIENT TEMPERATURE SENSOR (EXCEPT BASE)

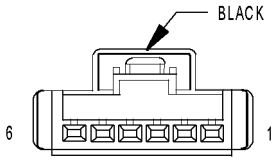
CAV	CIRCUIT	FUNCTION
1	G31 18VT/LG (EXCEPT 2.4L)	AMBIENT TEMPERATURE SENSOR SIGNAL
1	G31 18VT/LG (2.4L)	AAT SIGNAL
2	K900 18DB/DG (2.4L)	SENSOR GROUND
2	G931 18VT/BR (EXCEPT 2.4L)	AMBIENT TEMPERATURE SENSOR RETURN



BODY CONTROL MODULE C3

BODY CONTROL MODULE C3

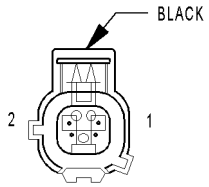
CAV	CIRCUIT	FUNCTION
1	G23 22VT/DB (POWER SLIDING DOOR)	SLIDING DOORS OVERHEAD SWITCH MUX
2	D123 20WT/BR	FLASH PROGRAM ENABLE
3	G152 22VT/GY (POWER SLIDING DOOR)	RIGHT SLIDING DOOR WAKE UP SIGNAL
4	G151 22VT/BR (POWER SLIDING DOOR)	LEFT SLIDING DOOR WAKE UP SIGNAL
5	G76 20VT/YL	RIGHT SLIDING DOOR AJAR SWITCH SENSE
6	G75 22VT (LHD)	LEFT FRONT DOOR AJAR SWITCH SENSE
6	G74 22VT/WT (RHD)	RIGHT FRONT DOOR AJAR SWITCH SENSE
7	G75 22VT (RHD)	LEFT FRONT DOOR AJAR SWITCH SENSE
7	G74 22VT/WT (LHD)	RIGHT FRONT DOOR AJAR SWITCH SENSE
8	G77 22VT/GY	LEFT SLIDING DOOR AJAR SWITCH SENSE
9	E10 20OR/DG (3 ZONE ATC/MTC)	PANEL LAMPS DRIVER (REAR BLOWER SWITCH)
10	-	-
11	L162 20WT/VT (EXPORT)	RIGHT SIDE REPEATER LAMP FEED
12	G42 22VT/WT (POWER SLIDING DOOR)	RIGHT SLIDING DOOR PILLAR SWITCH MUX
13	G165 20VT/GY (EXPORT)	LIFTGATE CYLINDER LOCK SWITCH MUX
14	G163 22VT/LB	LEFT CYLINDER LOCK SWITCH MUX
15	G162 22VT/WT (EXCEPT EXPORT)	RIGHT CYLINDER LOCK SWITCH MUX
15	G162 22VT/TN (EXPORT)	RIGHT CYLINDER LOCK SWITCH MUX
16	-	-
17	F503 20WT/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
18	G41 22VT/DG (POWER SLIDING DOOR)	LEFT SLIDING DOOR PILLAR SWITCH MUX
19	L163 20WT/BR (EXPORT)	LEFT SIDE REPEATER LAMP FEED
20	N4 20DB/WT	FUEL LEVEL SENSOR SIGNAL
21	G161 22VT/DG (LHD)	LEFT DOOR LOCK SWITCH MUX
21	G160 22VT/LG (RHD)	RIGHT DOOR LOCK SWITCH MUX
22	G161 22VT/DG (RHD)	LEFT DOOR LOCK SWITCH MUX
22	G160 22VT/LG (LHD)	RIGHT DOOR LOCK SWITCH MUX
23	D25 20WT/VT	PCI BUS
24	-	-
25	M11 20YL/VT	COURTESY LAMPS DRIVER
26	P31 20TN/YL (POWER RELEASE EXCEPT GAS LHD SWB EXPORT)	LIFTGATE RELEASE DRIVER
27	-	-
28	-	-
29	G78 20VT/OR	LIFTGATE AJAR SWITCH SENSE
30	G70 22VT/LB (EXPORT)	HOOD AJAR SWITCH SENSE
31	F500 18DG/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
32	-	-
33	M21 20YL/BR	COURTESY LAMPS DRIVER
34	M27 20YL/LB	READING LAMPS DRIVER



BRAKE
LAMP
SWITCH

BRAKE LAMP SWITCH

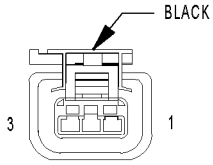
CAV	CIRCUIT	FUNCTION
1	A103 18GY/RD	FUSED B(+)
2	L50 18WT/TN (GAS)	BRAKE LAMP SWITCH OUTPUT
2	L50 18WT/TN (DIESEL)	PRIMARY BRAKE SWITCH SIGNAL
3	V30 20VT/WT (GAS)	SPEED CONTROL BRAKE SWITCH OUTPUT
4	V32 20VT/YL (GAS)	SPEED CONTROL ON/OFF SWITCH SENSE
5	Z429 20BK/OR	GROUND
6	B29 20DG/WT	SECONDARY BRAKE SWITCH SIGNAL



BRAKE
TRANSMISSION
SHIFT
INTERLOCK
SOLENOID
(EATX)

BRAKE TRANSMISSION SHIFT INTERLOCK SOLENOID (EATX)

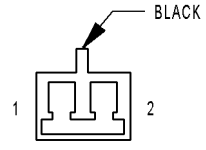
CAV	CIRCUIT	FUNCTION
1	K32 18DB/YL	BRAKE TRANSMISSION SHIFT INTERLOCK SOLENOID CONTROL
2	F2 18PK/YL	FCM OUTPUT (UNLOCK-RUN-START)



CAMSHAFT
POSITION SENSOR
(GAS)

CAMSHAFT POSITION SENSOR (GAS)

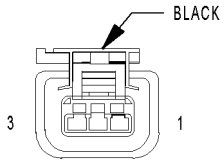
CAV	CIRCUIT	FUNCTION
1	F855 20PK/YL (2.4L)	5 VOLT SUPPLY
1	F888 18BR/PK (3.3L/3.8L)	8 VOLT SUPPLY
2	K900 20DB/DG	SENSOR GROUND
3	K44 18DB/GY (3.3L/3.8L)	CAMSHAFT POSITION SENSOR SIGNAL
3	K44 18DB/GY (2.4L)	CMP SIGNAL



CLUTCH PEDAL
INTERLOCK
SWITCH
(MTX)

CLUTCH PEDAL INTERLOCK SWITCH (MTX)

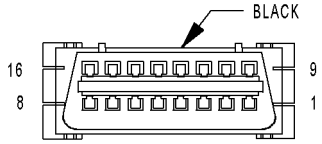
CAV	CIRCUIT	FUNCTION
1	T141 20YL/OR	FUSED IGNITION SWITCH OUTPUT (START)
2	T751 20YL (DIESEL)	FUSED IGNITION SWITCH OUTPUT (START)
2	Z429 20BK/OR (GAS)	GROUND



CRANKSHAFT POSITION SENSOR (GAS)

CRANKSHAFT POSITION SENSOR (GAS)

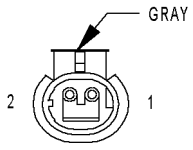
CAV	CIRCUIT	FUNCTION
1	F888 18BR/PK (3.3L/3.8L)	8 VOLT SUPPLY
1	F855 20PK/YL (2.4L)	5 VOLT SUPPLY
2	K900 18DB/DG (3.3L/3.8L)	SENSOR GROUND
2	K900 20DB/DG (2.4L)	SENSOR GROUND
3	K24 18BR/LB (2.4L)	CKP SIGNAL
3	K24 18BR/LB (3.3L/3.8L)	CRANKSHAFT POSITION SENSOR SIGNAL



DATA LINK CONNECTOR

DATA LINK CONNECTOR

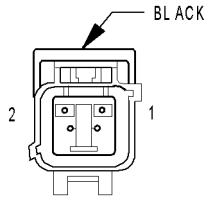
CAV	CIRCUIT	FUNCTION
1	-	-
2	D25 20WT/VT	PCI BUS
3	-	-
4	Z11 18BK/LG	GROUND
5	Z111 18BK/WT	GROUND
6	-	-
7	D21 20WT/DG (GAS)	SCI TRANSMIT (PCM)
7	D21 20WT/DG (DIESEL)	SCI TRANSMIT (ECM)
8	-	-
9	D123 20WT/BR	FLASH PROGRAM ENABLE
10	-	-
11	-	-
12	D20 20WT/LG (GAS)	SCI RECEIVE (PCM)
13	-	-
14	-	
15	D15 20DG/YL (GAS)	SCI TRANSMIT (TCM)
16	A105 20DB/RD	FUSED B(+)



EGR SOLENOID (3.3L/3.8L)

EGR SOLENOID (3.3L/3.8L EXPORT)

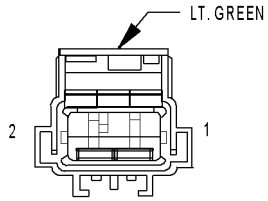
CAV	CIRCUIT	FUNCTION
1	K35 18DB/VT	EGR SOLENOID CONTROL
2	F202 18PK/GY	FUSED IGNITION SWITCH OUTPUT (RUN-START)



ENGINE COOLANT TEMP SENSOR (GAS)

ENGINE COOLANT TEMP SENSOR (GAS)

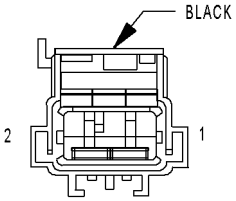
CAV	CIRCUIT	FUNCTION
1	K900 18DB/DG	SENSOR GROUND
2	K2 18VT/OR (3.3L/3.8L)	ENGINE COOLANT TEMPERATURE SENSOR SIGNAL
2	K2 18VT/OR (2.4L)	ECT SIGNAL



ENGINE OIL PRESSURE SWITCH (GAS)

ENGINE OIL PRESSURE SWITCH (GAS)

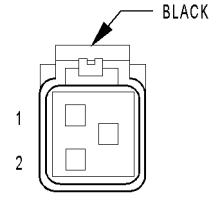
CAV	CIRCUIT	FUNCTION
1	G6 16VT/GY (3.3L/3.8L)	ENGINE OIL PRESSURE SWITCH SENSE
1	G6 16VT/GY (2.4L)	OIL PRESSURE SIGNAL
2	-	-



EVAP/ PURGE SOLENOID (GAS)

EVAP/PURGE SOLENOID (GAS)

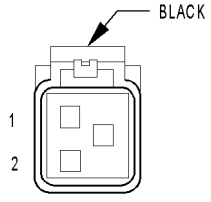
CAV	CIRCUIT	FUNCTION
1	K52 18DB/WT (3.3L/3.8L)	EVAPORATIVE EMISSION SOLENOID CONTROL
1	K52 18DB/WT (2.4L)	EVAP PURGE CONTROL
2	K70 18DB/BR (2.4L)	EVAP PURGE SIGNAL
2	K70 18DB/BR (3.3L/3.8L)	EVAPORATIVE EMISSION SOLENOID SENSE



FUEL INJECTOR NO. 1 (2.4L/3.3L/3.8L)

FUEL INJECTOR NO. 1 (2.4L/3.3L/3.8L)

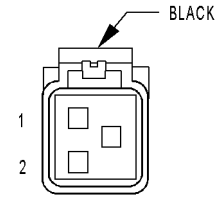
CAV	CIRCUIT	FUNCTION
1	K342 16BR/WT	AUTOMATIC SHUT DOWN RELAY OUTPUT
2	K11 16BR/YL (3.3L/3.8L)	FUEL INJECTOR NO. 1 DRIVER
2	K11 16BR/YL (2.4L)	INJECTOR CONTROL NO. 1



FUEL INJECTOR NO. 2 (2.4L/3.3L/3.8L)

FUEL INJECTOR NO. 2 (2.4L/3.3L/3.8L)

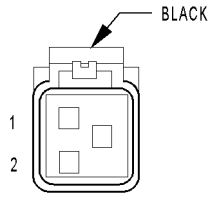
CAV	CIRCUIT	FUNCTION
1	K342 16BR/WT	AUTOMATIC SHUT DOWN RELAY OUTPUT
2	K12 16BR/DB (3.3L/3.8L)	FUEL INJECTOR NO. 2 DRIVER
2	K12 16BR/DB (2.4L)	INJECTOR CONTROL NO. 2



FUEL INJECTOR NO. 3 (2.4L/3.3L/3.8L)

FUEL INJECTOR NO. 3 (2.4L/3.3L/3.8L)

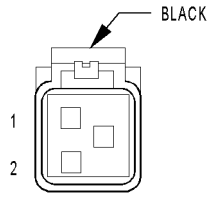
CAV	CIRCUIT	FUNCTION
1	K342 16BR/WT	AUTOMATIC SHUT DOWN RELAY OUTPUT
2	K13 16BR/LB (3.3L/3.8L)	FUEL INJECTOR NO. 3 DRIVER
2	K13 16BR/LB (2.4L)	INJECTOR CONTROL NO. 3



FUEL INJECTOR NO. 5 (3.3L/3.8L)

FUEL INJECTOR NO. 5 (3.3L/3.8L)

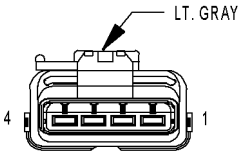
CAV	CIRCUIT	FUNCTION
1	K342 16BR/WT	AUTOMATIC SHUT DOWN RELAY OUTPUT
2	K38 16BR/OR	FUEL INJECTOR NO. 5 DRIVER



FUEL INJECTOR NO. 6 (3.3L/3.8L)

FUEL INJECTOR NO. 6 (3.3L/3.8L)

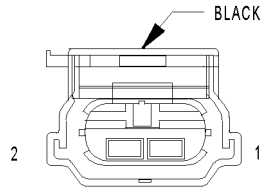
CAV	CIRCUIT	FUNCTION
1	K342 16BR/WT	AUTOMATIC SHUT DOWN RELAY OUTPUT
2	K58 16BR/VT	FUEL INJECTOR NO. 6 DRIVER



FUEL PUMP MODULE

FUEL PUMP MODULE

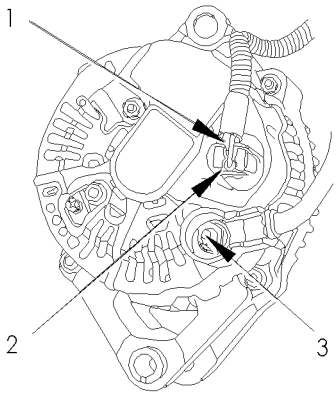
CAV	CIRCUIT	FUNCTION
1	Z201 18BK/OR (GAS)	GROUND
2	Z201 20BK/DB (LHD/ DIESEL/GAS)	GROUND
2	Z201 18BK/OR (RHD/ DIESEL)	GROUND
3	N4 20DB/WT	FUEL LEVEL SENSOR SIGNAL
4	N1 18DB/OR (GAS)	FUEL PUMP RELAY OUTPUT



GENERATOR

GENERATOR

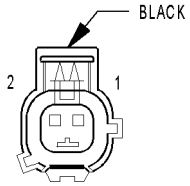
CAV	CIRCUIT	FUNCTION
1	K342 16BR/WT (GAS)	AUTOMATIC SHUT DOWN RELAY OUTPUT
1	K342 16BR/WT (DIESEL)	ECM/PCM RELAY OUTPUT
2	K20 14BR/GY (DIESEL)	GENERATOR FIELD CONTROL
2	K20 18BR/GY (3.3L/3.8L)	GENERATOR FIELD CONTROL
2	K20 18BR/GY (2.4L)	GEN FIELD CONTROL



GENERATOR

GENERATOR (GENERATOR SIDE)

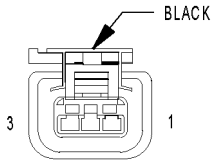
CAV	CIRCUIT	FUNCTION
1	-	AUTOMATIC SHUT DOWN RELAY OUTPUT
2	-	GENERATOR FIELD DRIVER (EXCEPT 2.4L)
2	-	GEN FIELD CONTROL (2.4L)
3	-	-
4	-	B(+)
5	-	CASE GROUND



IDLE AIR CONTROL MOTOR (GAS)

IDLE AIR CONTROL MOTOR (GAS)

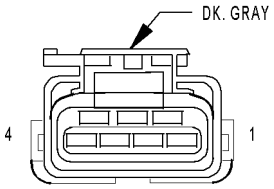
CAV	CIRCUIT	FUNCTION
1	K39 18VT/DG (3.3L/3.8L)	IDLE AIR CONTROL MOTOR DRIVER
1	K61 18VT/GY (2.4L)	IAC MOTOR CONTROL
2	K961 18BR/VT (2.4L)	IAC RETURN
2	K60 18VT/LG (3.3L/3.8L)	IDLE AIR CONTROL MOTOR SENSE



IGNITION COIL (2.4L)

IGNITION COIL (2.4L)

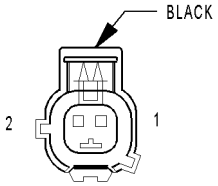
CAV	CIRCUIT	FUNCTION
1	K17 18DB/TN	COIL CONTROL NO. 2
2	K342 16BR/WT	AUTOMATIC SHUT DOWN RELAY OUTPUT
3	K19 18DB/DG	COIL CONTROL NO. 1



IGNITION
COIL
(3.3L/3.8L)

IGNITION COIL (3.3L/3.8L)

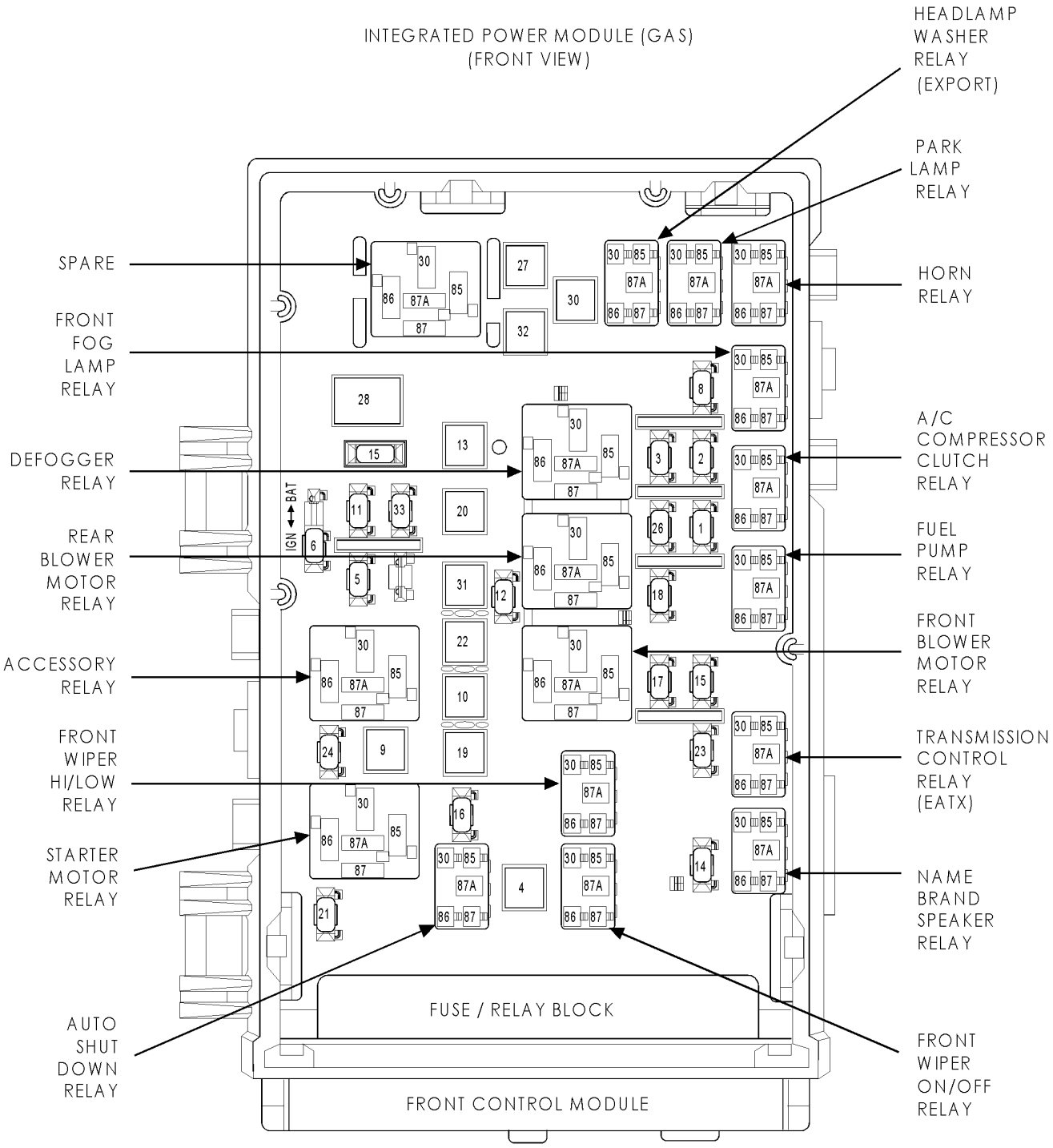
CAV	CIRCUIT	FUNCTION
1	K18 16DB/OR	IGNITION COIL NO. 3 DRIVER
2	K342 16BR/WT	AUTOMATIC SHUT DOWN RELAY OUTPUT
3	K19 16DB/DG	IGNITION COIL NO. 1 DRIVER
4	K17 16DB/TN	IGNITION COIL NO. 2 DRIVER



INLET AIR
TEMPERATURE
SENSOR

INLET AIR TEMPERATURE SENSOR

CAV	CIRCUIT	FUNCTION
1	K21 18DB/LG (3.3L/3.8L)	INLET AIR TEMPERATURE SENSOR SIGNAL
1	K21 18DB/LG (2.4L)	IAT SIGNAL
2	K900 20DB/DG	SENSOR GROUND

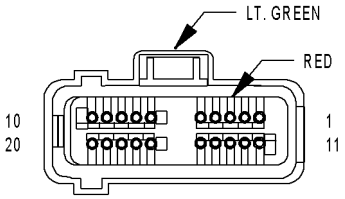

INTEGRATED POWER MODULE (GAS)
(FRONT VIEW)
HEADLAMP WASHER RELAY (EXPORT)
PARK LAMP RELAY
SPARE
HORN RELAY
FRONT FOG LAMP RELAY
A/C COMPRESSOR CLUTCH RELAY
DEFOGGER RELAY
FUEL PUMP RELAY
REAR BLOWER MOTOR RELAY
FRONT BLOWER MOTOR RELAY
ACCESSORY RELAY
TRANSMISSION CONTROL RELAY (EATX)
FRONT WIPER HI/LOW RELAY
NAME BRAND SPEAKER RELAY
STARTER MOTOR RELAY
FUSE / RELAY BLOCK
AUTO SHUT DOWN RELAY
FRONT WIPER ON/OFF RELAY
FRONT CONTROL MODULE
IGN BAT

FUSES (IPM)

FUSE NO.	AMPS	FUSED CIRCUIT	FUNCTION
1	20A	INTERNAL	FUSED B(+)
2	15A	INTERNAL	FUSED PARK LAMP RELAY OUTPUT
3	15A	INTERNAL	FUSED PARK LAMP RELAY OUTPUT
4	30A	INTERNAL	FUSED B(+)
5	20A	F306 16DB/PK	FUSED ACCESSORY RELAY OUTPUT
6	20A	F307 16LB/PK (BATTERY POSITION)	FUSED B(+)
6	20A	F307 16LB/PK (ACCESSORY RELAY POSITION)	FUSED ACCESSORY RELAY OUTPUT
8	20A	INTERNAL	FUSED B(+)
9	40A	INTERNAL	FUSED B(+)
10	40A	C7 12DB	FUSED FRONT BLOWER MOTOR RELAY OUTPUT
11	20A	F302 18GY/PK	FUSED ACCESSORY RELAY OUTPUT
12	25A	C51 12LB/BR	FUSED REAR BLOWER MOTOR RELAY OUTPUT
13	40A	C15 12DB/WT	FUSED REAR WINDOW DEFOGGER RELAY OUTPUT
14	15A	INTERNAL	FUSED B(+) (I.O.D.)
15	20A	INTERNAL (EATX)	FUSED B(+)
15	20A	INTERNAL (DIESEL)	FUSED B(+)
16	25A	INTERNAL	FUSED B(+)
17	20A	INTERNAL	FUSED B(+)
18	15A	INTERNAL	FUSED B(+)
19	40A	A101 12VT/RD	FUSED B(+)
20	40A	A102 12WT/RD	FUSED B(+)
21	25A	A111 12DG/RD	FUSED B(+)
22	40A	A110 12OR/RD	FUSED B(+)
23	10A	A106 20LB/RD	FUSED B(+)
24	20A	A701 16BR/RD	FUSED B(+) (HAZARD)
26	20A	A103 18GY/RD	FUSED B(+)
27	40A	A112 12OR/RD	FUSED B(+)
28	40A	F30 12PK/YL	FUSED ACCESSORY RELAY OUTPUT
30	40A	INTERNAL (EXPORT)	FUSED B(+)
31	40A	A113 12WT/RD	FUSED B(+)
32	40A	A115 12YL/RD	FUSED B(+)
33	15A	INTERNAL	FUSED ACCESSORY RELAY OUTPUT

FUEL PUMP RELAY (GAS)

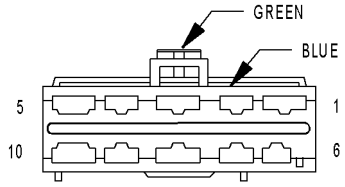
CAV	CIRCUIT	FUNCTION
30	N1 18DB/OR	FUEL PUMP RELAY OUTPUT
85	K31 18BR	FUEL PUMP RELAY CONTROL
86	INTERNAL	FUSED IGNITION SWITCH OUTPUT (RUN-START)
87	INTERNAL	FUSED B(+)
87A	-	-



INTEGRATED POWER MODULE C1

INTEGRATED POWER MODULE C1

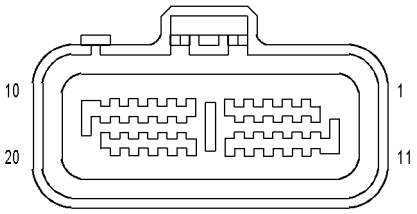
CAV	CIRCUIT	FUNCTION
1	F301 18VT/PK	FUSED ACCESSORY RELAY OUTPUT
2	-	-
3	-	-
4	L43 18WT/DB	LEFT LOW BEAM DRIVER
5	Z344 16BK/TN	GROUND
6	L34 16WT/GY	RIGHT HIGH BEAM DRIVER
7	W1 18BR/TN	WASHER FLUID LEVEL SWITCH SENSE
8	L33 18WT/LG	LEFT HIGH BEAM DRIVER
9	G31 18VT/LG (EXCEPT 2.4L/BASE)	AMBIENT TEMPERATURE SENSOR SIGNAL
9	G31 18VT/LG (2.4L)	AAT SIGNAL
10	L44 16WT/TN	RIGHT LOW BEAM DRIVER
11	F300 18OR/PK	FUSED ACCESSORY RELAY OUTPUT
12	-	-
13	Z343 18BK/LG	GROUND
14	-	-
15	L78 18WT/OR	FUSED PARK LAMP RELAY OUTPUT (RIGHT)
16	L77 18WT/BR	FUSED PARK LAMP RELAY OUTPUT (LEFT)
17	-	-
18	G931 18VT/BR (EXCEPT 2.4L/BASE)	AMBIENT TEMPERATURE SENSOR RETURN
19	W20 18BR/YL	REAR WASHER PUMP MOTOR CONTROL
20	W10 18BR	FRONT WASHER PUMP MOTOR CONTROL



INTEGRATED POWER MODULE C2

INTEGRATED POWER MODULE C2

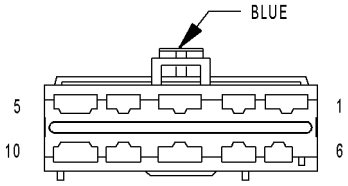
CAV	CIRCUIT	FUNCTION
1	N173 16DB/VT (GAS)	RADIATOR FAN RELAY CONTROL
2	V53 12BR/OR (EXPORT)	HEADLAMP WASHER RELAY OUTPUT
3	L60 16WT/TN (EXPORT)	RIGHT FRONT TURN SIGNAL DRIVER
3	L60 16WT/TN (EXCEPT EXPORT)	RIGHT FRONT TURN SIGNAL DRIVER
4	L13 18WT/YL (EXPORT)	HEADLAMP ADJUST SIGNAL
5	X2 18DG/OR	HORN RELAY OUTPUT
6	L90 18WT/OR (FOG LAMPS)	FRONT FOG LAMP RELAY OUTPUT
7	L61 16WT/LG	LEFT FRONT TURN SIGNAL DRIVER
8	-	-
9	A112 12OR/RD	FUSED B(+)
10	L89 18WT/YL (FOG LAMPS)	FRONT FOG LAMP RELAY OUTPUT



INTEGRATED
POWER
MODULE C3

INTEGRATED POWER MODULE C3

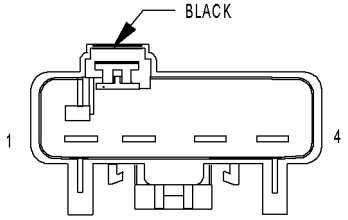
CAV	CIRCUIT	FUNCTION
1	Z115 18BK/OR (2.4L EATX)	GROUND
1	Z115 20BK/OR (3.3L/3.8L EATX)	GROUND
1	N21 20DB/TN (DIESEL)	LIFT PUMP RELAY CONTROL
2	F1 18PK/WT (GAS EATX)	FCM OUTPUT (UNLOCK-RUN-START)
3	T751 18YL (GAS)	FUSED IGNITION SWITCH OUTPUT (START)
3	T751 20YL (DIESEL)	FUSED IGNITION SWITCH OUTPUT (START)
4	T2 18DG/WT (2.4L/DIESEL MTX)	TRS REVERSE SENSE
5	T16 18YL/OR (GAS EATX)	TRANSMISSION CONTROL RELAY OUTPUT
5	N2 18DB/YL (DIESEL)	LIFT PUMP RELAY OUTPUT
6	F202 18PK/GY (DIESEL)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
6	T15 18YL/BR (GAS EATX)	TRANSMISSION CONTROL RELAY CONTROL
7	C3 20DB/YL (GAS)	A/C COMPRESSOR CLUTCH RELAY OUTPUT
7	C3 18DB/YL (DIESEL)	A/C COMPRESSOR CLUTCH RELAY OUTPUT
8	Z114 18BK/LG (DIESEL)	GROUND
8	K31 18BR (GAS)	FUEL PUMP RELAY CONTROL
9	C13 18LB/OR (GAS)	A/C COMPRESSOR CLUTCH RELAY CONTROL
9	C13 20LB/OR (DIESEL)	A/C COMPRESSOR CLUTCH RELAY CONTROL
10	A119 16RD/OR (DIESEL)	FUSED B(+)
10	A104 18YL/RD (3.3L/3.8L EATX)	FUSED B(+)
11	C41 20LB/DG (DIESEL)	CABIN HEATER ASSIST CONTROL
12	-	-
13	D25 18WT/VT (GAS)	PCI BUS
13	D25 20WT/VT (DIESEL)	PCI BUS
14	T752 18DG/OR (2.4L)	STARTER RELAY CONTROL
14	T752 18DG/OR (3.3L/3.8L)	STARTER MOTOR RELAY CONTROL
14	T752 20DG/OR (DIESEL)	STARTER MOTOR RELAY CONTROL
15	Z116 18BK/VT	GROUND
16	K51 18BR/WT (GAS)	AUTOMATIC SHUT DOWN RELAY CONTROL
16	K51 20BR/WT (DIESEL)	ECM/PCM RELAY CONTROL
17	F202 18PK/GY (DIESEL)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
17	F202 20PK/GY (GAS)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
18	K173 18BR/VT (3.3L/3.8L)	RADIATOR FAN RELAY CONTROL
18	K173 18BR/WT (2.4L)	RAD FAN RELAY CONTROL
19	F202 20PK/GY (GAS)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
19	K342 16BR/WT (DIESEL)	ECM/PCM RELAY OUTPUT
20	A109 18OR/RD (GAS)	FUSED B(+)



INTEGRATED POWER MODULE C4

INTEGRATED POWER MODULE C4

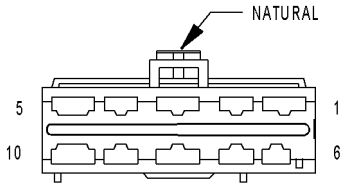
CAV	CIRCUIT	FUNCTION
1	Z127 12BK (2.4L EXCEPT EXPORT/3.3L/3.8L/ABS)	GROUND
2	T750 12YL/GY	STARTER MOTOR RELAY OUTPUT
3	K342 16BR/WT (GAS)	AUTOMATIC SHUT DOWN RELAY OUTPUT
3	K342 16BR/WT (DIESEL)	ECM/PCM RELAY OUTPUT
4	F500 16DG/PK (EATX)	FUSED IGNITION SWITCH OUTPUT (RUN)
5	-	-
6	D25 18WT/VT (ANTILOCK BRAKES)	PCI BUS
6	D25 18WT/VT (3.3L/3.8L)	PCI BUS
7	A107 12TN/RD (ANTILOCK BRAKES)	FUSED B(+)
8	A111 12DG/RD (ANTILOCK BRAKES)	FUSED B(+)
9	A710 14RD/BR	B(+) (HAZARD FEED)
10	-	-



INTEGRATED POWER MODULE C5

INTEGRATED POWER MODULE C5

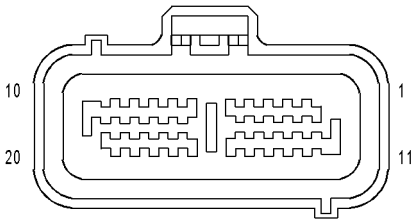
CAV	CIRCUIT	FUNCTION
1	A1 4RD	B(+)
2	-	-
3	-	-
4	-	-



INTEGRATED POWER MODULE C6

INTEGRATED POWER MODULE C6

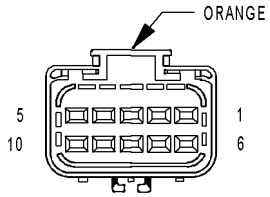
CAV	CIRCUIT	FUNCTION
1	A101 12VT/RD	FUSED B(+)
2	Z117 16BK/WT	GROUND
3	Z118 16BK/YL	GROUND
4	A110 12OR/RD (POWER SEAT)	FUSED B(+)
5	-	-
6	-	-
7	C7 12DB	FUSED FRONT BLOWER MOTOR RELAY OUTPUT
8	F307 16LB/PK (BATTERY POSITION)	FUSED B(+)
8	F307 18LB/PK (ACCESSORY RELAY POSITION)	FUSED ACCESSORY RELAY OUTPUT
9	A113 12WT/RD (POWER SLIDING DOOR)	FUSED B(+)
10	-	-



INTEGRATED POWER MODULE C7

INTEGRATED POWER MODULE C7

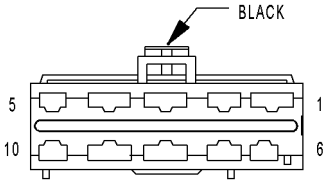
CAV	CIRCUIT	FUNCTION
1	C16 20DB/GY	FUSED REAR WINDOW DEFOGGER RELAY OUTPUT
2	T751 20YL (GAS)	FUSED IGNITION SWITCH OUTPUT (START)
2	T141 20YL/OR (DIESEL)	FUSED IGNITION SWITCH OUTPUT (START)
3	D25 20WT/VT	PCI BUS
4	L13 20WT/YL (EXPORT)	HEADLAMP ADJUST SIGNAL
5	K32 18DB/YL (GAS)	BRAKE TRANSMISSION SHIFT INTERLOCK SOLENOID CONTROL
6	-	-
7	W7 20BR/GY	FRONT WIPER PARK SWITCH SENSE
8	B20 20DG/OR	BRAKE FLUID LEVEL SWITCH SENSE
9	F201 18PK/OR	ORC RUN-START DRIVER
10	F214 18PK/LG (SIACM)	SIACM RUN-START DRIVER
11	A106 20LB/RD	FUSED B(+)
12	-	-
13	F2 18PK/YL (GAS)	FCM OUTPUT (UNLOCK-RUN-START)
14	-	-
15	A114 16GY/RD	FUSED B(+) (I.O.D.)
16	D123 20WT/BR	FLASH PROGRAM ENABLE
17	L50 18WT/TN	BRAKE LAMP SWITCH OUTPUT
18	X13 16DG/GY (PREMIUM 8 SPEAKER)	NAME BRAND SPEAKER RELAY OUTPUT
19	X3 20DG/VT	HORN SWITCH SENSE
20	F100 18PK/VT	ORC RUN ONLY DRIVER



INTEGRATED POWER MODULE C8

INTEGRATED POWER MODULE C8

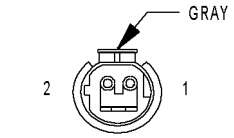
CAV	CIRCUIT	FUNCTION
1	W3 14BR/WT	FRONT WIPER HIGH/LOW RELAY LOW SPEED OUTPUT
2	N1 18DB/OR (GAS)	FUEL PUMP RELAY OUTPUT
2	N1 16DB/OR (DIESEL)	FUEL HEATER RELAY OUTPUT
3	A108 20LG/RD	FUSED B(+)
4	A103 18GY/RD	FUSED B(+)
5	L77 20WT/BR	FUSED PARK LAMP RELAY OUTPUT (LEFT)
6	W4 14BR/OR	FRONT WIPER HIGH/LOW RELAY HIGH SPEED OUTPUT
7	C51 12LB/BR (3 ZONE ATC/MTC)	FUSED REAR BLOWER MOTOR RELAY OUTPUT
8	-	-
9	L78 18WT/OR	FUSED PARK LAMP RELAY OUTPUT (RIGHT)
10	L60 18WT/TN	RIGHT FRONT TURN SIGNAL DRIVER



INTEGRATED POWER MODULE C9

INTEGRATED POWER MODULE C9

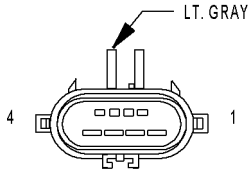
CAV	CIRCUIT	FUNCTION
1	A102 12WT/RD	FUSED B(+)
2	F20 18PK/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)
3	C15 12DB/WT	FUSED REAR WINDOW DEFOGGER RELAY OUTPUT
4	A105 18DB/RD	FUSED B(+)
5	L61 20WT/LB	LEFT FRONT TURN SIGNAL DIVER
6	A701 18BR/RD	FUSED B(+) (HAZARD)
6	A701 16BR/RD	FUSED B(+) (HAZARD)
7	F306 16DB/PK	FUSED ACCESSORY RELAY OUTPUT
8	F30 12PK/YL (POWER WINDOWS)	FUSED ACCESSORY RELAY OUTPUT
9	A115 20YL/RD (POWER DRIVER SEAT)	FUSED B(+)
9	A115 12YL/RD (POWER LIFTGATE/EXCEPT POWER DRIVER SEAT)	FUSED B(+)
10	F302 18GY/PK	FUSED ACCESSORY RELAY OUTPUT



KNOCK SENSOR (3.3L/3.8L ABS EXCEPT EXPORT)

KNOCK SENSOR (3.3L/3.8L ABS EXCEPT EXPORT)

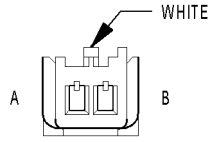
CAV	CIRCUIT	FUNCTION
1	K42 18DB/YL	KNOCK SENSOR SIGNAL
2	K900 18DB/DG	SENSOR GROUND



LEAK DETECTION PUMP (3.3L/3.8L EXCEPT EXPORT)

LEAK DETECTION PUMP (3.3L/3.8L EXCEPT EXPORT)

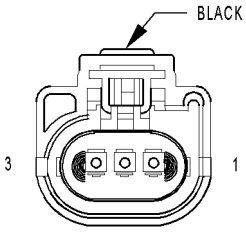
CAV	CIRCUIT	FUNCTION
1	K107 18VT/WT	LEAK DETECTION PUMP SWITCH SENSE
2	K106 18VT/LB	LEAK DETECTION PUMP SOLENOID CONTROL
3	F202 18PK/GY	FUSED IGNITION SWITCH OUTPUT (RUN-START)
4	-	-



LEFT SPEED CONTROL SWITCH

LEFT SPEED CONTROL SWITCH

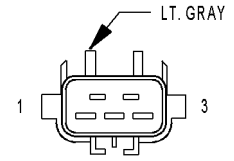
CAV	CIRCUIT	FUNCTION
B	Z23 20BK/VT	LEFT SPEED CONTROL SWITCH GROUND
A	V37 20VT/TN (EXPORT)	SPEED CONTROL SWITCH SIGNAL
A	V37 20DG/VT (EXCEPT EXPORT)	SPEED CONTROL SWITCH SIGNAL
A	V37 18VT (2.4L)	S/C SWITCH SIGNAL



MANIFOLD ABSOLUTE PRESSURE SENSOR (GAS)

MANIFOLD ABSOLUTE PRESSURE SENSOR (GAS)

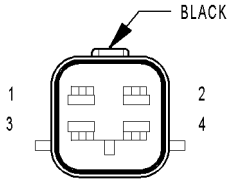
CAV	CIRCUIT	FUNCTION
1	K1 18VT/BR (3.3L/3.8L)	MANIFOLD ABSOLUTE PRESSURE SENSOR SIGNAL
1	K1 18VT/BR (2.4L)	MAP SIGNAL
2	K900 18DB/DG	SENSOR GROUND
3	F855 18PK/YL	5 VOLT SUPPLY



NATURAL VACUUM LEAK DETECTION ASSEMBLY (2.4L EXCEPT EXPORT)

NATURAL VACUUM LEAK DETECTION ASSEMBLY (2.4L EXCEPT EXPORT)

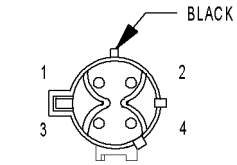
CAV	CIRCUIT	FUNCTION
1	Z166 18BK/WT	GROUND
2	K107 20VT/WT	NVLD SWITCH SIGNAL
3	K106 20VT/LB	NVLD SOL CONTROL



OXYGEN SENSOR 1/1 UPSTREAM (GAS)

OXYGEN SENSOR 1/1 UPSTREAM (GAS)

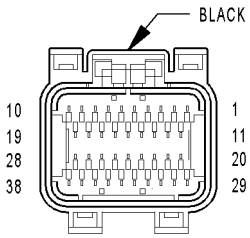
CAV	CIRCUIT	FUNCTION
1	K99 18BR/LG (3.3L/3.8L)	OXYGEN SENSOR 1/1 HEATER CONTROL
1	Z42 18BK/LG (2.4L)	GROUND
2	K99 18BR/LG (2.4L)	O2 1/1 HEATER CONTROL
2	K342 16BR/WT (3.3L/3.8L)	AUTOMATIC SHUT DOWN RELAY OUTPUT
3	K902 18BR/DG (3.3L/3.8L)	OXYGEN SENSOR 1/1 GROUND
3	K902 18BR/DG (2.4L)	O2 RETURN (UP)
4	K41 18DB/LB (2.4L)	O2 1/1 SIGNAL
4	K41 18DB/LB (3.3L/3.8L)	OXYGEN SENSOR 1/1 SIGNAL



OXYGEN SENSOR 1/2 DOWNSTREAM (GAS)

OXYGEN SENSOR 1/2 DOWNSTREAM (GAS)

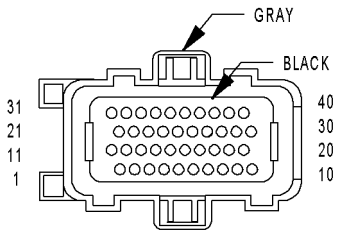
CAV	CIRCUIT	FUNCTION
1	Z43 18BK/DB	GROUND
2	K342 16BR/WT (3.3L/3.8L)	AUTOMATIC SHUT DOWN RELAY OUTPUT
2	K299 18BR/WT (2.4L)	O2 1/2 HEATER CONTROL
3	K904 18DB/DG (2.4L)	O2 RETURN (DOWN)
3	K902 18BR/DG (3.3L/3.8L)	OXYGEN SENSOR 1/2 GROUND
4	K141 18DB/YL (3.3L/3.8L)	OXYGEN SENSOR 1/2 SIGNAL
4	K141 18DB/YL (2.4L)	O2 1/2 SIGNAL



POWERTRAIN CONTROL MODULE C1 (NGC)

POWERTRAIN CONTROL MODULE C1 (NGC)

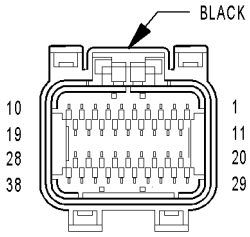
CAV	CIRCUIT	FUNCTION
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	Z130 18BK/BR	GROUND
10	-	-
11	F202 20PK/GY	FUSED IGNITION SWITCH OUTPUT (RUN-START)
12	F1 18PK/WT (EXCEPT EX-PORT)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
13	N7 18DB/OR (MTX)	VEHICLE SPEED SIGNAL
14	-	-
15	-	-
16	-	-
17	-	-
18	Z131 18BK/DG	GROUND
19	-	-
20	G6 16VT/GY	OIL PRESSURE SIGNAL
21	-	-
22	G31 18VT/LG	AAT SIGNAL
23	-	-
24	-	-
25	D20 20WT/LG	SCI RECEIVE (PCM)
26	D123 20WT/BR	SCI RECEIVE (TCM)
27	-	-
28	-	-
29	A109 18OR/RD	FUSED B(+)
30	T751 18YL	FUSED IGNITION SWITCH OUTPUT (START)
31	K141 18DB/YL	O2 1/2 SIGNAL
32	K904 18DB/DG	O2 RETURN (DOWN)
33	-	-
34	-	-
35	-	-
36	D21 20WT/BR	SCI TRANSMIT (PCM)
37	D15 18DG/YL	SCI TRANSMIT (TCM)
38	D25 18WT/VT	PCI BUS



POWERTRAIN CONTROL MODULE C1 (SBEC)

POWERTRAIN CONTROL MODULE C1 (SBEC)

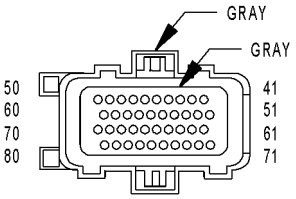
CAV	CIRCUIT	FUNCTION
1	-	-
2	K18 16DB/OR	IGNITION COIL NO. 3 DRIVER
3	K17 16DB/TN	IGNITION COIL NO. 2 DRIVER
4	-	-
5	V32 18VT/YL	SPEED CONTROL ON/OFF SWITCH SENSE
6	K342 16BR/WT	AUTOMATIC SHUT DOWN RELAY OUTPUT
7	K13 16BR/LB	FUEL INJECTOR NO. 3 DRIVER
8	K20 18BR/GY	GENERATOR FIELD CONTROL
9	-	-
10	Z130 18BK/BR	GROUND
11	K19 16DB/DG	IGNITION COIL NO. 1 DRIVER
12	G6 16VT/GY	ENGINE OIL PRESSURE SWITCH SENSE
13	K11 16BR/YL	FUEL INJECTOR NO. 1 DRIVER
14	K58 16BR/VT	FUEL INJECTOR NO. 6 DRIVER
15	K38 16BR/OR	FUEL INJECTOR NO. 5 DRIVER
16	K14 16BR/TN	FUEL INJECTOR NO. 4 DRIVER
17	K12 16BR/DB	FUEL INJECTOR NO. 2 DRIVER
18	K99 18BR/LG	OXYGEN SENSOR 1/1 HEATER CONTROL
19	-	-
20	F202 18PK/GY	FUSED IGNITION SWITCH OUTPUT (RUN-START)
21	-	-
22	-	-
23	-	-
24	-	-
25	K42 18DB/YL (ABS EXCEPT EXPORT)	KNOCK SENSOR SIGNAL
26	K2 18VT/OR	ENGINE COOLANT TEMPERATURE SENSOR SIGNAL
27	K902 18BR/DG	OXYGEN SENSOR GROUND
28	-	-
29	-	-
30	K41 18DB/LB	OXYGEN SENSOR 1/1 SIGNAL
31	T752 18DG/OR	STARTER MOTOR RELAY CONTROL
32	K24 18BR/LB	CRANKSHAFT POSITION SENSOR SIGNAL
33	K44 18DB/GY	CAMSHAFT POSITION SENSOR SIGNAL
34	-	-
35	K22 18BR/OR	THROTTLE POSITION SENSOR SIGNAL
36	K1 18VT/BR	MANIFOLD ABSOLUTE PRESSURE SENSOR SIGNAL
37	K21 18DB/LG	INTAKE AIR TEMPERATURE SENSOR SIGNAL
38	T751 18YL	FUSED IGNITION SWITCH OUTPUT (START)
39	-	-
40	K35 18DB/VT	EGR SOLENOID CONTROL



POWERTRAIN CONTROL MODULE C2 (NGC)

POWERTRAIN CONTROL MODULE C2 (NGC)

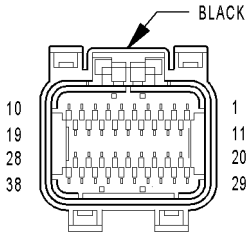
CAV	CIRCUIT	FUNCTION
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	K17 18DB/TN	COIL CONTROL NO. 2
10	K19 18DB/DG	COIL CONTROL NO. 1
11	K14 16 BR/TN	INJECTOR CONTROL NO. 4
12	K13 16BR/LB	INJECTOR CONTROL NO. 3
13	K12 16BR/DB	INJECTOR CONTROL NO. 2
14	K11 16BR/YL	INJECTOR CONTROL NO. 1
15	-	-
16	-	-
17	-	-
18	K99 18BR/LG	O2 1/1 HEATER CONTROL
19	K20 18BR/GY	GEN FIELD CONTROL
20	K2 18VT/OR	ECT SIGNAL
21	K22 18BR/OR	TP SIGNAL
22	-	-
23	K1 18VT/BR	MAP SIGNAL
24	K942 18BR/LG	KS RETURN
25	K42 18DB/YL	KS SIGNAL
26	-	-
27	K900 18DB/DG	SENSOR GROUND
28	K961 18BR/VT	IAC RETURN
29	F855 20PK/YL	5 VOLT SUPPLY
30	K21 18DB/LG	IAT SIGNAL
31	K41 18DB/LB	O2 1/1 SIGNAL
32	K902 18BR/DG	O2 RETURN (UP)
33	-	-
34	K44 18DB/GY	CMP SIGNAL
35	K24 18BR/LB	CKP SIGNAL
36	-	-
37	-	-
38	K61 18VT/GY	IAC MOTOR CONTROL



POWERTRAIN CONTROL MODULE C2 (SBEC)

POWERTRAIN CONTROL MODULE C2 (SBEC)

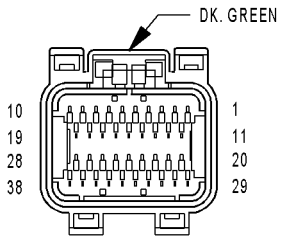
CAV	CIRCUIT	FUNCTION
41	V37 18VT	SPEED CONTROL SWITCH SIGNAL
42	C18 18LB/BR	A/C PRESSURE SENSOR SIGNAL
43	K900 18DB/DG	SENSOR GROUND
44	F888 18BR/PK	8 VOLT SUPPLY
45	-	-
46	A109 18OR/RD	FUSED B(+)
47	-	-
48	-	-
49	K39 18VT/DG	IDLE AIR CONTROL NO. 1 DRIVER
50	Z131 18BK/DG	GROUND
51	K141 18DB/YL	OXYGEN SENSOR 1/2 SIGNAL
52	-	-
53	-	-
54	-	-
55	-	-
56	V36 18VT/YL	SPEED CONTROL VACUUM SOLENOID CONTROL
57	K60 18VT/LG	IDLE AIR CONTROL NO. 2 DRIVER
58	-	-
59	D25 18WT/VT	PCI BUS
60	-	-
61	F855 18PK/YL (EXPORT)	5 VOLT SUPPLY
61	F855 20PK/YL (EXCEPT EXPORT)	5 VOLT SUPPLY
62	B29 18DG/WT	SECONDARY BRAKE SWITCH SIGNAL
63	T10 18DG/LG	TORQUE MANAGEMENT REQUEST SENSE
64	C13 18LB/OR	A/C COMPRESSOR CLUTCH RELAY CONTROL
65	D21 18WT/BR (EXPORT)	SCI TRANSMIT (PCM)
65	D21 20WT/BR (EXCEPT EXPORT)	SCI TRANSMIT (PCM)
66	N7 18DB/OR	VEHICLE SPEED SENSOR SIGNAL
67	K51 18BR/WT	AUTOMATIC SHUT DOWN RELAY CONTROL
68	K52 18DB/WT	EVAPORATIVE EMISSION SOLENOID CONTROL
69	-	-
70	K70 18DB/BR	EVAPORATIVE EMISSION SOLENOID SENSE
71	-	-
72	K107 20VT/WT (EXCEPT EXPORT)	LEAK DETECTION PUMP SWITCH SENSE
73	K173 18BR/VT	RADIATOR FAN RELAY CONTROL
74	K31 18BR	FUEL PUMP RELAY CONTROL
75	D20 20WT/LG	SCI RECEIVE (PCM)
76	T41 18YL/DB	PARK/NEUTRAL POSITION SWITCH SENSE (TRS T41)
77	K106 20VT/LB (EXCEPT EXPORT)	LEAK DETECTION PUMP SOLENOID CONTROL
78	-	-
79	-	-
80	V35 18VT/OR	SPEED CONTROL VENT SOLENOID CONTROL



POWERTRAIN CONTROL MODULE C3 (NGC)

POWERTRAIN CONTROL MODULE C3 (NGC)

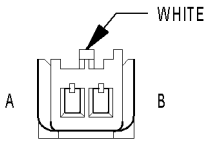
CAV	CIRCUIT	FUNCTION
1	-	-
2	-	-
3	K51 18BR/WT	AUTOMATIC SHUT DOWN RELAY CONTROL
4	-	-
5	V35 18VT/OR	S/C VENT CONTROL
6	K173 18BR/VT	RAD FAN RELAY CONTROL
7	V32 18VT/YL	S/C SUPPLY
8	-	-
9	K299 18BR/WT	O2 1/2 HEATER CONTROL
10	-	-
11	C13 18LB/OR	A/C CLUTCH RELAY CONTROL
12	V36 18VT/YL	S/C VACUUM CONTROL
13	-	-
14	-	-
15	-	-
16	-	-
17	-	-
18	-	-
19	K342 16BR/WT	AUTOMATIC SHUT DOWN RELAY OUTPUT
20	K52 18DB/WT	EVAP PURGE CONTROL
21	T141 18YL (MTX)	FUSED IGNITION SWITCH OUTPUT (START)
22	-	-
23	B29 18DG/WT	BRAKE SWITCH SIGNAL
24	-	-
25	-	-
26	-	-
27	-	-
28	K342 16BR/WT	AUTOMATIC SHUT DOWN RELAY OUTPUT
29	K70 18DB/BR	EVAP PURGE SIGNAL
30	-	-
31	C18 18LB/BR	A/C PRESSURE SIGNAL
32	K91 18DB/YL	BATTERY TEMP SIGNAL
33	-	-
34	V37 18VT	S/C SWITCH SIGNAL
35	K107 20VT/WT	NVLD SWITCH SIGNAL
36	-	-
37	K31 18BR	FUEL PUMP RELAY CONTROL
38	T752 18DG/OR	STARTER RELAY CONTROL



POWERTRAIN CONTROL MODULE C4 (NGC) (EATX)

POWERTRAIN CONTROL MODULE C4 (NGC) (EATX)

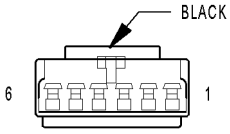
CAV	CIRCUIT	FUNCTION
1	T60 18YL/GY	OVERDRIVE SOLENOID CONTROL
2	T59 18YL/LB	UNDERDRIVE SOLENOID CONTROL
3	-	-
4	-	-
5	-	-
6	T19 18YL/DB	2-4 SOLENOID CONTROL
7	-	-
8	-	-
9	-	-
10	T20 18DG/WT	LOW/REVERSE SOLENOID CONTROL
11	-	-
12	Z133 16BK/LG	GROUND
13	Z133 16BK/LG	GROUND
14	-	-
15	T1 18DG/LB	TRS T1 SENSE
16	T3 18DG/DB	TRS T3 SENSE
17	-	-
18	T15 18YL/BR	TRANSMISSION CONTROL RELAY CONTROL
19	T16 18YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
20	-	-
21	-	-
22	T9 18DG/TN	OVERDRIVE PRESSURE SWITCH SENSE
23	-	-
24	-	-
25	-	-
26	-	-
27	T41 18DG/GY	TRS T41 SENSE
28	T16 18YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
29	T50 18YL/TN	LOW/REVERSE PRESSURE SWITCH SENSE
30	T47 18YL/DG	2-4 PRESSURE SWITCH SENSE
31	-	-
32	T14 18DG/BR	OUTPUT SPEED SENSOR SIGNAL
33	T52 18DG/WT	INPUT SPEED SENSOR SIGNAL
34	T13 18DG/VT	SPEED SENSOR GROUND
35	T54 18DG/OR	TRANSMISSION TEMPERATURE SENSOR SIGNAL
36	-	-
37	T42 18DG/YL	TRS T42 SENSE
38	T16 18YL/OR	TRANSMISSION CONTROL RELAY OUTPUT



RIGHT SPEED CONTROL SWITCH

RIGHT SPEED CONTROL SWITCH

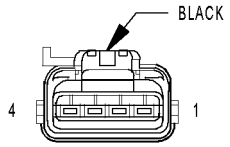
CAV	CIRCUIT	FUNCTION
A	V37 20VT/TN (EXPORT)	SPEED CONTROL SWITCH SIGNAL
A	V37 20DG/VT (EXCEPT EXPORT)	SPEED CONTROL SWITCH SIGNAL
A	V37 18VT (2.4L)	S/C SWITCH SIGNAL
B	Z23 20BK/VT	RIGHT SPEED CONTROL SWITCH GROUND



SENTRY KEY IMMOBILIZER MODULE

SENTRY KEY IMMOBILIZER MODULE

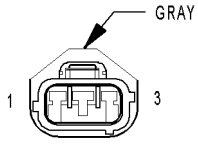
CAV	CIRCUIT	FUNCTION
1	-	-
2	D25 20WT/VT	PCI BUS
3	-	-
4	F20 20PK/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)
5	Z120 22BK/WT	GROUND
6	A114 20GY/RD (LHD EX-PORT)	FUSED B(+) (I.O.D.)
6	A114 18GY/RD (EXCEPT LHD EXPORT)	FUSED B(+) (I.O.D.)



SPEED CONTROL SERVO (GAS)

SPEED CONTROL SERVO (GAS)

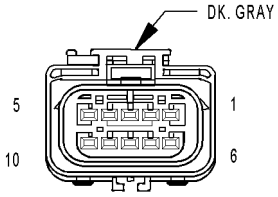
CAV	CIRCUIT	FUNCTION
1	V36 18VT/YL (3.3L/3.8L)	SPEED CONTROL VACUUM SOLENOID CONTROL
1	V36 18VT/YL (2.4L)	S/C VACUUM CONTROL
2	V35 18VT/OR (2.4L)	S/C VENT CONTROL
2	V35 18VT/OR (3.3L/3.8L)	SPEED CONTROL VENT SOLENOID CONTROL
3	V30 20VT/WT	SPEED CONTROL BRAKE SWITCH OUTPUT
4	Z155 18BK/LG	GROUND



THROTTLE POSITION SENSOR (GAS)

THROTTLE POSITION SENSOR (GAS)

CAV	CIRCUIT	FUNCTION
1	K900 18DB/DG	SENSOR GROUND
2	K22 18BR/OR (3.3L/3.8L)	THROTTLE POSITION SENSOR SIGNAL
2	K22 18BR/OR (2.4L)	TP SIGNAL
3	F855 18PK/YL (3.3L/3.8L)	5 VOLT SUPPLY
3	F855 20PK/YL (2.4L)	5 VOLT SUPPLY



TRANSMISSION RANGE SENSOR (EATX)

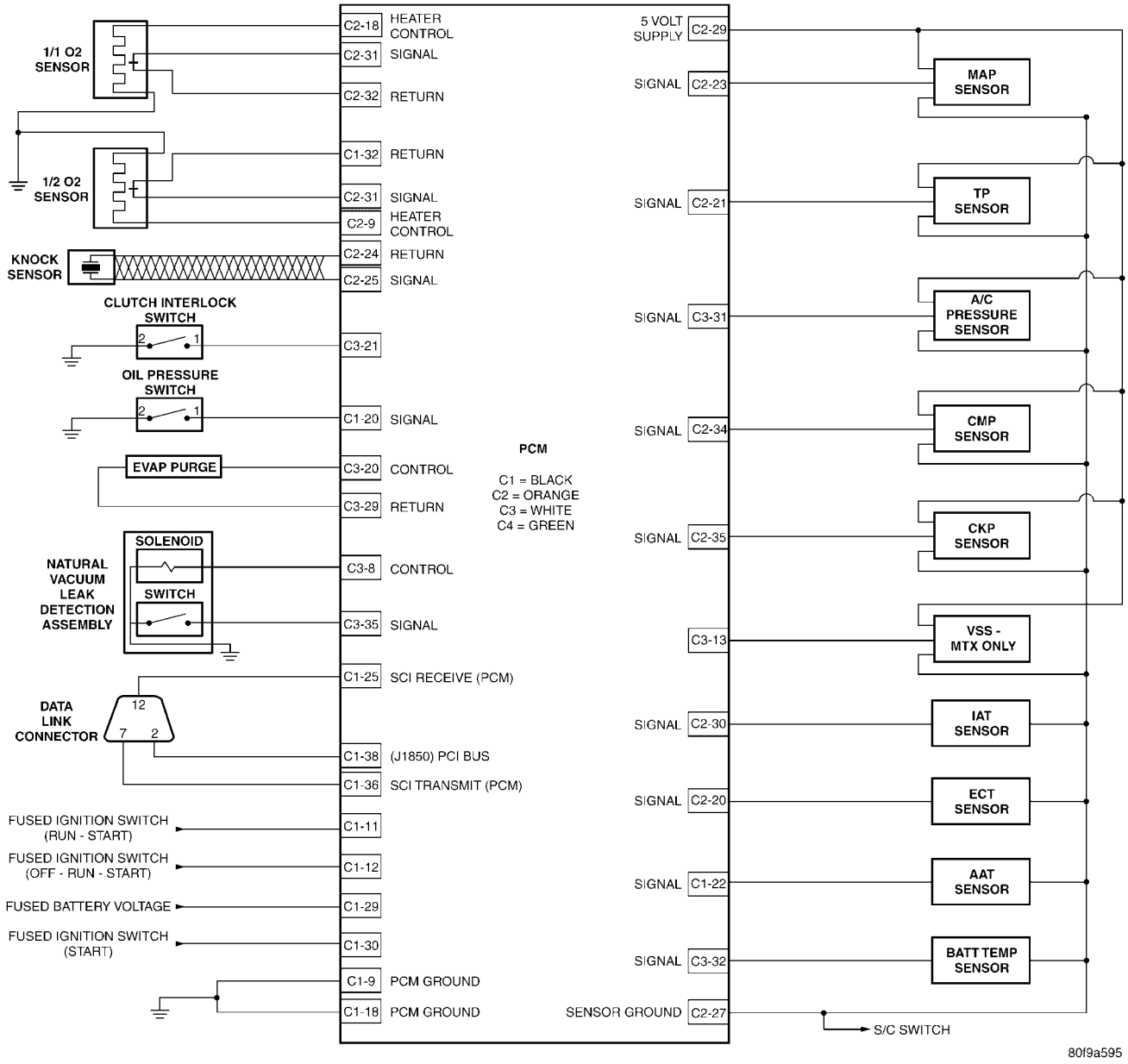
TRANSMISSION RANGE SENSOR (EATX)

CAV	CIRCUIT	FUNCTION
1	-	-
2	-	-
3	T13 18DG/VT	SPEED SENSOR GROUND
4	T54 18DG/OR	TRANSMISSION TEMPERATURE SENSOR SIGNAL
5	T41 18DG/GY (3.3L/3.8L)	TRS T41 SENSE
6	-	-
7	T1 18DG/LB	TRS T1 SENSE
8	T3 18DG/DB	TRS T3 SENSE
9	T42 18DG/YL	TRS T42 SENSE
10	T41 18YL/DB (3.3L/3.8L)	PARK/NEUTRAL POSITION SWITCH SENSE (TRS T41)
10	T41 18DG/GY (2.4L)	TRS T41 SENSE

NOTES

10.0 SCHEMATIC DIAGRAMS

10.1 2003 RS 2.4L



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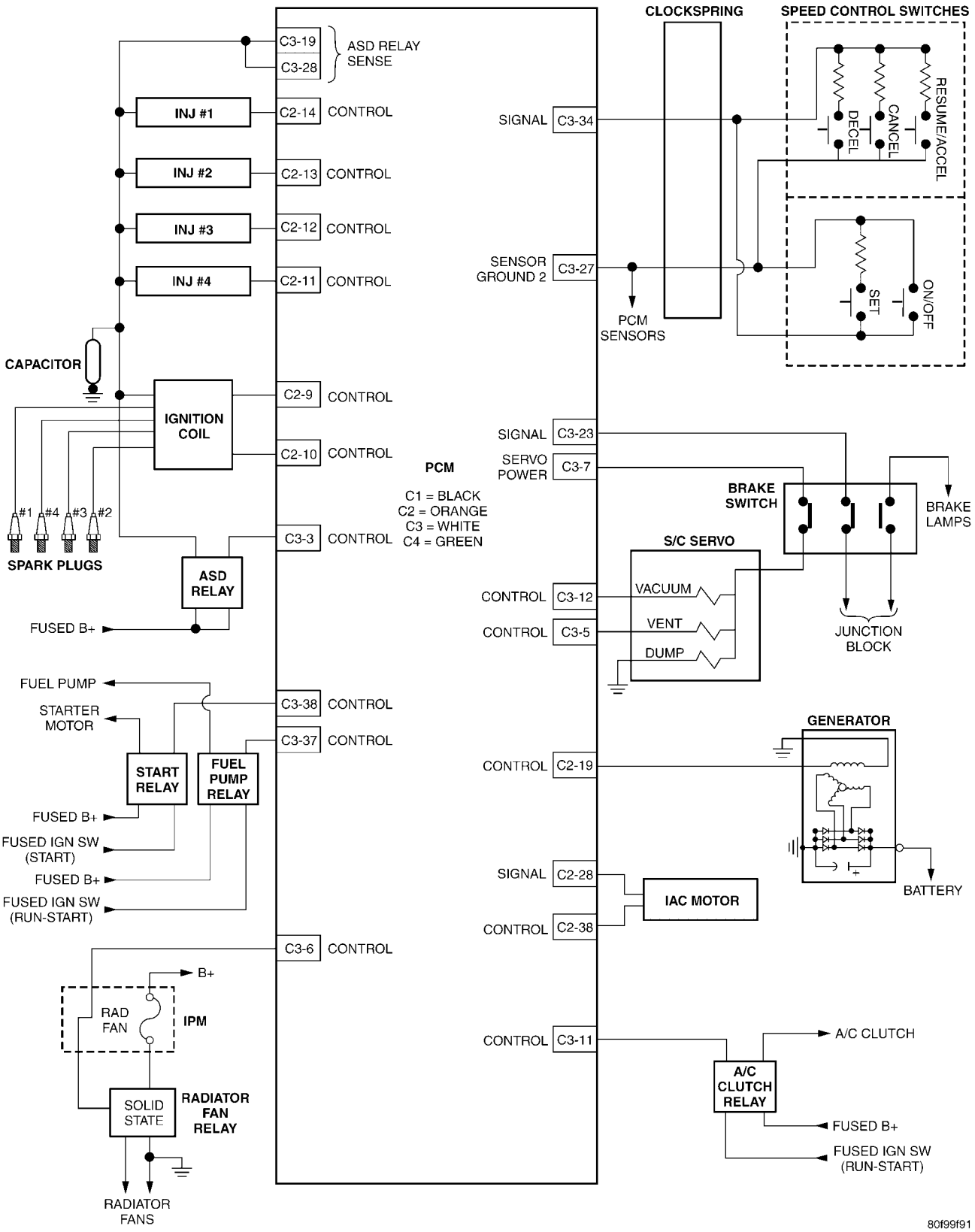
10.1 2003 RS 2.4L (Continued)



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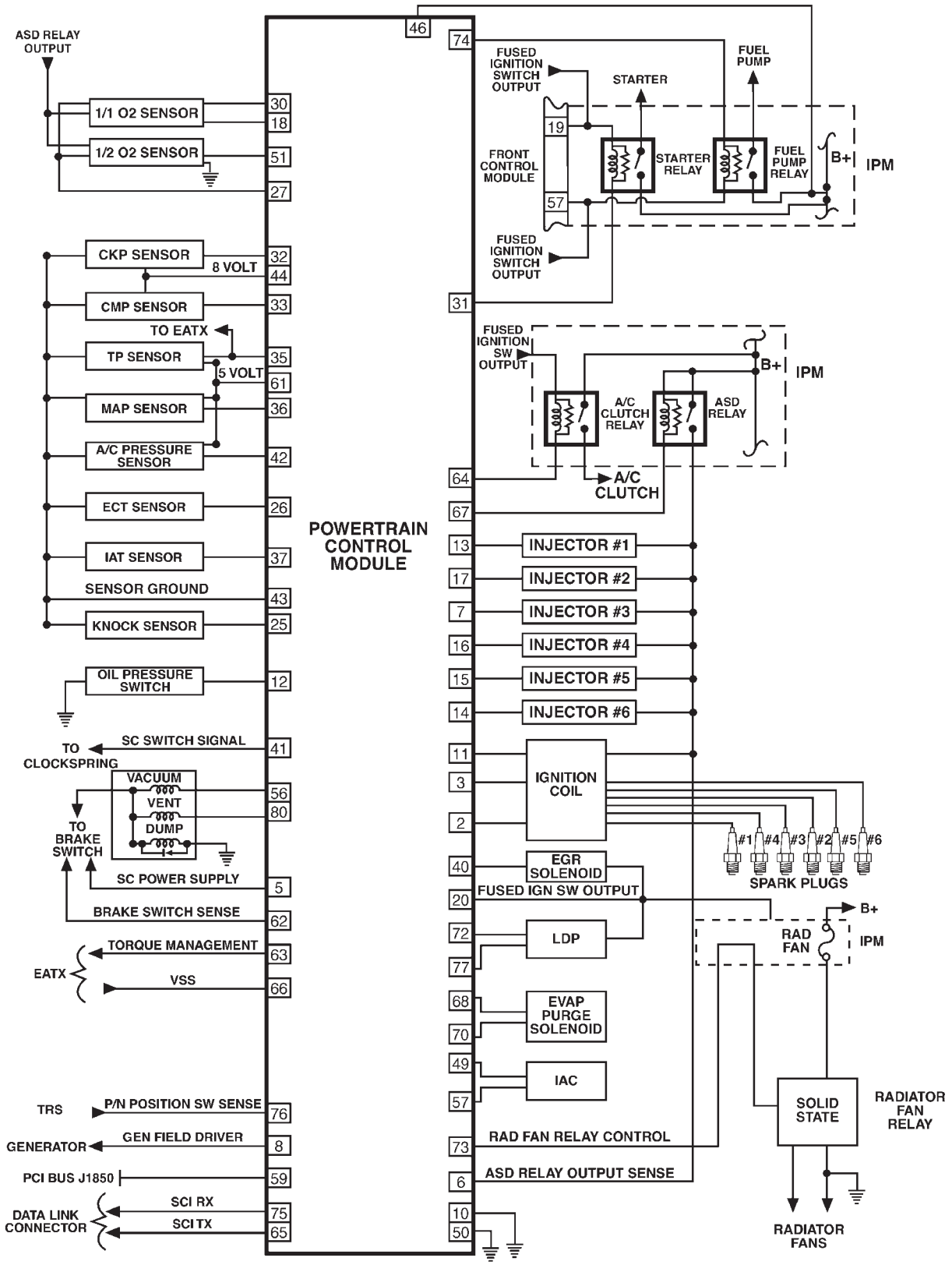

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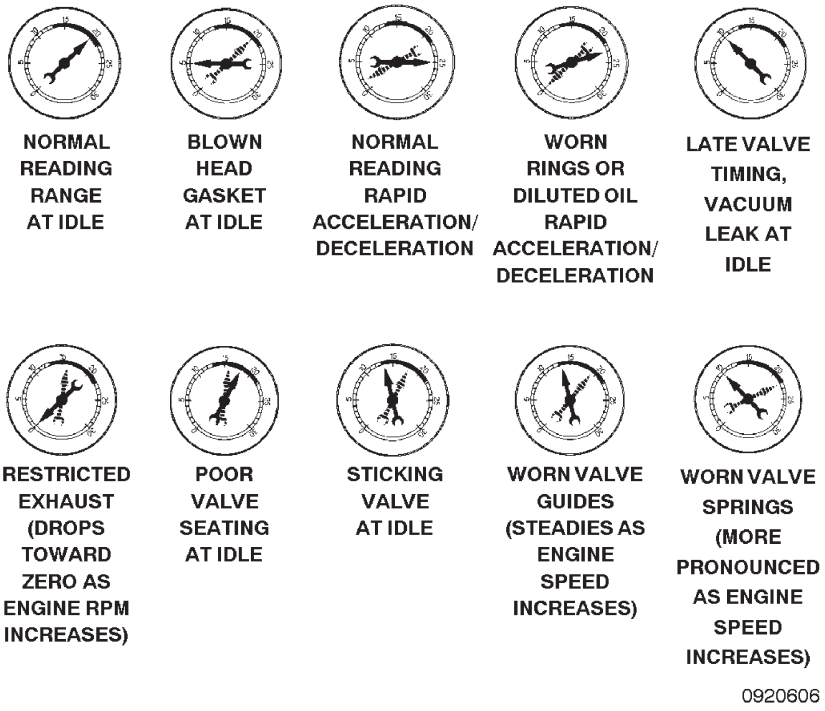
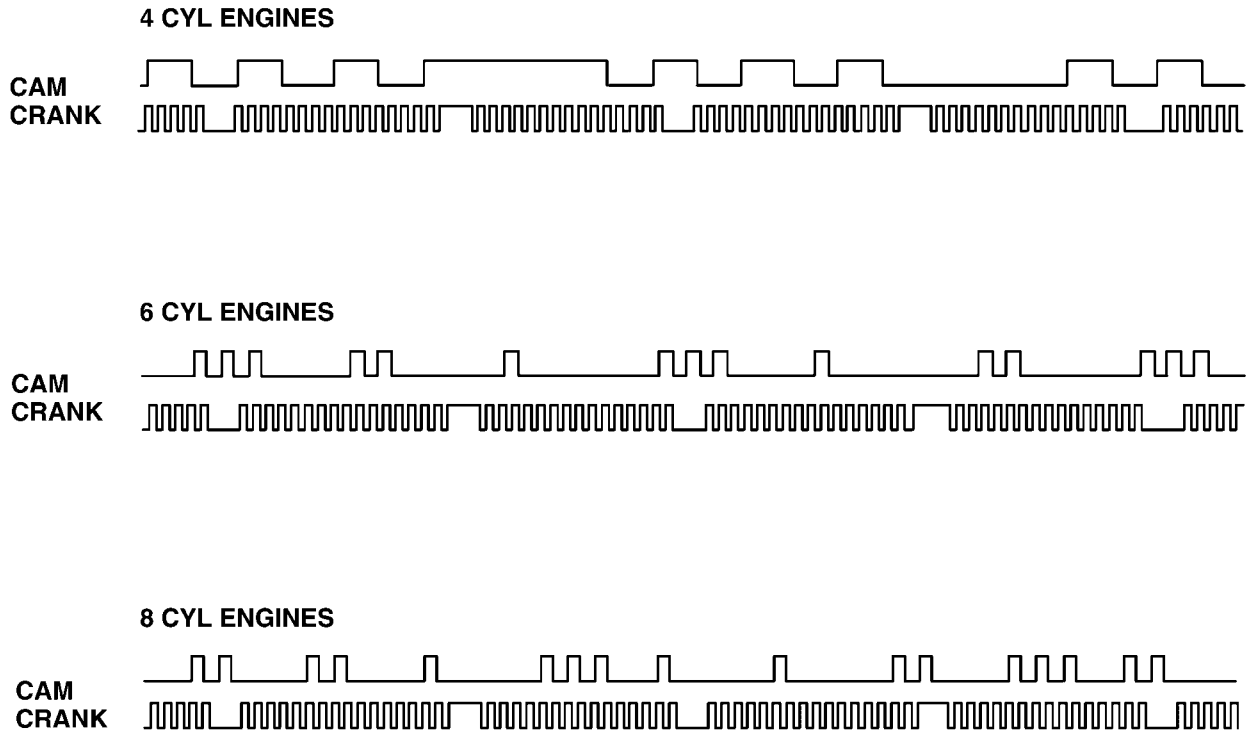
NOTES

11.0 CHARTS AND GRAPHS



NGC VEHICLES

NGC TYPICAL SCOPE PATTERNS
CAMSHAFT AND CRANKSHAFT SENSOR

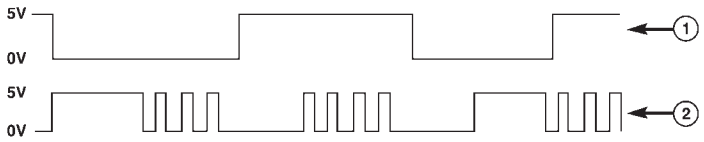


10.1 2003 RS 2.4L (Continued)

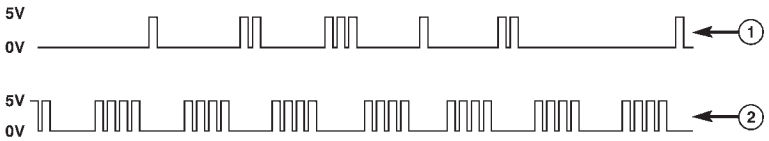
SBEC VEHICLES

TYPICAL SCOPE PATTERNS
CAMSHAFT AND CRANKSHAFT SENSORS

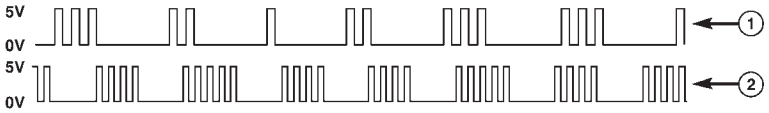
2.0L/2.4L ENGINES



3.3L/3.8L ENGINES



2.7L/3.5L ENGINES



1 CAMSHAFT SIGNAL
2 CRANKSHAFT SIGNAL

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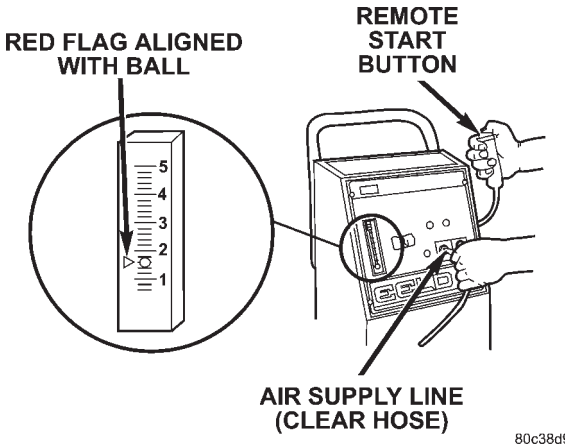
EELD CALIBRATION



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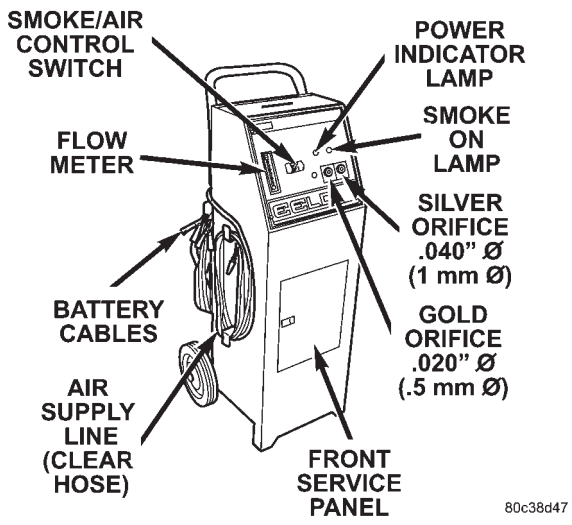

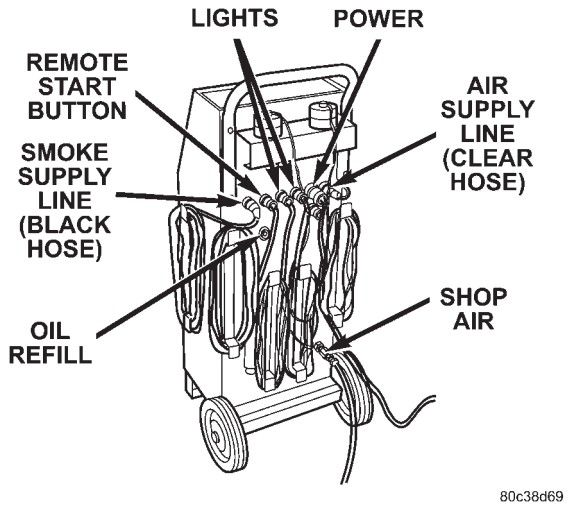

O2 SENSOR CONFIGURATION

JR	4 CYLINDER	1/1	UPSTREAM
JR	4 CYLINDER	1/2	DOWNSTREAM
JR	2.7L V-6	1/1	REAR BANK UP
JR	2.7L V-6	1/2	REAR BANK DOWN
JR	2.7L V-6	2/1	FRONT BANK UP
JR	2.7L V-6	2/2	FRONT BANK DOWN
LH	V-6 ALL	1/1	RIGHT BANK UP
LH	V-6 ALL	1/2	RIGHT BANK DOWN
LH	V-6 ALL	2/1	LEFT BANK UP
LH	V-6 ALL	2/2	LEFT BANK DOWN
RS/RG	ALL	1/1	UPSTREAM
RS/RG	ALL	1/2	DOWNSTREAM
PL	ALL	1/1	UPSTREAM
PL	ALL	1/2	DOWNSTREAM
PR	3.5L	1/1	RIGHT BANK UP
PR	3.5L	1/2	RIGHT BANK DOWN
PR	3.5L	2/1	LEFT BANK UP
PR	3.5L	2/2	LEFT BANK DOWN
PT	ALL	1/1	UPSTREAM
PT	ALL	1/2	DOWNSTREAM

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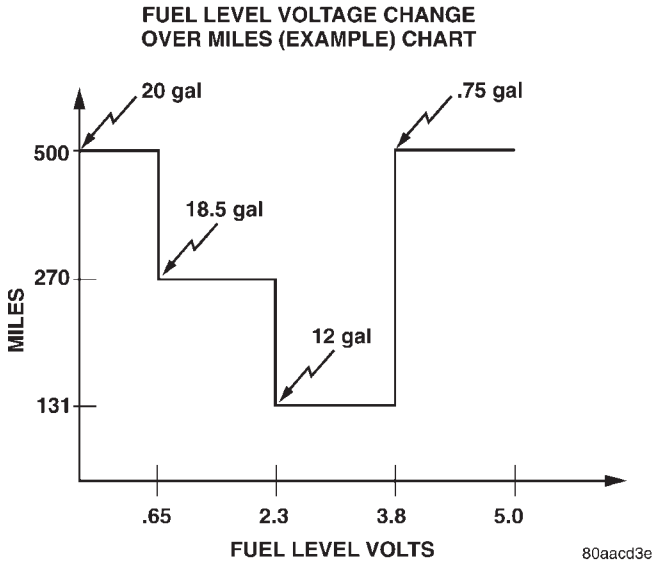
10.1 2003 RS 2.4L (Continued)



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NOTES

1.0 INTRODUCTION

The procedures contained in this manual include all the specifications, instructions and graphics needed to diagnose 2003 body system problems. The diagnostics in this manual are based on the failure condition or symptom being present at the time of diagnosis.

Please follow the recommendations below when choosing your diagnostic path.

1. First make sure the DRBIII® is communicating with the appropriate modules; i.e., if the DRBIII® displays a "No Response" or a "Bus ± Signals Open" condition, you must diagnose that first.
2. Read DTC's (diagnostic trouble codes) with the DRBIII®.
3. If no DTC's are present, identify the customer complaint.
4. Once the DTC or customer complaint is identified, locate the matching test in the Table of Contents and begin to diagnose the symptom.

All component location views are in Section 8.0. All connector pinouts are in Section 9.0. All schematics are in Section 10.0. All Charts and Graphs are in Section 11.0.

An * placed before the symptom description indicated a customer complaint.

When repairs are required, refer to the appropriate service information for the proper removal and repair procedure.

Diagnostic procedures change every year. New diagnostic systems may be added: carryover systems may be enhanced. READ THIS MANUAL BEFORE TRYING TO DIAGNOSE A VEHICLE DIAGNOSTIC TROUBLE CODE. It is recommended that you review the entire manual to become familiar with all the new and changed diagnostic procedures.

This book reflects many suggested changes from readers of past issues. After using this book, if you have any comments or suggestions, please fill out the form in the back of this book and mail it back to us.

1.1 SYSTEM COVERAGE

This diagnostic procedures manual covers all 2003 Chrysler Town and Country, Chrysler Voyager and Caravan vehicles. This diagnostic procedures manual also covers both left hand drive (LHD) and right hand drive (RHD) vehicles. There may be some slight differences in the location views of components. If the location views shown are on a LHD vehicle, a RHD vehicle will be symmetrically opposite.

1.2 SIX-STEP TROUBLESHOOTING PROCEDURE

Diagnosis of the body system is done in six basic steps:

- verification of complaint
- verification of any related symptoms
- symptom analysis
- problem isolation
- repair of isolated problem
- verification of proper operation

2.0 IDENTIFICATION OF SYSTEM

The vehicle systems that are part of the "body" system are:

- Airbag
- Audio
- Automatic Temperature Control
- Cabin Heater
- Chime
- Communication
- Door Ajar System
- Electrically heated system
- Exterior lighting
- Instrument Cluster
- Interior Lighting
- Manual Temperature Control
- Memory Seat
- Overhead Console
- Power Door Lock/RKE
- Power Folding Mirrors
- Power Sliding Doors
- Power Liftgate
- Power windows
- Tire Pressure Monitor
- Vehicle Theft Security System (VTSS)
- Windshield Wiper and Washer

3.0 SYSTEM DESCRIPTION AND FUNCTIONAL OPERATION

The body system on the 2003 RS and RG consists of a combination of modules that communicate over the PCI bus (Programmable Communication Interface multiplex system). Through the PCI bus, information about the operation of vehicle components and circuits is relayed quickly to the appropriate modules. All

modules receive all the information transmitted on the bus even though a module may not require all information to perform its function. It will only respond to messages "addressed" to it through binary coding process. This method of data transmission significantly reduces the complexity of the wiring in the vehicle and the size of wiring harnesses. All of the information about the functioning of all the systems is organized, controlled, and communicated by the PCI bus, which is described in the Communication Section of this general information.

3.1 AIRBAG SYSTEM

The 2003 Minivan Airbag System contain the following components: Occupant Restraint Controller (ORC), Airbag Warning Indicator, Clockspring, Driver and Passenger Airbags, Seat belt Tensioners (SBT), Hall-effect Seat Belt Switches (SBS), Left and Right Side Airbag Control Module (SIACM), and Seat (mounted side) Airbags.

The Occupant Restraint Controller (ORC) is a new type of Airbag Control Module (ACM) that supports staged airbag deployment. Staged deployment is the ability to trigger airbag system squib inflators all at once or individually as needed to provide the appropriate restraint for the severity of the impact. The ACM has four major functions: PCI Bus communications, onboard diagnostics, impact sensing, and component deployment. The ACM also contains an energy-storage capacitor. This capacitor stores enough electrical energy to deploy the front airbag components for two seconds following a battery disconnect or failure during an impact. The ORC is secured to the floor panel transmission tunnel below the instrument panel inside the vehicle. The ACM cannot be repaired or adjusted and must be replaced.

The ACM sends and/or receives PCI Bus messages with the Instrument Cluster (MIC), Body Control Module (BCM), and Powertrain Control Module (PCM). Diagnostic trouble codes will be set if the communication with these modules is lost or contains invalid information.

The microprocessor in the ACM monitors the impact sensor signal and the airbag system electrical circuits to determine the system readiness. The ACM also monitors bus messages from both SIACM. If the ACM detects a monitored system fault or SIACM fault, it sends a message to the instrument cluster via PCI bus to turn on the airbag warning indicator. The ACM can set both active and stored diagnostic trouble codes to aid in the diagnosing system problems. See DIAGNOSTIC TROUBLE CODES in this section.

The ACM has an internal accelerometer that senses the rate of vehicle deceleration, which provides verification of the direction and severity of an impact. A pre-programmed decision algorithm in the ACM microprocessor determines when the deceleration rate is severe enough to require airbag system protection. The ACM also uses the driver and front passenger seat belt switch status (buckled or unbuckled) to determine whether or not the seat belt tensioners should deploy. The ACM also uses the crash severity to determine the level of driver and front passenger deployment, low medium or high. When the programmed conditions are met, the ACM sends an electrical signal to deploy the appropriate airbag system components.

WARNING: THE AIRBAG SYSTEM IS A SENSITIVE, COMPLEX ELECTRO-MECHANICAL UNIT. BEFORE ATTEMPTING TO DIAGNOSE OR SERVICE ANY AIRBAG SYSTEM OR RELATED STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENTS YOU MUST FIRST DISCONNECT AND ISOLATE THE BATTERY NEGATIVE (GROUND) CABLE. WAIT TWO MINUTES FOR THE SYSTEM CAPACITOR TO DISCHARGE BEFORE FURTHER SYSTEM SERVICE. THIS IS THE ONLY SURE WAY TO DISABLE THE AIRBAG SYSTEM. FAILURE TO DO THIS COULD RESULT IS ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY. NEVER STRIKE OR KICK THE AIRBAG CONTROL MODULE, AS IT CAN DAMAGE THE IMPACT SENSOR OR AFFECT ITS CALIBRATION. IF AN AIRBAG CONTROL MODULE IS ACCIDENTALLY DROPPED DURING SERVICE, THE MODULE MUST BE SCRAPPED AND REPLACED WITH A NEW UNIT.

The airbag warning lamp is the only point at which the customer can observe symptoms of a system malfunction. Whenever the ignition key is turned to the run or start position, the MIC performs a lamp check by turning the airbag warning indicator on for 6-8 seconds. After the lamp check, if the indicator turns on, it means that the ACM has checked the system and found it to be free of discernible malfunctions. If the lamp remains on, there could be an active fault in the system or the MIC lamp circuit may be internally shorted to ground. If the lamp comes on and stays on for a period longer than 6-8 seconds then goes off, there is usually an intermittent problem in the system.

3.1.1 DRIVER AIRBAG

The airbag protective trim cover is the most visible part of the driver side airbag system. The protective trim cover is fitted to the front of the airbag module and forms a decorative cover in the center of the steering wheel. The module is mounted directly to the steering wheel. Located under the trim cover are the horn switch, the airbag cushion, and the airbag cushion supporting components. The airbag module includes a housing to which the cushion and hybrid inflator are attached and sealed. The Minivan is equipped with driver airbag with dual stage inflators that include a small canister of highly compressed argon gas. The ACM uses vehicle crash severity, seat belt switch status (buckled or unbuckled) as inputs to determine the level of airbag deployment. When supplied with the proper electrical signal, the hybrid inflator or inflators discharge the compressed gas it contains directly into the cushion. The airbag cannot be repaired, and must be replaced if deployed or in any way damaged.

WARNING: THE DRIVER AIRBAG MODULE CONTAINS ARGON GAS PRESSURIZED TO OVER 17236.89 Kpa (2500 PSI). DO NOT ATTEMPT TO DISMANTLE AN AIRBAG MODULE OR TAMPER WITH ITS INFLATOR. DO NOT PUNCTURE, INCINERATE, OR BRING INTO CONTACT WITH ELECTRICITY. DO NOT STORE AT TEMPERATURE EXCEEDING 93°C (200°F). REPLACE AIRBAG SYSTEM COMPONENTS ONLY BUT INTERNAL DIFFERENCES MAY RESULT IN INFERIOR OCCUPANT PROTECTION. THE FASTENERS, SCREWS, AND BOLTS ORIGINALLY USED FOR THE AIRBAG SYSTEM COMPONENTS HAVE SPECIAL COATINGS AND ARE SPECIFICALLY DESIGNED FOR THE AIRBAG SYSTEM. THEY MUST NEVER BE REPLACED WITH ANY SUBSTITUTES. ANY TIME A NEW FASTENER IS NEEDED, REPLACE IT WITH THE CORRECT FASTENERS PROVIDED IN THE SERVICE PACKAGE OR SPECIFIED IN THE MOPAR PARTS CATALOG.

3.1.2 CLOCKSPRING

The clockspring is mounted on the steering column behind the steering wheel. This assembly consist of a plastic housing which contains a flat, ribbon-like, electrically conductive tape that winds and unwinds with the steering wheel rotation. The clockspring is used to maintain a continuous electrical circuit between the instrument panel wiring and the driver airbag, the horn, and the vehicle speed control switches if equipped. The clockspring must be properly centered when it is reinstalled on the steering column following any service procedure, or it could be damaged. The clockspring cannot be repaired and it must be replaced.

CAUTION: Deployed Front Air Bags may or may not have live pyrotechnic material within the air bag inflator. Do not dispose of 2003 Model Year Driver and Passenger Airbags unless you are sure of complete deployment. Please refer to the Hazardous Substance Control System for Proper Disposal. Dispose of deployed air bags in a manner consistent with state, provincial, local, and federal regulations. Use the following table to identify the status of the Airbag Squib.

AIRBAG SQUIB STATUS

(1) Using a DRBIII® read Airbag DTC's **If** the following active codes are present:

ACTIVE DTC	CONDITIONS	SQUIB STATUS
Driver Squib 1 open Driver Squib 2 open	Check the stored DTC's **AND IF** the stored minutes for both are within 15 minutes of each other.	Both Driver Squib 1 and 2 were used.
Driver Squib 1 open Driver Squib 2 open	Check the stored DTC's **AND IF** the stored minutes for Driver Squib 2 open is GREATER than the stored minutes for Driver Squib 1 by 15 minutes or more.	Driver Squib 1 was used; Driver Squib 2 is live.
Driver Squib 1 open Driver Squib 2 open	Check the stored DTC's **AND IF** the stored minutes for Driver Squib 1 open is GREATER than the stored minutes for Driver Squib 2 by 15 minutes or more.	Driver Squib 1 is live; Driver Squib 2 was used.
If Driver Squib 1 open	**AND IF** Driver Squib 2 opens is NOT an active code.	Driver Squib 1 was used; Driver Squib 2 is live.
If Driver Squib 2 open	**AND IF** Driver Squib 1 open is NOT an active code.	Driver Squib 1 is live; Driver Squib 2 was used.

If neither of the following codes is an active code:

ACTIVE DTC	SQUIB STATUS
Driver squib 1 open	Status of Airbag is Unknown
Driver Squib 2 open	

3.1.3 PASSENGER AIRBAG

The airbag insignia in the instrument panel top cover above the glove box is the most visible part of the passenger side airbag system. The airbag door has a living hinge at the top, which is secured to the instrument panel top cover. Located under the airbag door is the airbag cushion and its supporting components. The airbag module includes a housing to which the cushion and hybrid inflators are attached and sealed. The 2003 Minivan is equipped with front passenger airbag with dual stage inflators that include a small canister of highly compressed argon gas. The ACM uses vehicle crash severity, front passenger seat belt switch status (buckled or unbuckled) inputs to determine the level of airbag deployment. When supplied with the proper electrical signal, the hybrid inflator or inflators discharge the compressed gas it contains directly into the cushion. The airbag cannot be repaired, and must be replaced if deployed or in any way damaged.

WARNING: THE PASSENGER AIRBAG MODULE CONTAINS ARGON GAS PRESSURIZED TO 17236.89 Kpa (2500 PSI). DO NOT ATTEMPT TO DISMANTLE AN AIRBAG MODULE OR TAMPER WITH ITS INFLATOR. DO NOT PUNCTURE, INCINERATE, OR BRING INTO CONTACT WITH ELECTRICITY. DO NOT STORE AT TEMPERATURE EXCEEDING 93°C (200°F). REPLACE AIRBAG SYSTEM COMPONENTS ONLY WITH PARTS SPECIFIED IN THE MOPAR PARTS CATALOG. SUBSTITUTE PARTS MAY APPEAR INTERCHANGEABLE, BUT INTERNAL DIFFERENCES MAY RESULT IN INFERIOR OCCUPANT PROTECTION. THE FASTENERS, SCREWS, AND BOLTS ORIGINALLY USED FOR THE AIRBAG SYSTEM COMPONENTS HAVE SPECIAL COATINGS AND ARE SPECIFICALLY DESIGNED FOR THE AIRBAG SYSTEM. THEY MUST NEVER BE REPLACED WITH ANY SUBSTITUTES. ANY TIME A NEW FASTENER IS NEEDED, REPLACE IT WITH THE CORRECT FASTENERS PROVIDED IN THE SERVICE PACKAGE OR SPECIFIED IN THE MOPAR PARTS CATALOG.

CAUTION: Deployed Front Air Bags may or may not have live pyrotechnic material within the air bag inflator. Do not dispose of 2003 Mopar Year Driver and Passenger Airbags unless you are sure of complete deployment. Please refer to the Hazardous Substance Control System for Proper Disposal. Dispose of deployed air bags in a manner consistent with state, provincial, local, and federal regulations. Use the following table to identify the status of the Airbag Squib.

AIRBAG SQUIB STATUS

(1) Using a DRBIII® read Airbag DTC's **If** the following active codes are present:

ACTIVE DTC	CONDITIONS	SQUIB STATUS
Passenger Squib 1 open Passenger Squib 2 open	Check the stored DTC's **AND IF** the stored minutes for both are within 15 minutes of each other.	Both Passenger Squib 1 and 2 were used.
Passenger Squib 1 open Passenger Squib 2 open	Check the stored DTC's **AND IF** the stored minutes for Passenger Squib 2 open is GREATER than the stored minutes for Passenger Squib 1 by 15 minutes or more.	Passenger Squib 1 was used; Passenger Squib 2 is live.
Passenger Squib 1 open Passenger Squib 2 open	Check the stored DTC's **AND IF** the stored minutes for Passenger Squib 1 open is GREATER than the stored minutes for Driver Squib 2 by 15 minutes or more.	Passenger Squib 1 is live; Driver Squib 2 was used.
If Passenger Squib 1 open	**AND IF** Passenger Squib 2 open is NOT an active code.	Passenger Squib 1 was used; Passenger Squib 2 is live.
If Passenger Squib 2 open	**AND IF** Passenger Squib 1 open is NOT an active code.	Passenger Squib 1 is live; Passenger Squib 2 was used.

If neither of the following codes is an active code:

ACTIVE DTC	SQUIB STATUS
Passenger squib 1 open	Status of Airbag is Unknown
Passenger squib 2 open	

3.1.4 SEAT BELT TENSIONER (SBT)

The driver and passenger seat belt (buckle) tensioners are mounted to the inboard side of the front seats. The seat belt buckle and seat belt switch are connected directly to the seat belt tensioner cable. At the onset of an impact event the ACM uses the seat belt tensioner to rapidly retract the seat belt buckles. With the slack removed, the occupant's forward motion in an impact will be reduced as will the likelihood of contacting interior components. The seat belt tensioner cannot be removed, the occupant's forward motion in an impact will be reduced as will the likelihood of contacting repaired, if damaged or defective it must be replaced. The ACM continuously monitors the resistance of the seat belt tensioner circuits an open or shorted conditions.

3.1.5 SEAT BELT SWITCHES (SBS)

The hall-effect driver and front passenger seat belt switches provide the seat belt status, buckled or unbuckled, via hardwired inputs to the ACM. If the seat belt switches are damaged or defective the seat belt tensioner must be replaced. The ACM continuously monitors the seat belt switch circuits for an open or shorted conditions.

3.1.6 SIDE IMPACT AIRBAG CONTROL MODULE (SIACM)

Supplemental driver and front passenger seat airbags provide side impact protection for the front seat occupants. Each side airbag has it own side impact airbag control module (SIACM) to provide independent impact sensing and deployment. SIACM are located on the left and right B post just above the seat belt retractor. Both the left and right side impact airbag control modules (SIACM) use the same part number. However, for proper PCI bus operation each SIACM must have a unique module identification. To provide the unique module identification for both, left and right, the SIACM software looks for a ground on cavity 5 of the SIACM connector. If cavity 5 is grounded the SIACM communicates as a left SIACM otherwise it communicates as a right SIACM. The SIACM performs self diagnostics and circuit tests to determine if the system is functioning properly. If the test finds a problem the SIACM will set both active and stored diagnostic trouble codes. If a DTC is active the

SIACM will request that the airbag warning lamp be turned on. The results of the system test are transmitted on the PCI Bus to the ACM once each second or on change in lamp state. If the warning lamp status message from the either SIACM contains a lamp on request, the ACM will set an active DTC. At the same time as the DTC is set the ACM sends a PCI Bus message to the mechanical instrument cluster (MIC) requesting the airbag warning lamp be turned on. Observe all ACM warning and caution statements when servicing or handling the SIACM. SIACM are not repairable and must be replaced if they are dropped.

WARNING: THE AIRBAG SYSTEM IS A SENSITIVE, COMPLEX ELECTRO-MECHANICAL UNIT. BEFORE ATTEMPTING TO DIAGNOSE OR SERVICE ANY AIRBAG SYSTEM OR RELATED STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENTS YOU MUST FIRST DISCONNECT AND ISOLATE THE BATTERY NEGATIVE (GROUND) CABLE. WAIT TWO MINUTES FOR THE SYSTEM CAPACITOR TO DISCHARGE BEFORE FURTHER SYSTEM SERVICE. THIS IS THE ONLY SURE WAY TO DISABLE THE AIRBAG SYSTEM. FAILURE TO DO THIS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY. NEVER STRIKE OR KICK THE AIRBAG CONTROL MODULE, AS IT CAN DAMAGE THE IMPACT SENSOR OR AFFECT ITS CALIBRATION. IF AN AIRBAG CONTROL MODULE IS ACCIDENTALLY DROPPED DURING SERVICE, THE MODULE MUST BE SCRAPPED AND REPLACED WITH A NEW UNIT.

The airbag warning lamp is the only point at which the customer can observe symptoms of a system malfunction. Whenever the ignition key is turned to the run or start position, the MIC performs a lamp check by turning the airbag warning indicator on for 6-8 seconds. After the lamp check, if the indicator turns on, it means that the ACM has checked the system and found it to be free of discernible malfunctions. If the lamp remains on, there could be an active fault in the system or the MIC lamp circuit may be internally shorted to ground. If the lamp comes on and stays on for a period longer than 6-8 seconds then goes off, there is usually an intermittent problem in the system.

3.1.7 SEAT AIRBAGS (SAB)

The left and right seat airbags are located in the outboard end of the front seat backs. The airbag module contains a bag, an inflator (a small canister of highly compressed argon gas) and a mounting bracket. The seat airbags cannot be repaired and must be replaced if deployed or in any way damaged. When supplied with the proper electrical signal the inflator seals the hole in the airbag cushion so it can discharge the compressed gas it contains directly into the cushion. Upon deployment, the seat back trim cover will tear open and allow the seat airbag to fully deploy between the seat and the door.

WARNING: SEAT AIRBAG CONTAINS ARGON GAS PRESSURIZED TO OVER 17236.89 Kpa (2500 PSI). DO NOT ATTEMPT TO DISMANTLE AN AIRBAG MODULE OR TAMPER WITH ITS INFLATOR. DO NOT PUNCTURE, INCINERATE, OR BRING INTO CONTACT WITH ELECTRICITY. DO NOT STORE AT TEMPERATURE EXCEEDING 93°C (200°F). REPLACE AIRBAG SYSTEM COMPONENTS ONLY WITH PARTS SPECIFIED IN THE CHRYSLER MOPAR PARTS CATALOG. SUBSTITUTE PARTS MAY APPEAR INTERCHANGEABLE, BUT INTERNAL DIFFERENCES MAY RESULT IN INFERIOR OCCUPANT PROTECTION. THE FASTENERS, SCREWS, AND BOLTS ORIGINALLY USED FOR THE AIRBAG SYSTEM COMPONENTS HAVE SPECIAL COATINGS AND ARE SPECIFICALLY DESIGNED FOR THE AIRBAG SYSTEM. THEY MUST NEVER BE REPLACED WITH ANY SUBSTITUTES. ANY TIME A NEW FASTENER IS NEEDED, REPLACE IT WITH THE CORRECT FASTENERS PROVIDED IN THE SERVICE PACKAGE OR SPECIFIED IN THE MOPAR PARTS CATALOG.

3.1.8 DIAGNOSTIC TROUBLE CODES

Airbag diagnostic trouble codes consist of active and stored codes. If more than one code exists, diagnostic priority should be given to the active codes. Each diagnostic trouble code is diagnosed by following a specific testing procedure. The diagnostic test procedures contain step-by-step instructions for determining the cause of the trouble codes. It is not necessary to perform all of the tests in this book to diagnose an individual code. Always begin by reading the diagnostic trouble codes using the DRBIII®. Always begin diagnostic with the Table of Contents section 7.0. This will direct you to the specific test(s) that must be performed. Active diagnostic trouble codes for the airbag system are not permanent and will change the moment the reason

for the code is corrected. In certain test procedures within this manual, diagnostic trouble codes are used as a diagnostic tool.

3.1.9 SPECIAL TOOLS

Some airbag diagnostic test use special tools, 8310 and 8443 airbag load tool, for testing squib circuits. The load tools contain fixed resistive loads, jumpers and adapters. The fixed loads are connected to cables and mounted in a storage case. The cables can be directly connected to some airbag system connectors. Jumpers are used to convert the load tool cable connectors to the other airbag system connectors. The adapters are connected to the module harness connector to open shorting clips and protect the connector terminal during testing. When using the load tool follow all of the safety procedures in the service information for disconnecting airbag system components. Inspect the wiring, connector and terminals for damage or misalignment. Substitute the airbag load tool in place of a Driver or Passenger Airbag, seat airbag, clockspring, or seat belt tensioner (use a jumper if needed). Then follow all of the safety procedures in the service information for connecting airbag system components. Read the module active DTC's. If the module reports NO ACTIVE DTC's the defective component has been removed from the system and should be replaced. If the DTC is still active, continue this process until all component in the circuit have been tested. Then disconnect the module connector and connect the matching adapter to the module connector. With all airbags disconnected and the adapter installed the squib wiring can be tested for open and shorted conditions.

3.1.10 ACTIVE CODES

The code becomes active as soon as the malfunction is detected or key-on, whichever occurs first. An active trouble code indicates an on-going malfunction. This means that the defect is currently there every time the airbag control module checks that circuit or component. It is impossible to erase an active code. Active codes automatically erase by themselves when the reason for the code has been corrected. With the exception of the warning lamp trouble codes or malfunctions, when a malfunction is detected, the airbag lamp remains lit for a minimum of 12 seconds or as long as the malfunction is present.

3.1.11 STORED CODES

Airbag codes are automatically stored in the ACM's memory as soon as the malfunction is detected. The exception is the Loss of Ignition Run Only code which is an active code only. A stored code indicates there was an active code present at some time. However, the code currently may not be present as an active code, although another code could be active. When a trouble code occurs, the airbag warning indicator illuminates for 12 seconds minimum (even if the problem existed for less than 12 seconds). The code is stored, along with the time in minutes it was active, and the number of times the ignition has been cycled since the problem was last detected. The minimum time shown for any code will be one minute, even if the code was actually present for less than one minute. Thus, the time shown for a code will be one minute, even if the code was actually present for less than one minute. Thus, the time shown for a code that was present for two minutes 13 seconds, for example, would be three minutes. If a malfunction is detected a diagnostic trouble code is stored and will remain stored. When and if the malfunction ceases to exist, an ignition cycle count will be initiated for that code. If the ignition cycle count reaches 100 without a reoccurrence of the same malfunction, the diagnostic trouble code is erased and that ignition cycle counter is reset to zero. If the malfunction reoccurs before the count reaches 100, then the ignition cycle counter will be reset and diagnostic trouble code will continue to be a stored code. If a malfunction is not active while performing a diagnostic test procedure, the active code diagnostic test will not locate the source of the problem. In this case, the stored code can indicate an area to inspect. If no obvious problems are found, erase stored codes, and with the ignition on wiggle the wire harness and connectors, rotate the steering wheel from stop to stop. Recheck for codes periodically as you work through the system. This procedure may uncover a malfunction that is difficult to locate.

3.2 AUDIO SYSTEM

Some of the radios are on the PCI Bus system. The PCI Bus inputs into the radio are used for VF dimming, remote steering wheel controls and cabin EQ preference. PCI Bus outputs from the radio are used for the Name Brand Speaker (NBS) relay activation, as well as cabin EQ preference.

The RBB and RBK radios have the capability of containing multiple vehicle unique equalization curves (cabin EQ preferences) within the radio. These curves will reside in the radio's flash memory. The radio is capable of storing up to 20 unique equalization curves. The latent curves can be selected via the Front Control Module transmitting a PCI Bus message to the radio in response to a radio request for equalization message. Upon receipt of a valid equalization select message response, the radio will switch to output the corresponding equalization curve.

All the radios, except the RAS, are capable of displaying faults and allowing certain actuation tests through the use of the DRBIII®. When attempting to perform PCI Bus diagnostics, the first step is to identify the radio in use in the vehicle.

When trouble shooting output shorts or "output" error messages, the following applies:

On radios without an external amplifier, the term output refers to the path between the radio and the speaker. This type of circuit can be monitored all the way through the speaker connections by the radio assembly. When the radio displays a shorted output DTC with this type of system, the speaker, radio, or wiring could be at fault.

On radios with an external amplifier, the term "output" refers to the circuit between the radio connector and the amplifier. The radio is capable of monitoring only this portion and can tell nothing about the circuit between the amplifier and the speakers. Consequently, a shorted output DTC on this type of system would only refer to this circuit. A faulty speaker could not cause this DTC.

3.2.1 REMOTE RADIO CONTROLS

These radios can be controlled via remote radio switches (optional). These switches are located on the back side of the steering wheel. They control mode, preset, seek up, seek down, volume up and volume down functions.

These functions are inputs to the Body Control Module and can be read with the DRBIII® under "body computer". The switches are a multiplexed signal to the BCM. The radio control MUX circuit is a 5 volt line that is pulled to ground through different value resistors built into the switches. This causes a voltage drop to be seen by the BCM and it sends a specific message to the radio on the PCI Bus circuit. The radio then responses to the message.

This circuit is fairly simple to troubleshoot. The circuit must be complete from the switches in the steering wheel to the BCM. The ground must be complete so that the switches can cause the voltage drop for the BCM to see. The circuit passes through the clockspring so continuity through this devise must be verified.

3.2.2 CD CHANGER

The new in-dash CD Changer is designed to fit into the existing cubby bin in the center stack. This new cartridge-less CD Changer is controlled by your radio, and allows you to individually load up to four discs at a time. However, due to its compact design, the CD Changer can only carry out one operation at a time. For example, you can not load a new disc while playing another at the same time. Each operation happens sequentially.

The radio unit installed with your system provides control over all features of the CD Changer with the exception of the CD load and eject functions, which are controlled by buttons located on the front of the CD Changer. The radio also supplies the power, ground, PCI Bus, left and right speaker output through a single DIN cable. All features you would expect, such as Disc Up/Down, Track Up/Down, Random and Scan are controlled by the radio, which also displays all relevant CD Changer information on the radio display.

The CD Changer contains a Load/Eject button and an indicator light for each of the four disc positions. The individual light indicates whether a CD is currently loaded in that particular chamber of the CD Changer. Pressing the individual Load/Eject button for a particular chamber will eject a disc currently present in that chamber. If the chamber is currently empty, actuating the Load/Eject button will position that chamber to receive and load a new disc in that chamber.

3.3 BODY CONTROL MODULE

The body control module (BCM) supplies vehicle occupants with visual and audible information and controls various vehicle functions. To provide and receive information, the module is interfaced to the vehicle's serial bus communications network (PCI). This network consists of the powertrain control module (PCM), the engine control module (ECM) diesel, the transmission control module (TCM), the mechanical instrument cluster (MIC), the front control module (FCM), the airbag control module (ACM), the compass/mini-trip (CMTC), the electronic vehicle information center (EVIC), the controller antilock brake (CAB), the HVAC control module (ATC & MTC), the power sliding door (Left & Right) modules (PSD), the power liftgate module (PLG), the Audio system, the side impact airbag control (left & right) modules (SIACM), the memory seat/mirror module (MSMM), the RKE/thatcham alarm module (export) and the sentry key immobilizer module (SKIM). The BCM is operational when battery power is supplied to the module.

The body control module provides the following features:

- Power Door Locks
- Automatic Door Lock
- Door Lock Inhibit
- Central Locking (with VTSS Only)
- Battery Protection
- The BCM will automatically turn off all exterior lamps after 3 minutes and all interior lamps after 15 minutes after the ignition is turned off, if they are not turned off by the driver.

- Chime Driver
- Compass/Minitrip Support
- Interior Lighting (Courtesy/Reading Lamps)
- BCM Diagnostic Reporting
- Electronic Liftgate Release (with Power Door Locks)
- Exterior Lighting
- Headlamp Time Delay (with/without Autoheadlamps)
- Automatic Headlamps (with electrochromatic mirror)
- Illuminated Entry
- Fade to Off

This feature dims the interior lighting (courtesy lamps) gradually if the BCM does not receive any new inputs that would cause the interior lamps to remain on.

- PWM Instrument Panel Dimming
- Door Lock Inhibit

This feature disables the door lock functions if the key is in the ignition and either front door is ajar. Pressing the RKE lock/unlock button under these conditions, result in normal lock/unlock activation.

- Power Sliding Door Switch Inputs

The BCM has 4 switch inputs for the power sliding door feature: Located in the overhead console are the Left and Right side sliding door switches to activate either or both sliding doors under the proper conditions. Also there are B-Pillar switches located on the Left and Right B-pillar posts.

- Power Liftgate Switch Input

The BCM has 1 Liftgate switch input located in the overhead console

- Power Lockout Switch Input

The BCM has 1 Lockout switch that when enabled will disable the B-Pillar sliding door switches from activating either sliding door when depressed. When replacing a body control module there are 2 modules available, a Base and a Midline. The Midline controller is used on vehicles that have Power Door Locks. If a vehicle is equipped with the Vehicle Theft Security System, the midline controller becomes a premium when the theft feature is enabled.

NOTE: Do not swap the body control module between vehicles or body control modules off the shelf.

Engineering does not recommend that service, dealers or the plant swap Body Control Modules (BCM) between vehicles or off the shelf. The BCM has internal diagnostic capability that assists in diagnosing the system. When an “Open” or a “Short” circuit exists, the diagnostic tool can be used to read the BCM codes. The codes are very descriptive in identifying the appropriate feature that has faulted. The BCM also learns what features are on the vehicle and if modules are swapped the BCM could set false DTCs based on what it learned.

3.4 CHIME WARNING SYSTEM

The BCM monitors the door/liftgate ajar switches, multifunction switches, headlight switch, ignition switch, PCI bus, and the diagnostic tool to perform various chime operations. The BCM uses a low-side driver to control the chime located in the cluster.

The chime system provides the Driver with warning chimes for:

- Seat belt
- Exterior lights on
- Key-in Ignition
- Key-in Accessory
- Engine temperature critical
- Low washer fluid
- Turn signals on
- Dome light on
- Low oil pressure
- Any warning lamp announcement
- *High-speed warning Gulf Coast Countries (GCC) only*

The output sound intensity of the chime is approximately 72 decibels.

3.4.1 CHIME PRIORITY

The following list indicates the priority of the chime when more than one chime is active at the same time:

- Seat belt warning
- *High-speed warning Gulf Coast Countries (GCC) only*
- Turn signal on
- Chime request
- Warning lamp announcement

The cluster is responsible to set priority on all warning lamp announcement chimes.

3.4.2 CHIME ON CONDITIONS

The following is a list of the chime warnings and when they will sound.

Driver's Seat belt Unbuckled:	Sounds for approximately 6±2 seconds when the igntion is turned on and driver's seat belt is not buckled, as a reminder to the driver to buckle the seat belt.
Exterior Lights On:	Ignition is in the lock position, the driver door is ajar, and the headlight switch is left in any position, other than auto or off. The chime will sound as a warning to the driver until one of the above conditions is removed or until the battery protection time of 3 minutes has expired.
Key-In Ignition:	Ignition is in the lock position, driver door is ajar and the key is in the ignition. The chime will sound until one of the above conditions is removed or until the battery protection time of 15 minutes has expired.
Turn Signal On:	When the BCM detects a turn signal input continuously for 1.0mile/0.6km and the vehicle speed is greater than 15 mph/ 24kph, the chime will sound until the specific turn signal is cancelled.
Dome Lights On:	Ignition is in the lock position, driver door ajar, and the dome light switch is left in the on position. The chime will sound until one of the above conditions is removed or until the battery protection time of 15 minutes has expired.
Low Oil Pressure:	The chime will sound when the engine is operating and the oil pressure drops below 4psi/27.5kPa.
Engine Temperature Critical:	The chime will sound when the engine is operating and the coolant temperature exceeds 252°F/ 122C *or 234°/112C(diesel)*. The chime is continuous at 257°F/ 125C and will chime for 4 minutes and stop if the temperature drops below 255°F/123C.
Low Washer Fluid	The chime will sound when the washer fluid drops below a specific level.
Warning Lamp Announcement:	A chime will sound to alert the driver to scan the instrument panel and overhead console to see which warning lamp is illuminated. The door/liftgate ajar warning lamp will appear without a chime if the vehicle is running and a door or the liftgate is opened. A chime will sound if the door or liftgate is still open and the vehicle speed is greater than 4mph/6kph.
High-speed warning Gulf Coast Countries (GCC) only	*The chime will sound, acting as a warning to the driver that the vehicle speed has exceed 75mph±2/120kph±3.*

3.4.3 WARNING LAMP ANNOUNCEMENT

Low Fuel Lamp:	The cluster will request a single chime after the indicator is illuminated.
Volt Lamp:	The cluster will request a single chime after the indicator is illuminated.
Oil Pressure Lamp:	The cluster will request a single chime after illuminating the indicator above 450rpm vehicle operation.
Liftgate Ajar Lamp:	The BCM determines when to chime for liftgate ajar.
Fasten Seat Belt Lamp:	The MIC will request a single chime from the BCM when the ignition is turned to the unlock/ run/start positions if the driver seat belt is not buckled and 2 seconds after seatbelt warning chime ends.
Check Engine Lamp:	The cluster will request a single chime after the indicator is illuminated.
Low Washer Fluid Lamp:	The cluster will request a single chime after the indicator is illuminated.
Engine Temperature Lamp:	The cluster will request a single chime when the indicator is first illuminated at 252°F/122C.

3.4.4 OTHER CHIME ON CONDITIONS

Programming of an Additional Key Fob:	A single cluster chime will sound, which signals that the program mode has been initiated.
Programming for Rolling Door Locks:	When the programming has been completed, a single tone from the chime system, will occur.

3.5 COMMUNICATION

The Programmable Communication Interface or PCI Bus is a single wire multiplexed network capable of supporting binary encoded messages shared between multiple modules. The PCI bus circuit is identified as D25 and is white with a violet tracer. Additional tracer colors may be added to the violet in order to distinguish between different module connections. The modules are wired in parallel. Connections are made in the harness using splices. The following modules are used on the RS/RG:

- Body Control Module
- Front Control Module
- Airbag Control Module
- Left Side Impact Airbag Control Module
- Right Side Impact Airbag Control Module
- Controller Antilock Brake
- Powertrain Control Module (Gas)
- Engine Control Module (Diesel)
- Radio
- CD Changer
- Transmission Control Module
- Automatic Temperature Control Module
- A/C Heater Control Module (MTC)
- Sentry Key Immobilizer Module
- Memory Seat/Mirror Module
- Overhead Console
- Mechanical Instrument Cluster
- Left Sliding Door Control Module
- Right Sliding Door Control Module
- RKE/Thatcham Alarm Module (Export)
- Power Liftgate Module

Each module provides its own bias and termination in order to transmit and receive messages. The bus voltage is at zero volts when no modules are transmitting and is pulled up to about seven and a half volts when modules are transmitting.

The bus messages are transmitted at a rate averaging 10800 bits per second. Since there is only voltage present when the modules transmit and the message length is only about 500 milliseconds, it is ineffective to try and measure the bus activity with a conventional voltmeter. The preferred method is to use the DRBIII® lab scope. The 12v square wave selection on the 20-volt scale provides a good view of the bus activity. Voltage on the bus should pulse between zero and about seven and a half volts. Refer to the following figure for some typical displays.

The PCI Bus failure modes are broken down into two categories. Complete PCI Bus Communication Failure and individual module no response. Causes of a complete PCI Bus Communication Failure include a short to ground or battery on the PCI circuit. Individual module no response can be caused by an open PCI circuit at the module, or an open battery or ground circuit to the affected module.

Symptoms of a complete PCI Bus Communication Failure would include but are not limited to:

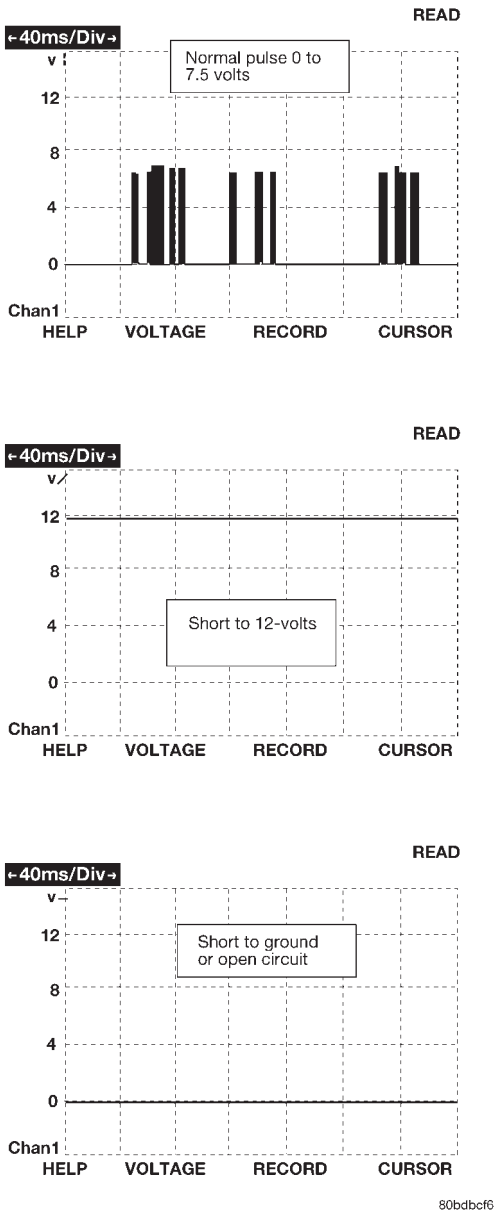
- All gauges on the MIC stay at zero
- All telltales on MIC illuminate
- MIC backlighting at full intensity
- Dashed lines in the overhead console ambient temperature display
- No response received from any module on the PCI bus (except the PCM/ECM)
- No start (if equipped with Sentry Key Immobilizer)

Symptoms of Individual module failure could include any one or more of the above. The difference would be that at least one or more modules would respond to the DRBIII®.

Diagnosis starts with symptom identification. If a complete PCI Bus Communication Failure is suspected, begin by identifying which modules the vehicle is equipped with and then attempt to get a response from the modules with the DRBIII®. If any modules are responding, the failure is not related to the total bus, but can be caused by one or more modules PCI circuit or power supply and ground circuits. The DRBIII® may display “BUS +/- SIGNAL OPEN” or “NO RESPONSE” to indicate a communication problem. These same messages will be displayed if the vehicle is not equipped with that particular module. The CCD error message is a default message used by the DRBIII® and in no way indicates whether or not the PCI bus is operational. The message is only an indication that a module is either not responding or the vehicle is not equipped.

NOTE: For 2003 model year, some vehicles will integrate the Transmission Control Module and Powertrain Control Module into a single control module. This new module is the Next Generation Controller for DaimlerChrysler and will be referred to as the Powertrain Control Module (PCM). The Transmission Control Module is part of the Powertrain Control Module.

New Diagnostic procedures and New DTC numbers are some of the changes you will see which reflect the new combined module technology. The PCM will have four color coded connectors C1 through C4, (C1-BLK, C2-GRAY, C3-WHITE, C4-GREEN), each PCM connector will have 38 pins each. Two new tools are used for probing and repairing the New PCM connectors. A New tool to release the pins from the PCM connectors Miller #3638 is introduced, you must use the Miller tool #3638 to release the connector pins or harness and connector damage will occur. Also a New tool for probing connectors Miller #8815 is introduced, you must use the Miller tool #8815 to probe the PCM pins or harness and connector damage will occur. There is also a new Verification test and module replacment procedure for the PCM.



3.6 DOOR AJAR SYSTEM

The door ajar and liftgate ajar states are used as inputs for the Body Control Module (BCM). The BCM uses these inputs to determine exactly what position the doors and liftgate are in. The DRBIII® will display the state of the door ajar and the liftgate ajar switches in Inputs/Outputs. It's important to note, that when any door, or the liftgate is closed, the switch state on the DRBIII® will show OPEN. When any door, or the liftgate is open the switch state on the DRBIII® will show CLOSED. During diagnosis, if a door or the liftgate is closed and the DRBIII® displays the switch state as CLOSED, it indicates a shorted ajar circuit. If the door or the liftgate is open and the DRBIII® displays the switch state as OPEN, it indicates an open ajar circuit.

3.7 EXTERIOR LIGHTING SYSTEM

3.7.1 HEADLAMP POWER

The Headlamp Switch is a direct input to the BCM. The BCM sends a BUS message to the FCM informing it of a headlamp switch status change. The FCM then turns on power to the headlamps through four “fuseless” circuits. These circuits are electronically controlled and continuously monitored for malfunctions. Power is supplied to each filament in a separate circuit. For vehicles equipped with daytime running Lamps (DRL), the FCM electronically steps down the headlamp voltage to provide the desired illumination.

3.7.2 HEADLAMP SWITCH

The Headlamp Switch uses a multiplexed (MUX) circuit to the Body Control Module (BCM). The Headlamp Switch controls the Fog lamp relay, Park lamps and the Low and High headlamps. The BCM then sends a signal through the PCI Bus line to the FCM as to what state the switch has selected. The FCM energizes the high side output drivers to turn ON the desired lamps.

3.7.3 PARK LAMP RELAY

The Park Lamp Switch is a direct input to the BCM. The BCM sends a BUS message to the FCM informing it to turn on the park lamp relay. The park lamp relay is then powered through low side control of the FCM. This circuit is electronically controlled and continuously monitored for malfunctions.

3.7.4 FOG LAMP RELAY

The Fog Lamp switch is a direct input to the BCM. The BCM sends a BUS message to the FCM informing it to turn on the fog lamp relay. The fog lamp relay is then powered through low side control of the FCM. This circuit is electronically controlled and continuously monitored for malfunctions. Fog lamp functionality is not equipped on all vehicles. The FCM “learns” that the vehicle is equipped with fog lamps by reading the BCM BUS message.

3.7.5 FOG LAMPS

The BCM controls the operation of the fog lamp relay that turns the fog lamps ON and OFF. The Fog lamps can only be ON when the park and low beams are ON. If the high beams are switched ON then the Fog lamps will be automatically turned OFF.

3.7.6 EXTERIOR LIGHTING BATTERY SAVER

The BCM monitors the status of, and controls, the Park Lamps, Headlamps and Fog Lamp relays. If any exterior lamps are left ON after the ignition is turned OFF, the BCM will turn them OFF after 3 minutes.

3.7.7 AUTO HEADLAMPS

This feature is available on vehicles equipped with both the Electrocromatic Mirror (ECM) and the Compass/Mini-Trip Computer (CMTC). When the BCM detects a day/night signal from the CMTC, an ECM is present and Auto Headlamp mode is selected.

3.8 FRONT CONTROL MODULE

The Front Control Module (FCM) is an electrical control and interface center located in the engine compartment. When it is mated to the Power Distribution Center (PDC), it is referred to as the Integrated Power Module (IPM). The IPM, with its fuses and relays provides power and signal distribution throughout most of the vehicle. The FCM receives both hard wire and digital electronic inputs from the vehicle electrical system through the PDC. Based on these inputs and the ignition switch position, it provides direct power feeds and relay control to some of the vehicles’ most critical electrical systems.

The Front Control Module provides the following features:

Controlled power feeds:

- Front airbag system
- Side airbag system
- Headlamp power
- EATX module power (4 speed only)
- Front washer motor
- Rear washer motor
- Cabin Heater
- Brake shift interlock system

Relay controls:

- Fog lamp relay (when equipped)
- Park lamp relay
- Front wiper on relay
- Front wiper high/low relay
- Accessory relay
- Horn relay
- Front & rear blower relay
- Name brand speakers (NBS) relay

- Electronic back light (EBL) run only relay

Electrical inputs:

- Headlamp battery supplies 1 & 2
- Module battery supply
- Power ground
- Ignition switch RUN or START position status
- Ignition switch START only status
- PCI Bus
- Stop lamp switch
- Horn switch
- Back-up switch
- Wiper park switch
- Washer fluid level switch
- Brake fluid level switch
- Ambient temperature sensor
- Right park lamp outage
- Left park lamp outage
- Battery IOD
- Battery (+) connection detection
- Flash reprogramming voltage

3.8.1 CONTROLLED POWER FEEDS

Front airbag system

The FCM provides power to the Occupant Restraint Control (ORC) system through two "fuseless" circuits (ORC RUN/START, and ORC RUN only). These circuits are electronically controlled and continuously monitored for malfunctions. Power is supplied while the ignition switch is in the RUN and START positions on pin 48 of the FCM connector, and in the RUN only position on pin 29.

Side airbag system

The FCM provides power to the Side Impact Airbag Control Module (SIACM) system through one "fuseless" circuit. This circuit is electronically controlled and continuously monitored for malfunctions. Power is supplied in the ignition RUN and START positions on pin 28 of the FCM connector.

Headlamp power

The headlamp switch is a direct input to the BCM. The BCM sends a PCI Bus message to the FCM informing it of a headlamp switch status change. The FCM then turns on power to the headlamps through four "fuseless" circuits. These circuits are electronically controlled and continuously monitored for malfunctions. Power is supplied to each filament in a separate circuit (RH low on pin 6, RH high on pin 4, LH low on pin 3 and LH high on pin 5). For vehicles equipped with Daytime Running Lamps (DRL), the FCM electronically steps down the headlamp voltage to provide the desired illumination.

EATX power

The electronic automatic 4 speed transmission module is powered when the ignition switch is in the UNLOCK, RUN or START positions. This circuit is electronically controlled and continuously monitored for malfunctions. Power is supplied through pin 27 of the FCM connector.

Front washer motor

The front washer switch is a direct input to the BCM. The BCM sends a PCI Bus message to the FCM informing it of a request to wash. The front washer motor is then powered through low side control inside the FCM. This circuit is electronically controlled and continuously monitored for malfunctions. In addition, the FCM electronically protects the washer motor from system voltages higher than 16 volts by automatically switching off the low side circuit. The low side circuit is connected to pin 45 in the FCM connector.

Rear washer motor

The rear washer switch is a direct input to the BCM. The BCM sends a PCI Bus message to the FCM informing it of a request to wash. The rear washer motor is then powered through low side control inside the FCM. This circuit is electronically controlled and continuously monitored for malfunctions. In addition, the FCM electronically protects the washer motor from system voltages higher than 16 volts by automatically switching off the low side circuit. The low side circuit is connected to pin 46 in the FCM connector.

Cabin Heater

When the ignition is in Run, the FCM monitors the PCI bus for the Cabin Heater Activation request. The Automatic or Manual Temperature Control initiates this request only when all conditions for the Cabin Heater activation are favorable. The request carries the status bit that the FCM requires to activate its Cabin Heater Assist Control output. This output is a low side driver (coming from FCM pin 15) which supplies a ground signal to the Cabin Heater (pin 5). When the Cabin Heater receives this ground signal input, it interprets this as an activation signal. The FCM low side driver is also capable of diagnostic sensing. The driver will sense an open circuit when the driver is off, and will sense a short to voltage when the driver is on. The FCM will set DTCs for both of these types of faults. For additional information, refer to Cabin Heater under General Information and Diagnostic Procedures in the manual.

Brake shift interlock system

The brake shift interlock solenoid receives power from both high side and low side controls inside the FCM. The high side control is on the same circuit as the EATX module power, and the low side control

comes through pin 47 of the FCM connector. The solenoid is controlled by the low side driver when the brake pedal is pressed. Both circuits are continuously monitored for malfunctions.

3.8.2 RELAY CONTROLS

Fog lamp relay

The fog lamp switch is a direct input to the BCM. The BCM sends a PCI Bus message to the FCM informing it to turn on the fog lamp relay. The fog lamp relay is then powered through low side control on pin 33 of the FCM. This circuit is electronically controlled and continuously monitored for malfunctions. Fog lamp functionality is not equipped on all vehicles. The FCM "learns" that the vehicle is equipped with fog lamps by reading the BCM PCI Bus message.

Park lamp relay

The park lamp switch is a direct input to the BCM. The BCM sends a PCI Bus message to the FCM informing it to turn on the park lamp relay. The park lamp relay is then powered through low side control on pin 13 of the FCM. This circuit is electronically controlled and continuously monitored for malfunctions.

Front wiper on relay

The front wiper switch is a direct input to the BCM. The BCM sends a PCI Bus message to the FCM informing it to turn on the front wiper on relay. The front wiper on relay is then powered through low side control on pin 14 of the FCM. This circuit is electronically controlled and continuously monitored for malfunctions.

Front wiper high/low relay

The front wiper switch is a direct input to the BCM. The BCM sends a PCI Bus message to the FCM informing it to turn on the front wiper high/low relay. The relay switches power between the low speed and high speed windings of the wiper motor. The front wiper high/low relay is powered through low side control on pin 34 of the FCM. This circuit is electronically controlled and continuously monitored for malfunctions.

Accessory relay

The accessory relay works in conjunction with the FCM's power accessory delay feature to control the operation of the radio, power windows, washer motors, wiper motors and power outlet. The accessory relay is turned on through low side control on pin 35 of the FCM. This circuit is electronically controlled and continuously monitored for malfunctions. Depending on the ignition switch position, the accessory relay will remain on or will time-out and turn off. The accessory relay remains on in the RUN and ACCY positions of the ignition switch. In the UNLK and OFF positions, the relay will remain energized for 45 seconds then turn off. During this time-out period, if the driver or passenger doors are opened, the relay will turn off immediately. While the ignition switch is in the START position, the relay will also drop-out, then resume operation. Accessory relay operation is most noticeable by observing the operation of the radio or blower functions.

Horn relay

The horn relay operates through a direct wire input to the FCM from the horn switch (FCM pin 17) , or a PCI Bus message from the BCM. The relay responds to the horn switch, remote door lock and VTA alarm functions. The horn relay is powered through low side control on pin 10 of the FCM. Under normal operating conditions, if the horn is pressed for longer than 30 seconds, the FCM will automatically deactivate the horn to prevent damage to it. The FCM will re-activate control of the relay after a 25 second cool-down period. This circuit is electronically controlled and continuously monitored for malfunctions.

Front and rear blower relay

The blower control switch is part of the Automatic Temperature Control (ATC) or A/C-Heater Control Module, (Manual Temp). When the blower switch is turned on, the ATC or A/C-Heater Control Module sends a PCI Bus message to the FCM. The front and rear blower relay is then powered through low side control on pin 30 of the FCM. The relay provides the high side to the blower motor, and the blower speed is governed through low side control in the ATC or A/C-Heater Control Module. This circuit is electronically controlled and continuously monitored for malfunctions.

Name Brand Speakers (NBS) relay

The NBS relay operates through the vehicle bus interface between the radio and the FCM. When the radio is turned on, the radio sends a PCI Bus message to the FCM. The NBS relay is then powered on through low side control on pin 11 of the FCM. The relay supplies power to the amplified speaker, and ground is supplied through the radio. This circuit is electronically controlled and continuously monitored for malfunctions.

Electronic Back Light (EBL) relay

The rear defrost switch is part of the Automatic Temperature Control or A/C-Heater Control Module (Manual Temp). When the ignition switch is in the RUN position and the rear defrost switch is turned on, the ATC or A/C-Heater Control Module sends a PCI Bus message to the FCM. The EBL run only relay is then powered through low side control on pin 31 of the FCM. The relay provides the high side to the rear window defrost grid, and ground is attached to the vehicle body. The FCM will only

allow the rear defrost to operate in the RUN position. This circuit is electronically controlled and continuously monitored for malfunctions.

3.8.3 ELECTRICAL INPUTS

Headlamp battery supplies 1 & 2 — 12 volt input on pins 1 and 2. Battery supply voltage for switching headlamp circuits only.

Module battery supply — 12 volt input on pin 9. Battery supply voltage for all other FCM operations.

Power ground — Ground source on pin 8 for all FCM operations.

Ignition switch RUN or START position status — 12 volt input on pin 37. Allows the FCM to determine the ignition switch status for related FCM operations.

Ignition switch START only status — 12 volt input on pin 19. Allows the FCM to discriminate between RUN/START input and START for related FCM operations.

PCI Bus — Approximately 7.5 volt input on pin 22. Allows the FCM to communicate with other modules on the vehicle bus.

Stop lamp Switch status — 12 volt input on pin 44. Provides for brake shift interlock function.

Horn Switch — Ground input on pin 17. Primary means for engaging the horn.

Back-up switch — Ground input on pin 39. Input is converted to a PCI Bus status message for use by other modules.

Wiper park switch — Ground input on pin 16. Used to determine park placement of wipers. Also used as feedback to FCM to determine correct operating mode of wipers.

Washer fluid level switch — Ground input to pull-up on pin 18. Ground is switched into the circuit when washer bottle fluid level is low.

Brake fluid level switch — Ground input to pull-up on pin 36. Ground is switched into the circuit when brake fluid level is low.

Ambient temperature sensor — Resistive input to pull-up on pin 25. Corresponding voltage level is converted to a PCI Bus message for use by other modules on the bus.

Right park lamp outage — 12 volt input on pin 21. Used to determine if right park lamp circuit is operating properly.

Left park lamp outage — 12 volt input on pin 41. Used to determine if left park lamp circuit is operating properly.

Battery IOD — 12 volt input on pin 20. The FCM enters a low power consumption mode when the ignition is turned OFF. This low current draw battery supply keeps the microprocessor functioning in the low power mode.

Battery (+) connection detection — 12 volt input on pin 38. The battery connection on the PDC incorporates the use of an internal switch to determine if the connector is properly mated and the Connector Positive Assurance (CPA) is engaged. If the CPA is not properly engaged, a voltage on pin 38 will be interpreted as an unseated connector and a fault will set.

Flash programming voltage — 20 volt input on pin 42. When a DRBIII® is connected and the proper flash reprogramming sequence is selected, the 20 volt signal will be applied through pin 42.

3.9 HEATING & A/C SYSTEM

3.9.1 AUTOMATIC TEMPERATURE CONTROL (ATC)

CAUTION: Automatic Temperature Control (ATC) Modules with software versions 41 and 0A used in 2001 and 2002 RS/RG vehicles are NOT compatible with software versions 13 and 0F used in 2003 RS/RG vehicles. Do NOT install an ATC Module with software version 41 or 0A in a 2003 RS/RG vehicle or an ATC Module with software version 13 or 0F in a 2001 or 2002 RS/RG vehicle. Use the DRBIII® to verify which version software the ATC Module is using by selecting Body Systems, Automatic Temperature Control, and then selecting Module Display.

3.9.1.1 SYSTEM AVAILABILITY

EXCEPT EXPORT

- The ATC system is a Three-Zone Air Conditioning System.

EXPORT

- Two different types of systems are currently available for these vehicles.
  - ► Dual-Zone Air Conditioning System for all vehicles with 2.4L and 2.5L engines and all SWB vehicles with 3.3L engines.
  - ► Three-Zone Air Conditioning System for all LWB vehicles.

CABIN HEATER, EXPORT WITH DIESEL ENGINE

- A Cabin Heater is used in conjunction with the ATC system. The Cabin Heater is designed to supply the vehicle's occupants with heat prior to the engine reaching operating temperature. For additional information on this system, refer to Cabin Heater under General Information and Diagnostic Procedures in this manual.

3.9.1.2 SYSTEM CONTROLS

The ATC Module:

- is fully addressable with the DRBIII®.
- communicates over the Programmable Communication Interface Multiplex System (PCI) Bus.
- provides an A/C request over the PCI Bus to the Powertrain Control Module (PCM) when compressor operation is desired.
- for exports with diesel engines, provides a Cabin Heater activation request over the PCI Bus to the Front Control Module (FCM) when conditions are favorable for Cabin Heater operation.
- uses input from the evaporator temperature sensor to prevent evaporator freeze up while maintaining optimum cooling performance.
- uses input from infrared (I/R) sensors, which measure surface temperature, to maintain occupant comfort levels.
  - ► The I/R sensors are mounted in the instrument panel center bezel.
- can be operated in a manual mode.
- provides a blower relay on request over the PCI Bus to the Front Control Module (FCM) when blower operation is desired.
- controls front blower operating speed, providing 10 speeds in manual mode and infinite speeds in automatic mode.
- controls rear blower operating speed, providing 10 speeds in manual mode and infinite speeds in automatic mode.
  - ► The separate front and rear Blower Motor Controllers operate as follows: When blower operation is desired, the Blower Motor Controller provides a 10.0 volt signal to the ATC Module over a control circuit. The ATC Module provides a variable duty cycle ground to the 10.0 volt signal based on input from the blower switch. When the blower switch is set to LO speed, the ATC Module provides a short duty cycle (less time grounding the signal voltage). As higher blower speeds are requested, the ATC Module increases the duty cycle (more time grounding the signal voltage). When the blower switch reaches HI speed, the duty cycle increases to where the signal pattern is almost a flat line (with brief voltage spikes).
- controls the front and rear electronic door actuators' operation.
  - ► A simplified control system for operation of the mode, recirculation, and temperature control actuators provides positive positioning without the complexity of feedback from position sensors. The ATC Module knows the number of operating actuator revolutions required for full door travel as well as the number of actuator commutator pulses per revolution. Using these parameters, the ATC Module runs the actuator for the number of commutator pulses that correspond to the desired door position. To maintain accuracy, the system recalibrates itself periodically at known zero and full travel conditions.
- activates and deactivates the Rear ATC Switch.

The Rear ATC Switch (Three-Zone Only):

- provides desired rear blower speed input to the ATC Module.
- provides desired rear blend and mode door position input to the ATC Module.

The Dual-Zone ATC system uses:

- two front, two-wire electronic blend door actuators.
- one front, two-wire electronic mode door actuator.
- one, two-wire electronic recirculation door actuator.

The Three-Zone ATC system uses:

- two front, two-wire electronic blend door actuators.
- one front, two-wire electronic mode door actuator.
- one, two-wire electronic recirculation door actuator.
- one rear, two-wire electronic blend door actuator.
- one rear, two-wire electronic mode door actuator.

System Relays

- The Integrated Power Module (IPM) houses and provides power to the A/C Clutch Relay, Front Blower Motor Relay, and Rear Blower Motor Relay.

3.9.1.3 SYSTEM REVISIONS

Revisions to the 2003 ATC system include:

- all new version 13 (Two-Zone) and 0F (Three-Zone) system software.

CAUTION: Automatic Temperature Control (ATC) Modules with software versions 41 and 0A used in 2001 and 2002 RS/RG vehicles are NOT compatible with software versions 13 and 0F used in 2003 RS/RG vehicles. Do NOT install an ATC Module with software version 41 or 0A in a 2003 RS/RG vehicle or an ATC Module with software version 13 or 0F in a 2001 or 2002 RS/RG vehicle. Use the DRBIII® to verify which version software the ATC Module is using by selecting Body Systems, Automatic Temperature Control, and then selecting Module Display.

- a Two-Zone HVAC system on select models.
- a Cabin Heater used in conjunction with the ATC system. For additional information on this system, refer to The AC Cooldown Test, under 3.9.1.4 System Diagnostics in this General Information section, and refer to Cabin Heater under General Information and Diagnostic Procedures in this manual.
- deletion of the rear IR sensor.

3.9.1.4 SYSTEM DIAGNOSTICS

Fault detection is through active and stored Diagnostic Trouble Codes (DTCs)

- DTCs are displayed by the DRBIII®.
- Active DTCs are those which currently exist in the system. The condition causing the fault must be repaired in order to clear this type of DTC.
- Stored DTCs are those which occurred in the system since the ATC Module received the last ″clear diagnostic info″ message.

The AC Cooldown Test:

- is actuated with the DRBIII®.
- checks A/C system performance based on evaporator temperature sensor input.
- forces the ATC to initiate the Cabin Heater Activation request when the vehicle is equipped with a Diesel Cabin Heater Assist.

WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. REFER TO VENTING THE DCHA's EXHAUST UNDER CABIN HEATER IN THE GENERAL INFORMATION PORTION OF THIS SECTION FOR PROPER EXHAUST VENTING INSTRUCTIONS. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.

CAUTION: Do not activate the A/C Cooldown Test with the engine off. Failure to follow these instructions may result in internal damage to the DCHA Heater Module.

  - ► The FCM monitors the PCI bus for the Cabin Heater Activation request. The request carries the status bit that the FCM requires to activate its' Cabin Heater Assist Control output. This output is a low side driver (coming from FCM pin 15) which supplies a ground signal to the Cabin Heater (pin 5). When the Cabin Heater receives this ground signal input, it interprets this as an activation signal.
  - ► The FCM low side driver is also capable of diagnostic sensing. The driver will sense an open circuit when the driver is off, and will sense a short to voltage when the driver is on. The FCM will set DTCs for both of these types of faults. For additional information, refer to Cabin Heater under General Information and Diagnostic Procedures in the manual.
- will not run the air conditioning portion of this test if ambient temperature is below 12°C (53°F).
  - ► The forced Cabin Heater activation will occur even if the air conditioning portion of this test fails to initiate because AC Cooldown test criteria was not met. When activated, the DCHA will operate for approximately seven minutes. Three minutes to run and four minutes to purge.
- will pass the air conditioning portion of this test if the evaporator temperature drops 6.7°C (20°F) within two minutes of starting this test.
- messages (air conditioning related only) display on the DRBIII® after running this test.
  - ► These messages will clear after paging back out of this test. Therefore, it is important to note all of the AC Cooldown test messages before doing so.
  - ► All Cabin Heater-related DTCs display under Cabin Heater, Read DTCs.
- will cause the DELAY and Snowflake VF segments on the ATC to flash for 162 seconds (RG with DCHA only). If the air conditioning portion of this test fails, the DELAY and Snowflake VF segments will continue to flash until the vehicle is driven more than three miles.

3.9.2 MANUAL TEMPERATURE CONTROL (MTC)

CAUTION: Manual Temperature Control (MTC) Modules with software versions 0614 and 0700 used in 2001 and 2002 RS/RG vehicles are NOT compatible with software version 0802 used in 2003 RS/RG vehicles. Do NOT install an MTC Module with software version 0614 or 0700 in a 2003 RS/RG vehicle. Use the DRBIII® to verify which version software the MTC Module is using by selecting Body Systems, HVAC, and then selecting Module Display.

3.9.2.1 SYSTEM AVAILABILITY

EXCEPT EXPORT

- Three different types of systems are currently available for these vehicles.
  - ► Single-Zone Air Conditioning System
  - ► Dual-Zone Air Conditioning System
  - ► Three-Zone Air Conditioning System

EXPORT

- Two different types of systems are currently available for these vehicles.
  - ► Single-Zone Air Conditioning System
  - ► Dual-Zone Air Conditioning System

CABIN HEATER, EXPORT WITH DIESEL ENGINE

- A Cabin Heater is used in conjunction with the HVAC system. The Cabin Heater is designed to supply the vehicle's occupants with heat prior to the engine reaching operating temperature. For additional information on this system, refer to Cabin Heater under General Information and Diagnostic Procedures in this manual.

3.9.2.2 SYSTEM CONTROLS

The A/C-Heater Control Module:

- is fully addressable with the DRBIII®.
- communicates over the Programmable Communication Interface Multiplex System (PCI) Bus.
- provides an A/C request to the Powertrain Control Module (PCM) over the PCI Bus when compressor operation is desired.
- uses input from the evaporator temperature sensor to prevent evaporator freeze up while maintaining optimum cooling performance.
- for exports with diesel engines, provides a Cabin Heater activation request to the Front Control Module (FCM) over the PCI Bus when conditions are favorable for Cabin Heater operation.
- provides a blower relay on request to the Front Control Module (FCM) over the PCI Bus when blower operation is desired.
- controls front blower operating speed. The five speed settings are Low, M1, M2, M3, and High.
- controls EBL operation.
- on three-zone systems, activates and deactivates the Rear A/C-Heater Control.
- on three-zone systems, controls rear blower operating speed. The three speed settings are Low, Med, and High.
- controls the front and the three-zone system rear electronic door actuators' operation.
  - ► A simplified control system for operation of the mode, recirculation, and temperature control actuators provides positive positioning without the complexity of feedback from position sensors. The A/C - Heater Control Module knows the number of operating actuator revolutions required for full door travel as well as the number of actuator commutator pulses per revolution. Using these parameters, the A/C - Heater Control Module runs the actuator for the number of commutator pulses that correspond to the desired door position. To maintain accuracy, the system recalibrates itself periodically at known zero and full travel conditions.

On Three-Zone systems, the Rear A/C-Heater Control:

- controls rear blower motor operating speed. The three blower speeds are Low, Med, and High.
- provides desired rear blend and mode door position input to the A/C-Heater Control Module.

The Single-Zone HVAC system uses:

- one, two-wire electronic blend door actuator.
- one, two-wire electronic mode door actuator.
- one, two-wire electronic recirculation door actuator.

The Dual-Zone HVAC system uses:

- two, two-wire electronic blend door actuators.
- one, two-wire electronic mode door actuator.
- one, two-wire electronic recirculation door actuator.

The Three-Zone HVAC system uses:

- two front, two-wire electronic blend door actuators.
- one front, two-wire electronic mode door actuator.

- one, two-wire electronic recirculation door actuator.
- one rear, two-wire electronic blend door actuator.
- one rear, two-wire electronic mode door actuator.

System Relays

- The Integrated Power Module (IPM) houses and provides power to the A/C Clutch Relay, Front Blower Motor Relay, and Rear Blower Motor Relay.

3.9.2.3 SYSTEM REVISIONS

Revisions to the 2003 MTC system include:

- all new version 0802 software.

CAUTION: Manual Temperature Control (MTC) Modules with software versions 0614 and 0700 used in 2001 and 2002 RS/RG vehicles are NOT compatible with software version 0802 used in 2003 RS/RG vehicles. Do NOT install an MTC Module with software version 0614 or 0700 in a 2003 RS/RG vehicle. Use the DRBIII® to verify which version software the MTC Module is using by selecting Body Systems, HVAC, and then selecting Module Display.

- an all-new System Test called the Actuator Circuit Test. Refer to The Actuator Circuit Test under 3.9.2.4 System Diagnostics for more information.
- an updated HVAC Door Recalibration function that provides actuator span and status data to ease diagnosis of door span faults.
- updated diagnostic procedures using the actuator span status data to diagnose HVAC Door Recalibration Fault messages.

3.9.2.4 SYSTEM DIAGNOSTICS

Fault detection is through active and stored Diagnostic Trouble Codes (DTCs)

- DTCs are displayed by the DRBIII®.
- Active DTCs are those which currently exist in the system. The condition causing the fault must be repaired in order to clear this type of DTC.
- Stored DTCs are those which occurred in the system since the A/C-Heater Control Module received the last ″clear diagnostic info″ message.

The A/C Cooldown Test:

- is actuated with the DRBIII®.
- checks A/C system performance based on evaporator temperature sensor input.
- will not run if ambient temperature is below 12.7°C (55°F).
- will pass if the evaporator temperature drops 6.7°C (20°F) within two minutes of starting the test.
- faults display on the DRBIII® as test messages only after running the test.
- faults will not display on the DRBIII® as Diagnostic Trouble Codes.
- will cause the PWR and A/C status indicators on the A/C - Heater Control Module to flash alternately while the test is running.
- The A/C status indicator will flash twice per second to indicate that the A/C Cooldown Test needs to be run. The A/C status indicator will stop flashing twice per second if either the A/C Cooldown Test returns passed, or if any button on the control is pressed, or if the ignition is cycled and the odometer shows greater than eight miles.

The HVAC Door Recalibration function:

- is actuated with the DRBIII®.
  - ► After completing HVAC Door Recalibration, the DRBIII® will the store the total span and the status of each door actuator. Selecting HVAC Door Cal Monitor in the System Tests will display this information.
- homes and repositions door actuators.
- monitors for door span faults on the actuator circuits.
- faults display on the DRBIII® as test messages only after running the test.
- faults will not display on the DRBIII® as Diagnostic Trouble Codes.
- will cause the PWR and RECIRC status indicators on the A/C - Heater Control Module to flash alternately while the test is running.
- The RECIRC status indicator will flash twice per second to indicate that the HVAC Door Recalibration Test needs to be run. The RECIRC status indicator will stop flashing twice per second if either the HVAC Door Recalibration Test returns passed, or if any button on the control is pressed, or if the ignition is cycled and the odometer shows greater than eight miles.

The Actuator Circuit Test:

- is actuated with the DRBIII®.
- monitors for shorted actuator circuits.
- allows service to easily diagnose and troubleshoot up to three simultaneous shorts.
- supplements the continuous diagnostics on the actuator drive system.

- faults display on the DRBIII® as test messages only after running the test.
- faults will not display on the DRBIII® as Diagnostic Trouble Codes.

When Performing the Actuator Circuit Test

CAUTION: Shorted rear door driver circuits can cause additional Actuator Circuit Test messages to set for circuits where no condition exists to cause a fault.

CAUTION: To ensure a proper diagnosis, repair all Short Too Complex messages first, all rear door driver circuit related messages second, all common door driver circuit related messages third, and all front door driver circuit related messages last.

CAUTION: The DRBIII® can display up to three Actuator Circuit Test messages at a time. After repairing each Actuator Circuit Test message, cycle the ignition switch, then rerun the Actuator Circuit Test to ensure no new messages exist.

- The Short Too Complex message:
  - ► indicates that a specific determination of which lines are shorted could not be made.
  - ► is caused by more than three drivers being shorted in the same direction. For example, four drivers all shorted to ground, or two or more drivers shorted with at least one driver shorted to ignition/battery and one driver shorted to ground.
- Messages displaying:
  - ► XXX Driver/Circuit Shorted to Ignition/ Battery will set on a per-driver basis.
  - ► XXX Driver/Circuit Shorted to Ground will set on a per-driver basis.
  - ► the same two drivers/circuits shorted to ignition/battery as-well-as shorted to ground indicates that two actuator driver circuits are shorted together.
- When the test returns passed, then troubleshooting should proceed to clearing faults and running the HVAC Door Recalibration system test as a final check of system health.

3.10 CABIN HEATER

NOTE: The Cabin Heater, also known as the Diesel Cabin Heater Assist (DCHA), will be referred to as the DCHA throughout most of the General Information and the Diagnostic Procedures in this manual.

3.10.1 GENERAL SAFETY INFORMATION

WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. REFER TO 3.10.3.1 VENTING THE DCHA'S EXHAUST FOR PROPER EXHAUST VENTING INSTRUCTIONS. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.

WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.

WARNING: ALWAYS DISCONNECT THE VEHICLE'S BATTERY PRIOR TO PERFORMING ANY TYPE OF WORK ON THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.

WARNING: NEVER ATTEMPT TO REPAIR THE DCHA HEATER MODULE OR ANY OF ITS INTERNAL COMPONENTS. ALWAYS PERFORM DCHA COMPONENT REPLACEMENT IN ACCORDANCE WITH THE SERVICE INFORMATION. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.

CAUTION: Do not actuate the DCHA Field Mode Test with the engine off. Failure to follow these instructions may result in internal damage to the DCHA Heater Module.

CAUTION: Always Perform The Cabin Heater Pre-Test Prior To Performing Any Other Cabin Heater Test For The Test Result To Be Valid.

NOTE: Do not disconnect the vehicle's battery or the DCHA's main power-supply while the DCHA is in operation or in run-down mode. Failure to follow these instructions may result in excess emissions from the DCHA Heater Module.

NOTE: Failure to prime the Dosing Pump after draining the DCHA fuel line will prevent DCHA heater activation during the first attempt to start the heater. This will also set a Diagnostic Trouble Code (DTC) in the DCHA Control's memory. Do not perform the Dosing Pump Priming Procedure if an attempt was made to start the DCHA without priming the Dosing Pump first. This will put excess fuel in the DCHA Heater Module and cause smoke to emit from the DCHA exhaust pipe when heater activation occurs.

NOTE: Waxed fuel can obstruct the fuel line and reduce flow. Check for the appropriate winter grade fuel and replace as necessary.

3.10.2 COMPONENT DESCRIPTION AND OPERATION

3.10.2.1 DCHA ASSEMBLY

The DCHA is a supplemental heater designed to pre-heat the engine's coolant in order to supply the vehicle's occupants with heat prior to the engine reaching operating temperature. The DCHA assembly mounts underneath the vehicle on the left side floor pan near the front door opening. The DCHA assembly connects to the vehicle's heater hoses and has a fuel supply line that connects to the vehicle's fuel tank.

The DCHA assembly consists of a:

- combustion air fan assembly
- burner housing
- burner insert
- control unit/heat exchanger
- combustion chamber
- dosing pump

3.10.2.2 COMBUSTION AIR FAN

The combustion air fan assembly includes the:

- combustion air fan
- combustion air fan inlet
- fuel supply inlet

The combustion air fan delivers the air required for combustion from the combustion air inlet to the burner insert.

3.10.2.3 BURNER HOUSING

The burner housing includes the:

- coolant inlet
- coolant outlet
- exhaust outlet

The burner housing accommodates the burner insert and is combined with the control unit/heat exchanger as an assembly.

3.10.2.4 BURNER INSERT

The burner insert includes the:

- combustion pipe fuel cross section
- glow plug/flame sensor

Inside the burner insert, fuel is distributed across the combustion-pipe fuel cross section. Combustion of the fuel/air mixture takes place within the combustion pipe to heat the exchanger. The glow plug/flame sensor, located in the burner insert, ignites the fuel/air mixture during heater start up. After heater start up, the glow plug/flame sensor operates in the flame sensor function. The glow plug/flame sensor is an electrical resistor by design, and is located in the burner insert opposite the flame side.

3.10.2.5 CONTROL UNIT/HEAT EXCHANGER

The control unit/heat exchanger includes the:

- control unit
- temperature sensor
- overheat protection
- heat exchanger
- connector terminal

The control unit controls and monitors combustion operation. The control unit is ventilated by means of a ventilation hose routed from the combustion air collector compartment of the burner. The heat exchanger transfers the heat generated by combustion to the coolant circuit. The control unit/heat exchanger and the burner housing are an assembly and must not be disassembled.

The temperature sensor senses the coolant temperature in the heat exchanger as an electrical resistance. This signal is sent to the control unit for processing.

The overheat protection, controlled by the temperature resistor, protects the heater against undue operating temperatures. The overheat protection will switch the heater off if the water temperature exceeds 105°C (221°F).

3.10.2.6 DOSING PUMP

The dosing pump is a combined delivery, dosing, and shut-off system for the fuel supply of the heater. The dosing pump receives its supply of fuel from the vehicle's fuel tank.

3.10.3 OPERATION

3.10.3.1 VENTING THE DCHA'S EXHAUST

WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.

WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.

CAUTION: When using a powered exhaust ventilation system, do not attach the exhaust ventilation hose directly to the DCHA exhaust pipe. Too much suction can prevent DCHA operation.

- When using a powered exhaust ventilation system, affix the ventilation hose to the DCHA exhaust pipe or to the vehicle in such a manor that the end of the ventilation hose remains approximately three inches away from the end of the DCHA exhaust pipe.
- When using a non-powered exhaust ventilation system, affix the ventilation hose directly to the DCHA exhaust pipe.

3.10.3.2 ACTIVATION

When the ignition is in Run, the FCM monitors the PCI bus for the Cabin Heater Activation request. The Automatic or Manual Temperature Control initiates this request only when all conditions for Cabin Heater activation are favorable (see below). The request carries the status bit that the FCM requires to activate its Cabin Heater Assist Control Output. This output is a low side driver (coming from FCM pin 15) which supplies a ground signal to the Cabin Heater (pin 5). When the Cabin Heater receives this ground signal input, it interprets this as an activation signal. The FCM low side driver is also capable of diagnostic sensing. The driver will sense an open circuit when the driver is off, and will sense a short to voltage when the driver is on. The FCM will set DTCs for both of these types of faults.

For vehicle's with a Manual Temperature Control system, the DCHA will activate only:

- when the engine is running.
- when the coolant temperature is below 66°C (151°F).
- when the fuel tank has greater than 1/8 of a tank of fuel.
- when the Power switch on the A/C - Heater Control Module is on.
- when the Blend control on the A/C - Heater Control Module is set above 90% reheat (within 2 detents of the full heat position).
- once per ignition cycle, when the ambient temperature is below 9°C (49°F), and the vehicle speed is above 25 km/h (15.5 mph) for two minutes, and the Blend control on the A/C - Heater Control Module is set anywhere from 80% to 90% reheat (3 to 4 detents from the full heat position). Under this circumstance, the DCHA will remain active for five minutes unless additional input is supplied to the DCHA.
- when the Front Control Module (FCM) sees the Cabin Heater Activation request that is bussed from the A/C - Heater Control Module.

For vehicle's with a Automatic Temperature Control system, the DCHA will activate only when the:

- VIN indicates that the vehicle has a diesel engine
- vehicle's odometer reads more than 5 miles.
- engine speed is above 500 rpm.
- coolant temperature is below 66°C (151°F).
- fuel tank has greater than 1/8 of a tank of fuel.
- Power switch on the Automatic Temperature Control is on.
- Driver Temperature Control on the Automatic Temperature Control is set above 22°C (72°F).
- Front Control Module (FCM) sees the Cabin Heater Activation request that is bussed from the Automatic Temperature Control.

When the DCHA starting sequence begins, the glow plug and the combustion air fan are activated.

After 30 seconds, the fuel dosing pump begins operating and the combustion air fan operation is suspended for 3 seconds. Subsequently, the combustion air fan speed is increased in two ramps within 56 seconds to nearly full load operation. After a stabilization phase of 15 seconds, the combustion air fan speed is again increased in a ramp within 50 seconds to nearly full load. After reaching full load fuel delivery, the glow plug is deactivated and the combustion air fan operation is increased to full load. During the subsequent 45 seconds, as well as in normal operation, the glow plug functions as a flame sensor to monitor the flame condition. After all these events, the automatically controlled heating operation starts.

In case of a no flame or a flame out condition, a restart is automatically initiated. If the no flame condition persists, fuel delivery is stopped and the heater enters an error lockout mode with a run-down of the combustion air fan. This will set one or more DTCs in the DCHA Control's memory. If six continuous attempts to start the heater fail due to one or more faults in the DCHA system, the heater enters a heater lockout mode. This will set DTC B1813 along with any other fault(s) that the DCHA Control identified.

3.10.3.3 HEATING

During the automatically controlled heating operation, when the coolant temperature reaches 76°C (169°F), the heater will switch to a part load operation. When the coolant temperature reaches 83°C (181°F) or if the heater runs for longer than 76 minutes the heater will switch to a control idle period. If the coolant temperature drops to 73°C (163°F) during a control idle period, the heater will perform a regular starting sequence into full load operation. A drop in coolant temperature to 66°C (151°F) during part load operation will cause the heater to switch to a full load operation.

3.10.3.4 DEACTIVATION

For vehicles with a Manual Temperature Control system, the DCHA will deactivate if the:

- engine is turned off.
- coolant temperature reaches 83°C (181°F).
- heater runs longer than 76 minutes (for normal automatic controlled heating operation).
- heater reaches 5-minute timeout period (for once per ignition cycle operation).
- fuel tank has less than 1/8 of a tank of fuel.
- Power switch on the A/C - Heater Control Module is off.
- Blend Control on the A/C - Heater Control Module is set below 75% reheat. 5 detents

For vehicle's with a Automatic Temperature Control system, the DCHA will deactivate if the:

- engine speed drops below 500 rpm.
- engine is turned off.
- coolant temperature reaches 83°C (181°F).
- heater runs longer than 76 minutes.
- fuel tank has less than 1/8 of a tank of fuel.
- Power switch on the Automatic Temperature Control is off.
- Comfort level is attained as determined by the temperature setting on the Automatic Temperature Control.

When the heater is deactivated, the combustion stops and a run-down sequence begins. During the run-down sequence, the combustion air fan continues operation to cool down the heater. The fan is automatically switched off after the run-down sequence is complete. The run-down time and the combustion air fan speed depend on the heater operating condition at the time of deactivation. Run-down time is approximately 175 seconds when deactivated in full load operation and approximately 100 seconds when deactivated in part load operation.

3.10.4 DIAGNOSTICS

The DCHA is fully addressable with the DRBIII®. System tests include a Field Mode Test to activate the DCHA for diagnostic testing purposes. The DCHA Control will store up to three DTCs in its memory. If the Controller detects a new fault in the DCHA system, one that is not already stored in its memory, it will clear the oldest of the three stored DTCs, and it will store the new fault's DTC. If the Controller detects a reoccurrence of a stored fault, it will overwrite that fault's DTC with the most recent occurrence.

For vehicles equipped with Automatic Temperature Control (ATC), the AC Cooldown Test will also activate the DCHA for diagnostic testing purposes. The AC Cooldown Test is actuated with the DRBIII. The test checks A/C system performance based on evaporator temperature sensor input. It also forces the ATC to initiate a Cabin Heater Activation request when the vehicle is equipped with a Diesel Cabin Heater Assist (DCHA). The air conditioning related portion of this test will not run if ambient temperature is below 12°C (53°F). However, the forced Cabin Heater activation will occur even if the air conditioning portion of this test fails to initiate because test criteria was not met. The air conditioning related portion of this test will pass if the evaporator temperature drops 6.7°C (20°F) within two minutes of starting this test. Only air conditioning related messages display on the DRBIII® after

running this test. These messages will clear after paging back out of this test. Therefore, it is important to note all of the AC Cooldown test messages before doing so. Running the AC Cooldown test will cause the DELAY and Snowflake VF segments on the ATC to flash for 162 seconds. If the air conditioning portion of this test fails, the DELAY and Snowflake VF segments will continue to flash until the vehicle is driven more than three miles.

3.11 INSTRUMENT CLUSTER

The Instrument Cluster receives and sends messages to other modules via the PCI bus circuit. The indicator lamps will illuminate briefly for a bulb check when the ignition is turned from off to run. All of the gauges receive their information via the PCI bus from the powertrain control module and body control module.

The gauges and the LEDs are not individually replaceable thereby requiring complete replacement of the Instrument Cluster if a repair is necessary. In the event that the Instrument Cluster loses communication with other modules on the PCI bus, the cluster will display “no bus” in the VF display.

The Trip/Reset button is used to switch the display from trip to total mileage. Holding the button when the display is in the trip mode will reset the trip mileage. This button is also used to put the cluster into self-diagnostic mode. The odometer display uses blue-green vacuum fluorescent digital characters.

On base models, the Instrument Cluster has three gauges: Speedometer, fuel and temperature. A red dot moves transversely appears through openings in the Instrument Cluster face (P-R-N-D-2-1) to indicate the gear selected.

With other models, the Instrument Cluster may also include a tachometer and use a vacuum-fluorescent shift indicator.

The high-line Instrument Cluster features Electroluminescent Illumination of the gauge faces (EL Panel). This feature eliminates the use of bulbs for gauge/panel lighting. In a manner similar to fluorescent lights, a/c voltage from an inverter integrated circuit chip is applied to the phosphorescent material, causing it to glow. The phosphorescent material is screen-printed onto flexible Mylar sheets that form the gauge faces.

The odometer display and door/liftgate ajar indicators turn on when a door is opened to assist both the customer and service technician to view the odometer without turning the ignition on.

On models with AutoStick, the display includes an O/D OFF indicator that is illuminated when the driver presses the Overdrive Off button on the transaxle shifter.

For complete details of the Instrument Cluster, refer to the RS/RG Service Manual.

3.11.1 INSTRUMENT CLUSTER SELF TEST

1. Depress and hold the Odometer Reset button.
2. Turn the ignition switch to on.
3. Release the Odometer reset button.

The Instrument Cluster will illuminate all indicators and step the gauges through several calibration points. Also, the odometer will display any stored codes that may have set.

3.11.2 MESSAGE CENTER

The Message Center is above the brow of the Instrument Cluster. It houses the following warning indicators: Check Engine/Service Engine Soon, High Beam, Left and Right turn signals, Security Alarm Set, and Low Oil Pressure. On base models equipped with the three-speed transaxle, these indicators appear in the face of the cluster. The Security Alarm set indicator is now a large red circle symbol.

Activation of Instrument Cluster indicators is coordinated with indicators in the message center and EVIC where used to avoid redundancy. A revised safety standard now requires that the seat belt warning lamp in the Instrument Cluster remain lit if the driver seat belt is not buckled. A headlamp out indicator is used to alert the driver when a headlamp is not functioning.

3.12 INTERIOR LIGHTING

3.12.1 COURTESY LAMP CONTROL

The body controller has direct control over all of the vehicle's courtesy lamps. The body computer will illuminate the courtesy lamps under any of the following conditions:

1. Any door ajar and courtesy lamp switch on the headlamp switch is not in the dome off position.
2. The courtesy lamp switch on the headlamp switch is in the dome on position.
3. A Remote Keyless Entry unlock message is received.
4. Driver door unlocked with key (with VTSS only).

3.12.2 ILLUMINATED ENTRY

Illuminated entry will be initiated when the customer enters the vehicle by unlocking the doors with the key fob, or with the key if the vehicle is equipped with vehicle theft alarm. Upon exiting the vehicle, if the lock button is pressed with a door open, illuminated entry will cancel when the door

closes. If the doors are closed and the ignition switch is turned on, the illuminated entry also cancels. The illuminated entry feature will not operate if the courtesy lamp switch is in the dome off position.

3.12.3 INTERIOR LIGHTING BATTERY SAVER

If any of the interior lamps are left on after the ignition is turned off, the BCM will turn them off after 8 minutes. To return to normal operation, the courtesy lamps will operate after the dome lamp switch or door ajar switch changes state. The glove box and switched reading lamps require that the ignition be turned to the on/acc position.

3.13 MEMORY SYSTEM

The memory system consists of power driver's seat, power mirror and radio presets. The Memory Seat/Mirror Module (MSMM) is located under the driver's seat. It receives input from the following: driver's manual 8-way seat switch, driver's seat position sensors, PCI bus circuits, and the power mirror sensors. The module uses these inputs to perform the following functions: position the driver's memory seat, both exterior mirrors (during recalls), and send/receive the memory system information over the PCI bus.

The Memory Set Switch is wired to the Body Control Module (BCM). A button (either #1 or #2) pressed on the set switch causes the BCM to send a message to the MSMM which in turn will send a motion status message back to the BCM. If the message from the MSMM indicates no current motion, the BCM will send a recal message to the module. The MSMM will set the seat, exterior mirror and radio to the presets for the indicated driver.

If any one of the memory controlled systems is inoperative from its manual switch, use the schematics and diagnostic information to correct the concern. This manual addresses the memory problems only and it is assumed there is not a basic component failure.

3.13.1 POWER SEAT

The memory power seat provides the driver with 2 position settings for the driver's seat. Each power seat motor is connected to the MSMM with two motor drive circuits. Each circuit is switched between battery and ground. By being able to bi-directionally drive the circuits, the MSMM controls the movement of the motors based on input from the power seat switch or from the position sensors when performing a memory recall. Each motor contains a potentiometer to monitor the seat position. To monitor the position of the motor, the MSMM sends out a 5-volt reference on the sensor supply circuit. The sensor is grounded back to the module on a common ground circuit. Based on the position of the sensor, the MSMM monitors the voltage change through the sensor on a separate signal circuit.

The MSMM stores the input value of each of the four seat potentiometers in memory when the system requests a set. The driver can initiate a memory recall, using either the door mounted memory switch or the RKE transmitter (if the remote linked to memory feature is enabled via the EVIC). When initiated, the MSMM adjusts the four seat sensors (by using the motors) to match the memorized seat position data.

For safety, the memory seat recall is disabled by the MSMM when the vehicle is out of park position or if the speed is not zero. Any obstruction to seat movement over a 2-second delay will cause the seat to stop moving in which case a stalled motor would be detected by the MSMM and the corresponding seat output would be deactivated. However, if the object obstructing the seat is removed, the seat will function normally again.

3.13.2 MEMORY MIRRORS

The driver sideview mirror contains vertical and horizontal bi-directional drive positioning motors and position sensors. The MSMM provides a 5-volt reference on the signal circuit to each position sensor. The sensors share a common ground circuit. The MSMM monitors the position of the mirror motors by measuring the voltage on each signal circuit. When a memory position is set, the MSMM monitors and stores the position of the outside mirror. The MSMM adjusts the mirror to the appropriate positions when a memory recall message is received from the RKE or is requested from the memory set switch.

The power mirror switch during non-memory operation operates the mirror independently of the MSMM.

3.14 OVERHEAD CONSOLE

COMPASS/TEMPERATURE MODULE, COMPASS/MINI-TRIP COMPUTER or ELECTRONIC VEHICLE INFORMATION CENTER

The Compass/Temperature Module (CT), Compass/Mini-Trip Computer (CMTC) or Electronic Vehicle Information Center (EVIC) is located in the overhead console. The CT provides the vehicle operator with only outdoor temperature and the compass heading. The CMTC or EVIC supplements the standard vehicle instrumentation. The CMTC

and EVIC use a vacuum fluorescent (VF) display to supply the vehicle operator with a compass heading, outdoor temperature, average fuel economy, distance to empty, instantaneous fuel economy, trip odometer, elapsed ignition on time, distance to service, warning messages, and service messages.

The difference between a CMTC and an EVIC is that only the EVIC provides additional memory, feature programming, and warning messages. The EVIC is capable of displaying warning messages and memory system messages when the vehicle is equipped with memory systems. The EVIC also provides the interface to enable and disable vehicle programmable features when the vehicle is equipped with certain features.

If equipped, the EVIC is also available with an integrated Universal Garage Door Opener (UGDO) known as HomeLink®. Also if equipped, the EVIC is available with a Tire Pressure Monitoring (TPM) System. The EVIC may also be equipped with up to 4 power door switches: ON/OFF, Left Sliding Door, Right Sliding Door, and Liftgate.

The CT function buttons are labeled C/T and US/M. The CMTC function buttons are labeled US/M, C/T, RESET, and STEP. The EVIC function buttons are labeled C/T, RESET, STEP, and MENU. The three UGDO buttons are labeled with dots to indicate the channel number.

The BCM supplies most of the information displayed by the CMTC/EVIC. Display information, except for the internal compass function, is received over the PCI bus. The FCM supplies the ambient temperature sensor information via the PCI bus. The CMTC/EVIC sends and receives data over the PCI bus, communicating with the BCM, PCM, FCM, and the Instrument Cluster. Tire Pressure Monitoring System information is received by the EVIC in the form of radio transmissions. The tire pressure sensors are mounted to the vehicle wheels. For complete information, refer to the Tire Pressure Monitoring System section in this publication.

3.14.1 VEHICLE INFORMATION DISPLAY

The CMTC/EVIC provides the following functions:

- Compass direction
- Outside temperature
- Elapsed ignition on time
- Distance to empty
- Average fuel economy
- Instantaneous fuel economy
- Trip odometer
- Distance to service

The EVIC will also display the following driver alert messages:

- TURN SIGNAL ON (with vehicle graphic)
- PERFORM SERVICE
- DOOR OPEN (individual or multiple doors, with graphic)
- LOW or HIGH TIRE(S) PRESSURE (when equipped)
- ADJUSTABLE PEDAL DISABLED CRUISE ENGAGED (when equipped)
- ADJUSTABLE PEDAL DISABLED VEHICLE IN REVERSE (when equipped)

An audible chime or chimes will accompany any displayed warning messages. Chime requests with an OPEN message are dependent upon vehicle speed.

The CT/CMTC/EVIC will not display information for any of the screens for which it did not receive the proper PCI bus data. Refer to the symptom list in the Overhead Console section for problems related to the CT/CMTC/EVIC.

The CMTC/EVIC receives the following messages from the Body Control Module (BCM):

- Verification of US/Metric status
- VF display dimming brightness and exterior lamp status
- Elapsed Ignition On Time data
- Fuel Economy (Average and Instantaneous)
- Distance to Empty
- Distance to service
- Driver warning messages

The CT/CMTC/EVIC receives the following messages from the Front Control Module (FCM):

- Outside Temperature

The CMTC/EVIC receives the following messages from the Powertrain Control Module (PCM):

- Trip Odometer data
- Vehicle Speed

The EVIC receives the following messages from the Adjustable Pedal System Module (APS):

- APS status warnings

The CMTC/EVIC transmits the following messages to the BCM:

- Status Request: Beep, Reset, US/M Toggle
- Current Display

STEP BUTTON

The STEP Button can be used in one of the following three ways:

1. To sequentially select one of seven displays or blank display in the following order:

- Average Fuel Economy

- Distance to Empty
- Instantaneous Fuel Economy
- Trip Odometer
- Time Elapsed
- Distance to Service Message
- Off (Blank)

2. To set the magnetic variance zone when VARIANCE = X (X = 1 - 15) is indicated in the VF Display.
3. To select the displayed programmable feature setting. (When equipped.)

MENU BUTTON (EVIC only)

For complete information of the programmable features and memory messages, refer to the RS/RG Service Manual.

Use the MENU button to sequentially step the EVIC through the programmable features.

Use the MENU button to enter the Tire Pressure Monitoring (TPM) Training Procedure.

RESET BUTTON

The RESET Button has two different functions:

1. To clear the trip functions that may be reset
2. To enter and exit the diagnostic mode

Pressing the RESET button once will clear the trip function that is currently being displayed (except Distance to Service) and the CMTC/EVIC will send a PCI bus beep request to the BCM. If the RESET button is pressed again within 3 seconds, the CMTC/EVIC will reset ALL of the trip functions and an additional beep request is sent to the BCM. The trip functions that may be reset are:

- Average Fuel Economy
- Trip Odometer
- Elapsed Time

A reset will only occur if one of the trip functions that may be reset is currently being displayed. Pressing the RESET button for more than three (3) seconds resets the Distance to Service function while the Distance to Service message is being displayed. The CMTC/EVIC module will send a beep request to the BCM.

Simultaneously pressing the RESET button and the STEP button while turning the ignition from Off to On will enter the CMTC/EVIC into the self-diagnostic mode.

COMPASS/TEMPERATURE (C/T) BUTTON

Actuating the Compass/Temperature Button (C/T) will cause the CMTC/EVIC to display the compass and temperature information. This function will operate from another traveler display or from the programmable feature mode.

3.14.2 TRAVELER DISPLAY FUNCTIONS

Using the STEP button will change the CMTC/EVIC between modes of operation and display the appropriate information according to data received from the PCI Bus.

COMPASS/TEMPERATURE

The CMTC/EVIC simultaneously displays the compass reading and the outside temperature. Outside temperature information is received via the PCI bus from the FCM.

The CMTC/EVIC module internally senses and calculates the compass direction.

COMPASS OPERATION - ALL

Upon ignition on, if the calibration information stored in the CMTC memory is within the normal range, the CMTC will perform in slow Auto-Cal mode. In slow Auto-Cal mode, the CMTC continuously compensates for the slowly changing magnetic field of the vehicle. The compass module detects changes in the vehicle magnetism and makes appropriate internal corrections to ensure proper displayed direction.

However, if the calibration information stored in the CMTC memory is not within the normal range at ignition on, the CMTC will enter fast Auto-Cal. CAL is displayed along with the temperature.

Auto activation of the fast Auto-Cal mode will also occur when the CMTC is subjected to high magnetic field strength levels, which cause all compass readings to be erroneous for a continuous period of five (5) minutes. During fast Auto-Cal, CAL will be displayed along with the temperature.

Fast Auto-Cal can also be performed manually, by pressing and holding the RESET button for 10 seconds during the Compass/Temperature display mode.

3.14.3 SETTING MAGNETIC ZONE VARIANCE

Variance is the difference between magnetic North and geographic North. For proper compass function, the correct variance zone must be set. Refer to the Zone Variance map for the correct zone. Follow these steps to check or change the variance zone:

CMTC/EVIC:

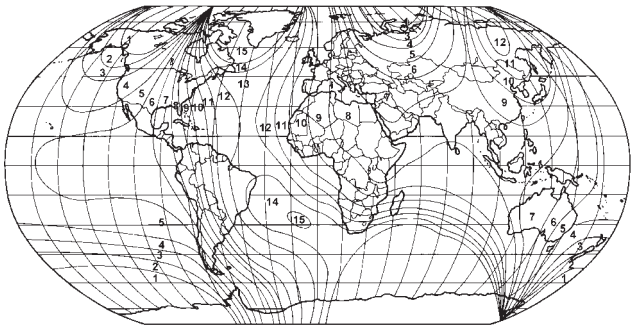
- The ignition switch must be in the On position and the CMTC/EVIC display must not be blank.
- If the compass/temperature data is not currently being displayed, momentarily press and release the C/T button to display compass/temp information.
- Press and hold the RESET button (approximately 5 seconds) until VARIANCE = XX is displayed.

The CMTC/EVIC will display the variance zone stored in memory and the word VARIANCE.

- Use the RESET button to select the proper variance zone number, 1 through 15.
- After selecting the proper zone number, momentarily press and release the RESET button. The variance zone is then stored in the memory and the CMTC/EVIC returns to normal operation.

CT:

- The ignition switch must be in the On position and the C/T display must not be blank.
- Press and hold the C/T and US/M buttons (approximately 5 seconds) until VARIANCE = XX is displayed. The C/T will display the variance zone stored in memory and the word VARIANCE.
- Use the US/M button to select the proper variance zone number, 1 through 15.
- After selecting the proper zone number, momentarily press and release the C/T button. The variance zone is then stored in the memory and the C/T returns to normal operation..



3.14.4 COMPASS CALIBRATION

The compass module has 2 types of auto-calibration; slow-cal and fast-cal. Slow-cal ensures that during normal vehicle operation the compass performs auto-calibration functions to keep the compass sensors in their proper operating range. Whenever the ignition is On and the CT/CMTC/EVIC receives PCI bus data indicating that engine RPM is greater than zero, auto-calibration is performed continuously.

If the calibration information stored in the compass module memory is not within the normal range after a power-up cycle, the compass will display CAL. The CT/CMTC/EVIC will enter into the fast-cal mode until calibration is complete.

To enter the compass into Manual Calibration mode, perform the following steps:

- Drive the vehicle to an area away from any large metal objects or overhead power lines.
- Ensure that the proper variance zone is selected. See ″Setting Magnetic Zone Variance.″
- The ignition switch must be in the On position and the CMTC/EVIC display must not be blank.
- Press the C/T button to view the Compass/ Temperature display.
- Press and hold the RESET button (approximately 10 seconds) until CAL is displayed, then release the button.
- Drive slowly, less than 5 MPH (8KPH) in at least 1 complete 360-degree circle.
- CAL will remain illuminated to alert the driver that the compass is in the calibration mode.
- After calibration is complete, CAL will turn off.

NOTE: For C/T Manual Calibration, perform the same procedure as above, but press and hold the C/T and US/M buttons until CAL is displayed.

If the compass appears blank, unable to be calibrated, or the compass displays false indications, the vehicle must be demagnetized. Refer to Compass Demagnetizing Procedure in the Service Manual.

3.14.5 SELF-CHECK DIAGNOSTICS

The CT/CMTC/EVIC is capable of performing a diagnostic self check on its internal functions. Diagnostics may be performed using a DRBIII® or by using the following procedure:

1. For CMTC/EVIC: With the ignition switch in the OFF position, depress and hold the RESET and the STEP buttons.
   For CT: With the ignition switch in the OFF position, depress and hold the C/T and the US/M buttons.
2. Turn the ignition switch to the ON position.
3. Continue to hold both buttons until the software versions are displayed, then release the buttons.
4. All of the VFD segments will illuminate for 2-4 seconds. Check for segments that do not illuminate or illuminate all the time.
5. When the self-check is complete the EVIC will display one of the following messages:

- PASS SELF TEST
- FAILED SELF TEST
- NOT RECEIVING J1850 MESSAGE
  When the self-check is complete the CT/CMTC will display one of the following messages:
- PASS
- FAIL
- BUS

1. To exit the self-check mode:

For the CMTC/EVIC: Depress the STEP or RESET button, or cycle the ignition switch and the CMTC/EVIC will return to normal operation.

For the C/T: Depress the C/T or US/M button, or cycle the ignition switch and the CT will return to normal operation.

If a Communication fault is displayed, refer to the symptom list. If a FAIL or FAILED is displayed, the CT/CMTC/EVIC must be replaced.

3.14.6 AMBIENT TEMPERATURE SENSOR

The ambient air temperature is monitored by the FCM and displayed by the CT/CMTC/EVIC. The FCM receives a hardwire input from the ambient temperature sensor (ATS).

The ATS is a variable resistor that operates on a 5-volt reference signal circuit hardwired from the FCM. The resistance in the ATS changes as the outside temperature rises or falls. The FCM senses the change in reference voltage through the ATS resistor. Based on the resistance of the ATS, the FCM is programmed to correspond to a specific temperature. The FCM stores and filters the ambient temperature data and transmits this data to the CMTC/EVIC via the PCI Bus. The ATS cannot be adjusted or repaired and, if faulty or damaged, it must be replaced.

3.14.7 AMBIENT TEMPERATURE SENSOR FAULT CODES

The outside temperature function is supported by the ambient temperature sensor (ATS), a signal and ground circuit hardwired to the FCM, and the CMTC/EVIC display.

If the CMTC/EVIC display indicates 54°C (130°F) or the ATS sense circuit is shorted to ground, the temp display will be 54°C (130°F) to indicate a SHORT circuit condition.

If the CMTC/EVIC display indicates -40°C (-40°F) or the ATS sense circuit is open, the temp display will be -40°C (-40°F) to indicate an OPEN circuit condition.

If there is an OPEN or SHORT circuit condition, it must be repaired before the CMTC/EVIC VFD can be tested.

The ATS is supported by the FCM. Ambient Temperature Sensor DTCs will be recorded in the FCM. The ATS can be diagnosed using the following Sensor Test. Test the ATS circuits using the diagnostics in the Body Diagnostic Procedures Manual. If the CMTC/EVIC passes the self-test, and the ATS, the circuits, and PCI bus communications are confirmed to be OK, but the CMTC/EVIC temperature display is inoperative or incorrect, replace the FCM.

AMBIENT TEMPERATURE SENSOR TEST

1. Turn the ignition OFF.
2. Disconnect the ATS harness connector.
3. Measure the resistance of the ATS using the following min/max values:

- 0° C (32° F) Sensor Resistance = 29.33 - 35.99 Kilohms
- 10° C (50° F) Sensor Resistance = 17.99 - 21.81 Kilohms
- 20° C (68° F) Sensor Resistance = 11.37 - 13.61 Kilohms
- 25° C (77° F) Sensor Resistance = 9.12 - 10.86 Kilohms
- 30° C (86° F) Sensor Resistance = 7.37 - 8.75 Kilohms
- 40° C (104° F) Sensor Resistance = 4.90 - 5.75 Kilohms

The sensor resistance should read between these min/max values. If the resistance values are not OK, replace the Sensor.

3.14.8 HOMELINK® UNIVERSAL TRANSMITTER

If equipped, the HomeLink® Universal Transmitter is integrated into the overhead console. For added security it will operate home security systems that use coded signals known generically as *Rolling Codes*. The overhead console display provides visual feedback to the driver, indicating which HomeLink® transmitter channel button is being pressed. The HomeLink® can learn and store up to three separate transmitter radio frequency codes to operate garage door openers, security gates, and security lighting. The HomeLink® buttons are marked with one, two, or three dots. For complete information, refer to Universal Transmitter in the Service Manual or the Owner's Manual.

3.14.9 TIRE PRESSURE MONITORING SYSTEM (TPM)

If equipped with the Tire Pressure Monitoring System (TPM), each of the vehicles four wheels will have a valve stem with a pressure sensor and radio transmitter built in. Signals from the tire pressure Sensor/Transmitters are received and interpreted by the Electronic Vehicle Information Center (EVIC).

A Sensor/Transmitter in a mounted wheel will broadcast its detected pressure once per minute when the vehicle is moving faster than 32 km/h (20 mph). Each Sensor/Transmitter's broadcast is uniquely coded so that the EVIC can determine the location.

3.14.9.1 TRAINING THE EVIC

The EVIC can be trained to recognize the source locations of the Sensor/Transmitter signals. The training procedure is given below:

1. From the Programmable Features List select ″RETRAIN TIRE SENSORS Y/N″ using the EVIC MENU button.

Use the STEP button to select and the MENU button to confirm ″YES″. The EVIC will initiate the following procedure:

2. A display will prompt the user to: ″TRAIN DRIVER FRONT SENSOR″. At this point the user must set the left front tire Sensor/Transmitter to learn mode by positioning a magnet (Relearn Magnet special tool 8821) over the valve stem for at least 5 seconds. The Sensor/Transmitter in the front left tire will transmit a message indicating to the EVIC that it is in learn mode. When the EVIC has received this message and is assured that it has learned an ID, the EVIC will request a horn chirp via a bus message and then display the next train request. Note: The EVIC will allow 60 seconds from the first train request display to the receipt of a unique learn ID message from the first Sensor/Transmitter and 30 seconds for each succeeding wheel. If either of these timers expires, the EVIC will abort the training procedure and revert to previous settings. The EVIC will not store one ID for multiple locations.
3. The EVIC will request the initiation of a training sequence for each tire, one-by-one in a clockwise direction around the vehicle (Left Front, Right Front, Right Rear, and Left Rear).

NOTE: 1. If one or all Sensor/Transmitters cannot be trained, move vehicle to avoid radio frequency interference.
2. If one Sensor/Transmitter still cannot be trained, replace it and retry.
3. If all Sensor/Transmitters still fail to train, replace the EVIC.
4. Once all tires are successfully learned, the previous set of stored IDs will be replaced by the new IDs, and the EVIC will display, ″TRAINING COMPLETE″ until a button is pressed.

If the vehicle is equipped with the HomeLink® feature and a HomeLink® button is pressed at any time during the training procedure, the EVIC module will immediately exit the training procedure, discard any IDs learned in the current session and perform the HomeLink® function. After the button is released, the module will display ″RETRAIN TIRE SENSORS? NO″.

The training procedure can be stopped at any time by pressing the C/T, STEP, RESET, or MENU button. When any of these buttons are pressed the EVIC will display ″TRAINING ABORTED″ until another button is pressed and then display ″RETRAIN TIRE SENSORS? NO″. Sensor/transmitter replacement or tire rotation will require retraining of the EVIC.

3.14.9.2 PRESSURE THRESHOLDS

The EVIC will monitor the tire pressure signals from the tire Sensor/Transmitters and determine if any tire has gone below the low pressure threshold or exceeded the high pressure threshold. Refer to the table below:

LOW TIRE PRESSURE THRESHOLDS	
SYSTEM STATUS INDICATOR	TIRE PRESSURE
On	179 kPa (26 PSI)
Off	214 kPa (31 PSI)
HIGH TIRE PRESSURE THRESHOLDS	
SYSTEM STATUS INDICATOR	TIRE PRESSURE
On	310 kPa (45 PSI)
Off	276 kPa (40 PSI)

3.14.9.3 CRITICAL AND NON-CRITICAL SYSTEM ALERTS

CRITICAL:

A critical alert will be triggered when a tire pressure has gone below or above a set threshold pressure. The EVIC will request a chime and then display ″X TIRE(S) LOW PRESSURE″ or ″X TIRE(S) HIGH PRESSURE″. ″X″ will be the number of tires reporting low or high pressure. The message will display for the duration of the current ignition cycle or until an EVIC button is pressed. If the display is removed without correcting the condition, it will reappear without a chime after 300 seconds to warn the driver of the low or high-pressure condition.

NON-CRITICAL:

A non-critical alert with no chime will be triggered when no signal is received from a Sensor/Transmitter or when a Sensor/Transmitter low battery condition is detected. The EVIC will display ″SERVICE TIRE PRESS. SYSTEM″.

3.14.9.4 SYSTEM FAULTS

There are two conditions that will cause a Tire Pressure Monitoring System fault to be set. All fault codes are associated with a specific wheel location.

1. If the EVIC detects a non-transmitting Sensor/ Transmitter condition, it will:
   a. Store an active fault code.
   b. Request a chime
   c. Display ″SERVICE TIRE PRESS. SYSTEM″.

1. When the EVIC receives a Low Sensor/ Transmitter battery report from a Sensor/ Transmitter, it will:
   a. Store an active fault code.
   b. Request a chime.
   c. Display ″SERVICE TIRE PRESS. SYSTEM″.

Use the DRBIII® Inputs/Outputs function to further isolate the specific concern. The DRBIII® can be queried to determine the status and battery condition for each Sensor/Transmitter.

3.14.9.5 SPARE WHEEL AUTO-DETECT

If the spare tire is mounted on the vehicle, the EVIC will:

1. Detect the change after 15 minutes at or above 32 km/h (20 mph)
2. Query driver: ″SPARE TIRE IN USE?″ Use the MENU button for YES, and the STEP button for NO. For YES, the EVIC will revert to the previous display and wait five hours. After five hours the EVIC will proceed as in the NO response below.
3. For a NO response, after 15 minutes, the EVIC will display: ″ALL 5 TIRES W/ VEHICLE? Y″ Use the STEP button to select YES or NO, and the MENU button to confirm.
   For a ″YES″ response, the EVIC will display ″SERVICE TIRE PRESS. SYSTEM″.
   For a ″NO″ response, the EVIC will revert to previous display and display ″ ALL 5 TIRES W/ VEHICLE? Y″ every time the ignition is cycled to RUN and the missing tire ID is not received.

3.14.9.6 DIAGNOSING AND CLEARING SYSTEM FAULTS

All Tire Pressure Monitoring System Faults are specific to one location. If a no-transmit, ″LOW BATTERY″, ″LOW or HIGH PRESSURE″ fault is detected, the location can be determined by the DRBIII®. The appropriate Sensor/Transmitter can then be replaced or the out-of-specification pressure condition can be corrected.

- If a single Sensor/Transmitter cannot be detected by the EVIC, replace that Sensor/Transmitter.
- If none of the Sensor/Transmitters can be detected, refer to symptoms in the Tire Pressure Monitor section.
- If a BUCKET COUNTER test fails, and one or more Sensor/Transmitters does not transmit, replace the affected Sensor/Transmitter.
- If none of the Sensor/Transmitter causes the BUCKET COUNTER to advance, replace the EVIC.
- If the EVIC displays SERVICE TIRE PRESS. SYSTEM and the DRBIII® sees no Sensor/ Transmitter fault or pressure out of specification;

1. Attempt the Retrain procedure. If the display reoccurs,
2. Replace the EVIC.

3.14.9.7 SYSTEM TEST

A test of the Tire Pressure Monitoring System can be initiated in the EVIC. The test sequence is as follows:

1. Perform the RETRAIN TIRE SENSORS procedure.
2. Press and hold the RESET and STEP buttons for five seconds.
3. The EVIC will display BUCKET COUNTERS.
4. Drive the vehicle at 32 km/h (20 mph) for at least 2 minutes.
5. The counters will increase by one each time a Sensor/Transmitter signal is received by the EVIC.
6. Observe that the COUNTERS register at least 3 receptions for each Sensor/Transmitter.
7. Replace any Sensor/Transmitter that does not meet this specification.

The test will continue until any EVIC button is pressed or until the ignition is cycled to OFF.

3.15 POWER DOOR LOCK SYSTEM

When the BCM receives input for a lock request from a door lock switch, RKE or cylinder lock switch (only with VTSS), it will turn the lock drivers on for a specified time of 375 msec. If the request is there beyond 375 msec, the BCM considers the door lock signal stuck. Once a door lock or unlock signal is stuck for longer than 10 seconds, the BCM will set a trouble code and the signal input is ignored until the stuck condition disappears. The door lock switches provide a variable amount of resistance thereby dropping the voltage of the multiplexed (MUX) circuit and the BCM will respond to that command.

3.15.1 DOOR LOCK INHIBIT

When the key is in the ignition and in any position and either front door is open, the door lock switches LOCK functions are disabled. The UNLOCK functions are still functional. This protects against locking the vehicle with the keys still in the ignition. The RKE key fob will still lock the doors as usual. After the key is removed from the ignition or the doors are closed, the power door locks will operate normally.

3.15.2 AUTOMATIC DOOR LOCKS

This feature can be enabled or disabled by using either the DRBIII® or the customer programming method. When enabled all the doors will lock when the vehicle reaches a speed greater than 18 MPH (29 KMH) and all the doors are closed. If a door is opened and the vehicle slows to below 18 MPH (29 KMH), the door locks will operate again once all doors are closed and the speed is above 18 MPH (29 KMH).

3.15.3 REMOTE KEYLESS ENTRY (RKE)

The body control module interfaces with the RKE module via a one-way serial bus interface. The RKE module is not on the PCI bus. The RKE module sends a 0-5 volt pulse width signal to the BCM depending on which button on the transmitter was pressed. The BCM controls the door lock/unlock functions and the arming/disarming of the Vehicle Theft Security System (if equipped) and the activation of illuminated entry. The BCM will also send the appropriate messages to the Power Sliding Doors and Power Liftgate modules. The Intergrated Power Module (IPM) activates the park lamps, headlamps, and horn for horn chirp when sent the appropriate message from the BCM as received from the RKE transmitter. When a one-button press is made for unlock, both driver side doors will unlock and the front and rear turn signals will flash. When a second press is initiated (within 5 seconds of the first) both passenger doors will unlock and all four turn signals will flash.

The RKE module is capable of retaining up to 4 individual access codes (4 transmitters). If the PRNDL is in any position except park, the BCM will ground the interface thereby disabling the RKE.

Both the 3 and 6 buttons transmitters will have 2-CR2016 batteries in series. The 2-button export transmitter will have 2-CR2016 batteries in series also but the 5-button will have one. The minimum battery life should be approximately 4.7 years based on 20 transmissions a day at 84°F (25°C). Using the DRBIII® and selecting RKE FOB Test can test the transmitter.

The RKE module can be programmed via the DRBIII® or the customer programming method. The BCM will only allow programming mode to be entered when the ignition is in the on position, the PRNDL is in park position, and the VTSS (if equipped) is in the disarmed mode.

3.16 POWER FOLDING MIRRORS

The power folding mirrors are powered to two positions: folded and unfolded. The driver may choose fold or unfold with a switch that is located on the right side of the steering column. The folding mirror switch grounds a sense wire that comes from the Body Control Module when it is placed in the fold position. The mirrors will move to the position designated by the switch whether the ignition switch is the On or Off position and both front doors are closed. When the Power Folding Mirror switch is left in the fold position during a vehicle exit the mirrors will automatically unfold then refold after both front doors are closed. This is to prevent mirror contact with either front door when opened. When opening either front door, the Body Control Module will unfold the mirrors in the following manner depending on which front door is opened. If the driver door is opened, only the driver side mirror will unfold. If the passenger door is opened, both mirrors will unfold. The passenger mirror is prevented from unfolding when the driver's door is opened by the Passenger Folding Mirror Relay, which opens the driver circuit to the passenger side mirror.

3.17 POWER LIFTGATE SYSTEM

3.17.1 POWER LIFTGATE

The power liftgate (PLG) system is activated through the use of the following: remote keyless entry (RKE), overhead console switches, outside liftgate handle switch or the DRBIII®. These inputs are hardwired to the body control module (BCM) and can be monitored with a diagnostic tool. The BCM will send the message via PCI bus to the power liftgate module (PLGM). The liftgate must be in the full open or full closed position to operate. Once the BCM sends a button activation message to the PLGM, the module shall read all inputs, outputs and vehicle conditions to determine whether it shall open, close or inhibit the PLG operation. Once the PLGM determines the vehicle conditions are safe for operation, the PLGM will initiate a chime for 2 seconds prior to the liftgate activation and 2 seconds during the open or close cycle.

During an opening or closing cycle, the PLGM can detect an obstacle present should it meet sufficient resistance by the hall effect sensors (integrated in the gear motor assembly GMA).

During an open cycle, multiple liftgate activations (RKE, overhead console, B pillar) are ignored until the liftgate reaches the full open position. However, during a close cycle, a 2nd liftgate activation (RKE, overhead console, B pillar) will reverse the liftgate to the full open position.

If the engine is cranked during a power open/close the PLG will pause then resume after engine cranking. In addition, if the vehicle is placed in gear during an open cycle, the PLG shall reverse direction and begin closing. If the vehicle is placed in gear during a closing cycle, the PLG shall continue closing until fully closed. If the outside handle is activated during an open cycle, the PLG will become a full manual liftgate. If the outside handle is activated during a close cycle, the PLG shall reverse direction of travel to the full open position.

3.17.2 DIAGNOSTIC FEATURES

The PLG can be flashed on vehicle via PCI bus with a DRBIII® diagnostic tool. The DRBIII® can read all inputs, actuate all outputs, read module information, and read diagnostic trouble codes. As a reminder, some DTC's can be set during normal PLG operation.

3.17.3 SYSTEM INHIBITORS

1. Battery voltage too high or too low (above 16V, below 9.5V)
2. Vehicle in gear
3. Vehicle speed > 0 mph/km/h
4. Outside temperature too high, above 143°F (62°C) or too low, below -12°F (-24°C).
5. O/H console lockout will inhibit the B pillar switches only.
6. Liftgate locked will inhibit all interior switches from opening (overhead console). A locked liftgate can be power closed.
7. Pinch Sensor switch stuck shall inhibit the power close feature.

3.18 POWER SLIDING DOOR SYSTEM

3.18.1 POWER SLIDING DOOR

The Power Sliding Door (PSD) system is activated through the use of the following: Remote Keyless Entry (RKE), overhead console switches, B pillar switches or the DRBIII®. These inputs are hardwired to the body control module (BCM) and can be monitored with a diagnostic tool. The BCM will send the message via PCI bus to the power sliding door module (PSDM). The sliding door must be in the full open or full closed position to operate. Once the BCM sends a button activation message to the PSDM, the module shall read all inputs, outputs and vehicle conditions to determine whether it shall open, close or inhibit the PSD operation. During an opening or closing cycle, the PSDM can detect an obstacle present should it meet sufficient resistance by the hall effect sensors (integrated in the drive motor).

During an open cycle, multiple door activations (RKE, overhead console, B pillar) are ignored until the door reaches the full open position. However, during a close cycle, a 2nd door activation (RKE, overhead console, B pillar) will reverse the door to the full open position.

If the engine is cranked during a power open/close the PSD will pause then resume after engine cranking. In addition, if the vehicle is placed in gear during an open cycle, the PSD shall reverse direction and begin closing. If the vehicle is placed in gear during a closing cycle, the PSD shall continue closing until fully closed.

If the inside or outside handle is activated during an open or close cycle, the PSD will become a full manual sliding door. The child lockout is mechanical only and has no effect on the B-pillar switch as it did in previous models.

There is only one part number for the power sliding door module (PSDM). The driver sliding door harness has an additional ground circuit which will identify it as the driver side. This eliminates the need for a left and a right side module.

3.18.2 DIAGNOSTIC FEATURES

The PSDM can be flashed on vehicle via PCI bus with a DRBIII® diagnostic tool. The DRBIII® can read all inputs, actuate all outputs, read module information, and read diagnostic trouble codes. As a reminder, some DTC's can be set during normal PSD operation.

3.18.3 SYSTEM INHIBITORS

1. Battery voltage too high or too low (above 16V, below 9.5V)
2. Vehicle in gear
3. Vehicle speed > 0 mph/km/h
4. O/H console lockout will inhibit the B pillar switches
5. Doors locked will inhibit all interior switches from opening (Overhead Console, B Pillar). A locked sliding door can be power closed.

3.19 REAR WINDOW DEFOG/HEATED MIRROR/FRONT WIPER DE-ICE (IF EQUIPPED)

The defroster button located on the HVAC control controls the rear window defogger, heated side view

mirrors and front wiper de-icer grid. In addition the front wiper de-ice function is turned on when front defog/defrost mode is selected.

When the defroster button is pushed, the HVAC control sends a bus message over the PCI bus to the Front Control Module (FCM) which controls the Rear Window Defogger relay. The defroster LED will illuminate when the defroster function is on. The defroster will function for 10 minutes or can be cycled off sooner by pressing the defroster button again. The front wiper de-icer grid receives its 12 volts from the accessory relay through fuse 11 and the HVAC control module supplies the grid ground.

3.20 VEHICLE THEFT SECURITY SYSTEM

The Vehicle Theft Security System (VTSS) is part of the Body Control Module (BCM). The BCM monitors the vehicle doors, liftgate (export only), hood (export only), and the ignition for unauthorized operation. The alarm activates by sounding the horn, flashing the headlamps and the VTSS indicator lamp. The VTSS does not prevent engine operation, this is done with the Sentry Key Immobilizer Module (SKIM). The VTSS indicator lamp will flash for approximately 15 seconds during the arming process. If there is no interruption during the arming process, upon completion the VTSS indicator lamp will flash at a slower rate. When the BCM receives an input to trigger the alarm, the BCM will control the outputs of the headlamps, horn, and VTSS lamp for approximately 15 minutes.

Arming (Active and Passive)

Active arming occurs when the ignition key is removed, the RKE transmitter or door key cylinders are used to lock the vehicle doors, whether the doors are open or closed. The arming process is complete only after all doors are closed.

Passive arming occurs when the ignition key is removed, the driver door is opened, and the doors are locked with the power door lock switch, and the door is closed.

Disarming (Active and Passive)

Active disarming occurs when the RKE transmitter is used to unlock the vehicle doors. This disarming will also halt the alarm once it has been activated.

Passive disarming occurs upon normal vehicle entry (unlocking driver door with the key) or turning the ignition switch on with a valid skim key. This disarming will also halt the alarm once it has been activated.

Tamper Alert

The VTSS tamper alert will sound the horn three times upon disarming after an initial alarming has occurred to indicate a tamper condition has occurred.

Manual Override

The system will not arm if the doors are locked using the manual lock control or if the locks are actuated by an inside occupant after the doors are closed.

Diagnosis

For complaints about the Vehicle Theft Alarm triggering on its own, use the DRBIII® and read the Last VTSS Cause status.

3.20.1 THATCHAM ALARM SYSTEM (EXPORT ONLY)

The Thatcham Alarm Module monitors the vehicle doors, liftgate, hood and the interior of the vehicle for unauthorized operation. The vehicle doors, liftgate, and hood use ajar switches as inputs to the BCM to indicate their current status. The interior of the vehicle is secured by the use of Intrusion Sensors. The Intrusion Sensors are used as inputs to the RKE/Thatcham Alarm Module to report any motion in the interior of the vehicle. The alarm activates by sounding the siren, flashing the hazard lamps, and the VTSS Indicator Lamp.

Arming

Before arming, all doors, liftgate, and the hood must be completely closed. The system can only be armed by locking the doors with the RKE transmitter.

Disarming

To disarm the alarm system, use the RKE transmitter or turn the ignition on with a valid SKIM key. This will also halt the alarm once it has been activated.

NOTE: A powertrain control module from a vehicle equipped with a vehicle theft security system cannot be used in a vehicle that is not equipped with a vehicle theft security system. If the VTSS indicator lamp comes on after ignition on and stays on, the PCI Bus Communication with the powertrain control module has possibly been lost.

3.21 WIPER SYSTEM

3.21.1 FRONT WIPER

The front wiper/washer system consists of the following features: lo-hi-speed, mist wipers, intermittent wipers and wipe after wash. The front wiper system is only active when the ignition switch is in the RUN/ACC position. The vehicle operator selects the front wiper function using the front wiper switch (a resistive multiplexed stalk switch) which is integral to the Multi-Function Switch. The front wiper switch is hardwired to the Body Control

Module (BCM). Upon receiving a wiper switch signal, the BCM sends a PCI Bus message to the Front Control Module (FCM). The FCM controls the ON/OFF relay, the HIGH/LOW relay and the front and rear washer pump motors.

The Wiper system utilizes the BCM to control the on/off and hi/low relays for the low and hi speed wiper functions, intermittent wiper delay as the switch position changes, pulse wipe, wipe after wash mode and wiper motor functions. The BCM uses the vehicle speed input to double the usual delay time below 10 MPH (6 KPH).

3.21.2 SPEED SENSITIVE INTERMITTENT WIPE MODE

There are 5 individual delay time settings with a minimum delay of 1.7 seconds to a maximum of 18.4 seconds. When the vehicle speed is under 10 MPH (6 KPM), the delay time is doubled, providing a delay range of 3.4 seconds to 36.8 seconds.

3.21.3 PULSE WIPE

When the wiper is in the off position and the driver presses the wash button for more than .062 seconds, but less than .5 seconds, 2 wipe cycles in low speed mode will be provided.

3.21.4 PARK AFTER IGNITION OFF

Because the wiper relays are powered from the battery, the BCM can run the wipers to park after the ignition is turned off.

3.21.5 WIPE AFTER WASH

When the driver presses the wash button for over .5 seconds and releases it, the wiper will continue to run for 2 additional wipe cycles.

3.21.6 REAR WIPER

The rear wiper/washer system consists of the following features: mist wipers, intermittent wipers and wipe after wash. The rear wiper system is only active when the ignition switch is in the RUN/ACC position. The vehicle operator selects the rear wiper function using one of the three buttons on the dash mounted rear wiper switch. The rear wiper switch is hardwired to the Body Control Module (BCM). Upon receiving a wiper switch signal, the BCM provides 12 volts to the rear wiper motor. Rear washer occurs when the BCM receives a rear washer switch ON input. The BCM sends a PCI Bus message to the FCM requesting rear washer on. The FCM activates the rear washer by providing a ground for the rear washer motor.

3.21.7 SPEED SENSITIVE INTERMITTENT WIPE MODE

The delay setting of the rear wiper system is based solely on the vehicle speed. The delay time is defined as the amount of time from the start of a wipe to the beginning of the next wipe. The rear wiper system delay time is based on the following:

7.75 - (MPH x .05) = Seconds delay

Examples:

At zero (0) MPH the delay is 7.75 seconds.

At 100 MPH the delay is 2.75 seconds.

3.21.8 WIPE AFTER WASH

When the driver presses the wash button for over 1.5 seconds and releases it, the wiper will continue to run for 2 additional wipe cycles.

3.22 USING THE DRBIII®

Refer to the DRBIII® user guide for instructions and assistance with reading trouble codes, erasing trouble codes, and other DRBIII® functions.

3.23 DRBIII® ERROR MESSAGES

Under normal operation, the DRBIII® will display one of only two error messages: user-requested WARM Boot or User-Requested COLD Boot. If the DRBIII® should display any other error message, record the entire display and call the STAR Center. This is a sample of such an error message display:

```
ver:2.14
date: 26 Jul93
file: key_iff.cc
date: Jul26 1993
line: 548
err: 0xi
User-Requested COLD Boot

Press MORE to switch between this display
and the application screen.
Press F4 when done noting information.
```

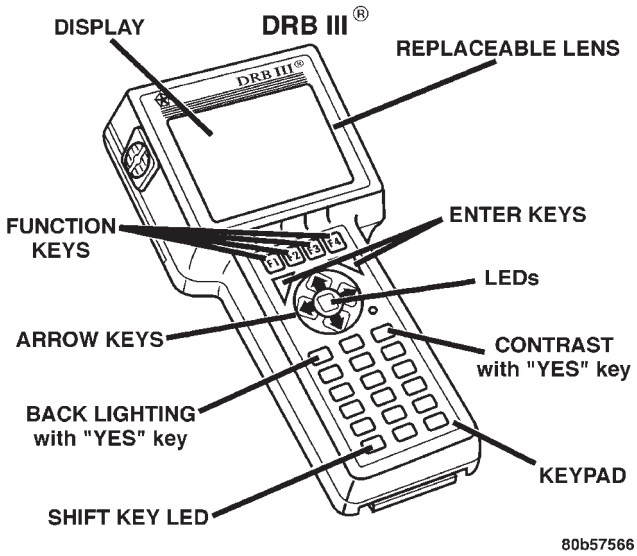
3.24 DRBIII® DOES NOT POWER UP (BLANK SCREEN)

If the LED's do not light or no sound is emitted at start up, check for loose cable connections or a bad cable. Check the vehicle battery voltage (data link connector cavity 16). A minimum of 11 volts is required to adequately power the DRBIII®. Check for proper grounds at DLC cavities 4 and 5.

If all connections are proper between the DRBIII® and the vehicle or other devices, and the vehicle battery is fully charged, an inoperative DRBIII® may be the result or a faulty cable or vehicle wiring.

3.25 DISPLAY IS NOT VISIBLE

Low temperatures will affect the visibility of the display. Adjust the contrast to compensate for this condition.



4.0 DISCLAIMERS, SAFETY, WARNINGS

4.1 DISCLAIMERS

All information, illustrations, and specifications contained in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

4.2 SAFETY

4.2.1 TECHNICIAN SAFETY INFORMATION

WARNING: ENGINES PRODUCE CARBON MONOXIDE THAT IS ODORLESS, CAUSES SLOWER REACTION TIME, AND CAN LEAD TO SERIOUS INJURY. WHEN THE ENGINE IS OPERATING, KEEP SERVICE AREAS WELL VENTILATED OR ATTACH THE VEHICLE EXHAUST SYSTEM TO THE SHOP EXHAUST REMOVAL SYSTEM.

Set the parking brake and block the wheel before testing or repairing the vehicle. It is especially important to block the wheels on front-wheel drive vehicles; the parking brake does not hold drive wheels.

When servicing a vehicle, always wear eye protection, and remove any metal jewelry such as rings, watchbands or bracelets that might make an inadvertent electrical contact.

When diagnosing a body system problem, it is important to follow approved procedures where applicable. These procedures can be found in this General Information Section or in the service manual procedures. Following these procedures is very important to safety of individuals performing diagnostic tests.

4.2.2 VEHICLE PREPARATION FOR TESTING

Make sure the vehicle being tested has a fully charged battery. If it does not, false diagnostic codes or error messages may occur.

4.2.3 SERVICING SUB-ASSEMBLIES

Some components of the body system are intended to be serviced as an assembly only. Attempting to remove or repair certain system subcomponents may result in personal injury and/or improper system operation. Only those components with approved repair and installation procedures in the service manual should be serviced.

4.2.4 DRBIII® SAFETY INFORMATION

WARNING: EXCEEDING THE LIMITS OF THE DRBIII® MULTIMETER IS DANGEROUS. IT CAN EXPOSE YOU TO SERIOUS OR POSSIBLY FATAL INJURY. CAREFULLY READ AND UNDERSTAND THE CAUTIONS AND THE SPECIFICATION LIMITS.

- Follow the vehicle manufacturer's service specifications at all times.
- Do not use the DRBIII® if it has been damaged.
- Do not use the test leads if the insulation is damaged or if metal is exposed.
- To avoid electrical shock, do not touch the test leads, tips, or the circuit being tested.
- Choose the proper range and functions for the measurement. Do not try voltage or current measurement that may exceed the rated capacity.
- Do not exceed the limits shown in the table below:

FUNCTION	INPUT LIMIT
Volts	0 - 500 peak volts AC 0 - 500 volts DC
Ohms (resistance)*	0 -1.12 megohms
Frequency Measured Frequency Generated	0 - 10 kHz

FUNCTION	INPUT LIMIT
Temperature	-58 - 1100°F -50 - 600°C

* Ohms cannot be measured if voltage is present. Ohms can be measured only in a non-powered circuit.

- Voltage between any terminal and ground must not exceed 500v DC or 500v peak AC.
- Use caution when measuring voltage above 25v DC or 25v AC.
- Use the low current shunt to measure circuits up to 10A. Use the high current clamp to measure circuits exceeding 10A.
- When testing for the presence of voltage or current, make sure the meter is functioning correctly. Take a reading of a known voltage or current before accepting a zero reading.
- When measuring current, connect the meter in series with the load.
- Disconnect the live test lead before disconnecting the common test lead.
- When using the meter function, keep the DRBIII® away from spark plug or coil wires to avoid measuring error from outside interference.

4.3 WARNINGS

4.3.1 VEHICLE DAMAGE WARNINGS

Before disconnecting any control module, make sure the ignition is “off”. Failure to do so could damage the module.

When testing voltage or continuity at any control module, use the terminal side (not the wire end) of the connector. Do not probe a wire through the insulation; this will damage it and eventually cause it to fail because of corrosion. Be careful when performing electrical tests so as to prevent accidental shorting of terminals. Such mistakes can damage fuses or components. Also, a second code could be set, making diagnosis of the original problem more difficult.

4.3.2 ROAD TESTING A COMPLAINT VEHICLE

Some complaints will require a test drive as part of the repair verification procedure. The purpose of the test drive is to try to duplicate the diagnostic code or symptom condition.

WARNING: BEFORE ROAD TESTING A VEHICLE, BE SURE THAT ALL COMPONENTS ARE REASSEMBLED. DURING THE TEST DRIVE, DO NOT TRY TO READ THE DRBIII® SCREEN WHILE IN MOTION. DO NOT HANG THE DRBIII® FROM THE REAR VIEW MIRROR OR OPERATE IT YOURSELF. HAVE AN ASSISTANT AVAILABLE TO OPERATE THE DRBIII®.

5.0 REQUIRED TOOLS AND EQUIPMENT

DRBIII® (diagnostic read-out box)
Jumper wires
Ohmmeter
Voltmeter
Sentry Key Tester
Test Light
8310 Airbag System Load Tool
8443 SRS Airbag System Load Tool

6.0 GLOSSARY OF TERMS

ABS	antilock brake system
ACM	airbag control module
ACT	actuator
AECM	airbag electronic control module (ACM)
APM	adjustable pedals module
ASDM	airbag system diagnostic module (ACM)
ATC	automatic temperature control
BCM	body control module
CAB	controller antilock brake
CMTC	compass/mini-trip computer
CPA	connector positive assurance
DAB	driver airbag
DCHA	diesel cabin heater assist (cabin heater)
DLC	data link connector
DTC	diagnostic trouble code
DR	driver
EBL	electric back lite (rear window defogger)
ECM	engine control module
EVIC	electronic vehicle information center
FCM	front control module
GCC	Gulf Coast Countries

HE	hall effect
HVAC	heater ventilation, air conditioning
IPM	integrated power module
LDU	lower drive unit
LHD	left hand drive
MIC	mechanical instrument cluster
MTC	manual temperature control
MSMM	memory seat/mirror module
NGC	next generation controller
OBD	on board diagnostics
ODO	odometer
ORC	occupant restraint controller
PAB	passenger airbag
PASS	passenger
PCI	Programmable Communication Interface (vehicle communication bus)
PCM	powertrain control module
PDC	power distribution center
PLG	power liftgate
PLGM	power liftgate module
PSD	power sliding door
PSDM	power sliding door module
PWM	pulse width modulated
RHD	Right Hand Drive
RKE	remote keyless entry
RX	receive
SAB	seat airbag
SBT	seat belt tensioner
SIACM	side impact airbag control module
SKIM	sentry key immobilizer module
SKIS	sentry key immobilizer system
SQUIB	also called initiator (located inside airbag)
SRS	supplemental restraint system
TCM	transmission control module
TPM	tire pressure monitor
TX	transmit
VFD	vacuum fluorescent display
VTSS	vehicle theft security system

NOTES

7.0

DIAGNOSTIC INFORMATION AND PROCEDURES

Symptom List:

ACCELEROMETER 1
ACCELEROMETER 2
INTERNAL 1
INTERNAL 2
OUTPUT DRIVER 1
OUTPUT DRIVER 2
STORED ENERGY FIRING 1

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be INTERNAL MODULE TEST.

When Monitored and Set Condition:

ACCELEROMETER 1

When Monitored: With the ignition on, the module on board diagnostics continuously performs internal circuit tests.

Set Condition: This DTC will set if the module identifies an out of range internal circuit.

ACCELEROMETER 2

When Monitored: With the ignition on, the module on board diagnostics continuously performs internal circuit tests.

Set Condition: This DTC will set if the module identifies an out of range internal circuit.

INTERNAL 1

When Monitored: With the ignition on, the module on board diagnostics continuously performs internal circuit tests.

Set Condition: This DTC will set if the module identifies an out of range internal circuit.

INTERNAL 2

When Monitored: With the ignition on, the module on board diagnostics continuously performs internal circuit tests.

Set Condition: This DTC will set if the module identifies an out of range internal circuit.

OUTPUT DRIVER 1

When Monitored: With the ignition on, the module on board diagnostics continuously performs internal circuit tests.

Set Condition: This DTC will set if the module identifies an out of range internal circuit.

OUTPUT DRIVER 2

When Monitored: With the ignition on, the module on board diagnostics continuously performs internal circuit tests.

Set Condition: This DTC will set if the module identifies an out of range internal circuit.

ACCELEROMETER 1 — Continued

STORED ENERGY FIRING 1

When Monitored: With the ignition on, the module on board diagnostics continuously performs internal circuit tests.

Set Condition: This DTC will set if the module identifies an out of range internal circuit.

POSSIBLE CAUSES
AIRBAG CONTROL MODULE - ACM
SIDE IMPACT AIRBAG CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** **WARNING: IF THE MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** Select the appropriate module and DTC type combination: ACM - ACTIVE DTC WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1. ACM - STORED DTC WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1. SIACM - ACTIVE DTC WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Side Impact Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1. SIACM - STORED DTC WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Side Impact Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1. **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

Symptom List:

AIRBAG WARNING INDICATOR OPEN
AIRBAG WARNING INDICATOR SHORT

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be AIRBAG WARNING INDICATOR TEST.

When Monitored and Set Condition:

AIRBAG WARNING INDICATOR OPEN

When Monitored: With ignition on the ACM monitors the PCI Bus for a message from the MIC containing the airbag warning indicator status. The ACM request the warning lamp status from the MIC once every second.

Set Condition: This DTC will set immediately if the indicator status is OPEN.

AIRBAG WARNING INDICATOR SHORT

When Monitored: With ignition on the ACM monitors the PCI Bus for a message from the MIC containing the airbag warning indicator status. The ACM request the warning lamp status from the MIC once every second.

Set Condition: This DTC will set immediately if the indicator status is SHORT.

POSSIBLE CAUSES
MIC, COMMUNICATION FAILURE
WARNING INDICATOR
ACM, WARNING INDICATOR
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Ensure the battery is fully charged. **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

AIRBAG WARNING INDICATOR OPEN — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, ensure PCI Bus communications with the Instrument Cluster. Is the Instrument Cluster communicating on the PCI Bus? Yes → Go To 3 No → Refer to category COMMUNICATION CATEGORY and select the related symptom NO RESPONSE or INSTRUMENT CLUSTER BUS +/- SIGNAL OPEN.	All
3	With the DRBIII® select PASSIVE RESTRAINTS, AIRBAG and MONITOR DISPLAY. Using the DRBIII®, read the WARNING LAMP MONITOR screen. Select the LAMP STATUS displayed on the DRB monitors screen. Observe the Lamp Driver State and Actual lamp Is the LAMP DRIVER and ACTUAL LAMP STATE: OK? YES Go To 4 NO Replace Instrument Cluster. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** If there are no possible causes remaining, view repair. Repair Replace the Airbag Control Module in accordance with Service Instructions. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
CALIBRATION MISMATCH

When Monitored and Set Condition:

CALIBRATION MISMATCH

When Monitored: With ignition on, the ACM monitors the PCI Bus for the VIN message containing the body style. Note: The VIN message should match the vehicle VIN plate.

Set Condition: If the Body style stored in ACM does not exactly match the vehicle body style indicated by the PCM for 2 consecutive VIN messages, then the fault shall be set.

POSSIBLE CAUSES
PCM, PCI COMMUNICATION FAILURE
PCM VEHICLE IDENTIFICATION NUMBERS INCORRECT OR MISSING
ACM CALIBRATION MISMATCH
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** Connect the DRB to the data link connector and select PASSIVE RESTRAINTS, AIRBAG, SYSTEM TEST. With the DRBIII®, read the system test. Does the DRB show PCM Active on the Bus:? Yes → Go To 3 No → Refer to category COMMUNICATION CATEGORY and select the related symptom. Perform AIRBAG VERIFICATION TEST - VER 1.	All

CALIBRATION MISMATCH — Continued

TEST	ACTION	APPLICABILITY
3	With the DRB select ENGINE MISCELLANEOUS, select MISC FUNCTION, and then CHECK VIN to read the Vehicle Identification Number in the Powertrain Control Module. Compare the VIN displayed on the DRB screen and the Vehicle VIN plate. Does the VIN plate and the PCM VIN match? Yes → Go To 4 No → Replace the Powertrain Control Module and program with the correct vehicle identification number. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** If there are no possible causes remaining, view repair. Repair WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Replace the Airbag Control Module in accordance with Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
CLUSTER MESSAGE MISMATCH

When Monitored and Set Condition:

CLUSTER MESSAGE MISMATCH

When Monitored: After the MIC bulb test is completed, the ACM compares the Lamp Request by ACM, On or Off, and the Lamp on by MIC, On or Off, PCI Bus messages. Each message is transmitted one time per second or when a change in the lamp state occur.

Set Condition: If the Lamp Request by ACM, On or Off, and the Lamp on by MIC, On or Off, messages do not match, the code will set.

POSSIBLE CAUSES
MIC DIAGNOSTIC CODES
CLUSTER MESSAGE MISMATCH
STORED CODE OR INTERMITTENT CONDITION
ACM, CLUSTER MESSAGE MISMATCH
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Ensure the battery is fully charged. **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Turn the ignition on. With the DRBIII®, read the MIC DTCs. Does the DRBIII® display any active Diagnostic Codes? Yes → Refer to symptom list for problems related to Instrument Cluster. No → Go To 3	All

CLUSTER MESSAGE MISMATCH — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII® select PASSIVE RESTRAINTS, AIRBAG, MONITOR DISPLAY and WARNING LAMP STATUS. Cycle the ignition key and observe the LAMP ON BY MIC and LAMP REQ BY ACM monitors after the 6 to 8 second indicator test. Does the LAMP ON BY MIC and LAMP REQ BY ACM monitors match? YES Go To 4 NO Replace Mechanical Instrument Cluster. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: MAKE SURE THE BATTERY IS DISCONNECTED, THEN WAIT TWO MINUTES BEFORE PROCEEDING.** If there are no possible causes remaining, view repair. Repair Replace the Airbag Control Module in accordance with Service Instructions. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SEAT BELT SWITCH CIRCUIT OPEN

When Monitored and Set Condition:

DRIVER SEAT BELT SWITCH CIRCUIT OPEN

When Monitored: With the ignition on the ACM monitors the Seat Belt Switch circuit for an open condition.

Set Condition: The code will set if the ACM does not detect the correct circuit voltage.

POSSIBLE CAUSES
DRIVER SEAT BELT SWITCH OPEN
DRIVER SEAT BELT SWITCH CIRCUITS OPEN
ACM, DRIVER SEAT BELT SWITCH CIRCUIT OPEN
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Turn the ignition off. Disconnect the Driver Seat Belt Switch. **NOTE: Check connectors - Clean and repair as necessary.** Turn the ignition on. Measure the voltage between Driver Seat Belt Switch Line 1 and Line 2 circuits at the SBS connector. Is there any voltage present? Yes → Replace the Driver Seat Belt Switch Buckle Assembly. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 3	All

DRIVER SEAT BELT SWITCH CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector. Measure the resistance of the Driver SBS Line 1 and line 2 circuits between the Driver SBS harness connector and Airbag Load Tool adaptor. Is the resistance of both circuits below 10K ohms? Yes → Replace the Airbag Control Module in accordance with the Service information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1. No → Repair the open Driver Seat Belt Switch Line 1 or Line 2. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SEAT BELT SWITCH SHORT TO BATTERY

When Monitored and Set Condition:

DRIVER SEAT BELT SWITCH SHORT TO BATTERY

When Monitored: With the ignition on the ACM monitors the Seat Belt Buckle Switch circuit for an short to battery.

Set Condition: The code will set if the ACM detects high circuit voltage.

POSSIBLE CAUSES
DRIVER SEAT BELT SWITCH SHORT TO BATTERY
DRIVER SEAT BELT SWITCH CIRCUITS SHORT TO BATTERY
ACM, DRIVER SEAT BELT SWITCH SHORT TO BATTERY
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Turn the ignition off. Disconnect the Driver Seat Belt Switch. **NOTE: Check connectors - Clean and repair as necessary.** Turn the ignition on. With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRB show DRIVER SEAT BELT SWITCH CIRCUIT OPEN? Yes → Replace the Driver Seat Belt Switch. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 3	All

DRIVER SEAT BELT SWITCH SHORT TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** Measure the voltage on the Driver SBS Line 1 and line 2 circuits at the Driver SBS connector. Is there any voltage present? Yes → Repair the Driver Seat Belt Switch line 1 or line 2 shorted to battery. Perform AIRBAG VERIFICATION TEST - VER 1. No → WARNING: MAKE SURE THE BATTERY IS DISCONNECTED, THEN WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Airbag Control Module in accordance with the Service information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SEAT BELT SWITCH SHORT TO GROUND

When Monitored and Set Condition:

DRIVER SEAT BELT SWITCH SHORT TO GROUND

When Monitored: With the ignition on the ACM monitors the Seat Belt Buckle Switch circuit for a shorted together or shorted to ground condition.

Set Condition: The code will set if the ACM detects low circuit voltage.

POSSIBLE CAUSES
DRIVER SEAT BELT SWITCH SHORT TOGETHER OR TO GROUND
DRIVER SEAT BELT SWITCH CIRCUITS SHORT TOGETHER
DRIVER SEAT BELT SWITCH CIRCUITS SHORT TO GROUND
ACM, DRIVER SEAT BELT SWITCH SHORT TO GROUND
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Turn Ignition off. Disconnect the Driver Seat Belt Switch connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Turn Ignition on. With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRB show DRIVER SEAT BELT CIRCUIT OPEN? Yes → Replace the Driver Seat Belt Switch Buckle Assembly. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 3	All

DRIVER SEAT BELT SWITCH SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector. Measure the resistance between the Driver SBS Line 1 and line 2 circuits at the Driver SBS connector. Is the resistance below 10K ohms? Yes → Repair the Driver Seat Belt Switch Line 1 and Line 2 shorted together. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 4	All
4	Measure the resistance of the Driver SBS Line 1 and Line 2 circuits between the Driver SBS connector and ground. Is the resistance below 10K ohms on either circuit? Yes → Repair the Driver Seat Belt Switch line 1 or line 2 shorted to ground. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with the Service information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SEAT BELT TENSIONER CIRCUIT OPEN

When Monitored and Set Condition:

DRIVER SEAT BELT TENSIONER CIRCUIT OPEN

When Monitored: With the ignition on the ACM monitors the resistance of the Driver Seat Belt Tensioner circuits.

Set Condition: The ACM has detected an open circuit or high resistance on the Driver Seat Belt Tensioner circuits.

POSSIBLE CAUSES
DRIVER SEAT BELT TENSIONER CIRCUITS OPEN
DRIVER SEAT BELT TENSIONER LINE 1 OR LINE 2 CIRCUIT OPEN
ACM, DRIVER SEAT BELT TENSIONER CIRCUIT OPEN
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	**NOTE: Ensure the battery is fully charged.** **WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Driver Seat Belt Tensioner connector. **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Driver Seat Belt Tensioner connector. **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read active Airbag Control Module DTC's. Does the DRBIII® display DRIVER SBT CIRCUIT OPEN? Yes → Go To 3 No → Replace Driver Seat Belt Tensioner in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All

DRIVER SEAT BELT TENSIONER CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Driver Seat Belt Tensioner connector. Disconnect the Airbag Control Module Connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool ACM Adaptor to the Airbag Control Module connector(s). Measure the resistance of the Driver SBT Line 1 and Line 2 circuits between the Load Tool Adapter and the Diver SBT connector. Is the resistance below 1.0 ohms on both circuit? Yes → Replace the Airbag Control Module in accordance with the Service information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1. No → Repair open or high resistance in Driver Seat Belt Tensioner Line 1 Line 2 circuits. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SEAT BELT TENSIONER CIRCUIT SHORT

When Monitored and Set Condition:

DRIVER SEAT BELT TENSIONER CIRCUIT SHORT

When Monitored: With the ignition on the ACM monitors the resistance of the Driver Seat Belt Tensioner circuits

Set Condition: The ACM has detected low resistance in the Driver Seat Belt Tensioner circuits.

POSSIBLE CAUSES
DRIVER SEAT BELT TENSIONER SHORT
DRIVER SEAT BELT TENSIONER LINE 1 SHORT TO LINE 2
ACM, DRIVER SEAT BELT TENSIONER CIRCUIT SHORT
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting airbag system components the Ignition must be turned off and the Battery must be disconnected.**	All
2	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Driver Seat Belt Tensioner connector. **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Driver Seat Belt Tensioner connector. **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read active Airbag Control Module DTC's. Does the DRBIII® display DRIVER SEAT BELT TENSIONER CIRCUIT SHORT? Yes → Go To 3 No → Replace Driver Seat Belt Tensioner in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All

DRIVER SEAT BELT TENSIONER CIRCUIT SHORT — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Driver Seat Belt Tensioner connector. Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool ACM Adaptor to the Airbag Control Module connector(s). Measure the resistance between the Driver SBT Line 1 and Line 2 circuit at the Driver SBT connector. Is the resistance below 10K Ohms? Yes → Repair Driver Seat Belt Tensioner Line 1 circuit short to Driver Seat Belt Tensioner Line 2 circuit. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with the Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SEAT BELT TENSIONER SHORT TO BATTERY

When Monitored and Set Condition:

DRIVER SEAT BELT TENSIONER SHORT TO BATTERY

When Monitored: With the ignition on the ACM monitors the voltage of the Driver Seat Belt Tensioner circuits.

Set Condition: The ACM has detected high voltage on the Driver Seat Belt Tensioner circuits.

POSSIBLE CAUSES
DRIVER SEAT BELT TENSIONER SHORT TO BATTERY
DRIVER SBT LINE 1 OR LINE 2 SHORT TO BATTERY
ACM, DRIVER SEAT BELT TENSIONER SHORT TO BATTERY
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting airbag system components the Ignition must be turned off and the Battery must be disconnected.**	All
2	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Driver Seat Belt Tensioner connector. **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Driver Seat Belt Tensioner connector. **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® display DRIVER SEAT BELT TENSIONER SHORT TO BATTERY? Yes → Go To 3 No → Replace Driver Seat Belt Tensioner in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All

DRIVER SEAT BELT TENSIONER SHORT TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Driver Seat Belt Tensioner connector. Disconnect the Airbag Control Module Connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool ACM Adaptor to the Airbag Control Module connector(s). **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** Measure the voltage of the Driver SBT Line 1 and Line 2 circuits between the Driver SBT connector and ground. Is there any voltage present? Yes → Repair Driver Seat Belt Tensioner Line 1 or Line 2 circuit short to battery. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with the Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SEAT BELT TENSIONER SHORT TO GROUND

When Monitored and Set Condition:

DRIVER SEAT BELT TENSIONER SHORT TO GROUND

When Monitored: With the ignition on the ACM monitors the voltage of the Driver Seat Belt Tensioner circuits.

Set Condition: When the ACM detects a short to ground in either Driver Seat Belt Tensioner circuits.

POSSIBLE CAUSES
DRIVER SEAT BELT TENSIONER SHORT TO GROUND
DRIVER SEAT BELT LINE 1 OR LINE 2 SHORT TO GROUND
ACM, DRIVER SEAT BELT TENSIONER SHORT TO GROUND
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting airbag system components the Ignition must be turned off and the Battery must be disconnected.**	All
2	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Driver Seat Belt Tensioner connector. **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Driver Seat Belt Tensioner connector. **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® display DRIVER SEAT BELT TENSIONER SHORT TO GROUND? Yes → Go To 3 No → Replace the Driver Seat Belt Tensioner in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All

DRIVER SEAT BELT TENSIONER SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Driver Seat Belt Tensioner connector. Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool ACM Adaptor to the Airbag Control Module connector(s). Measure the resistance of the Driver SBT Line 1 and Line 2 circuits between the Driver SBT connector and ground. Is the resistance below 10K ohms on either circuit? Yes → Repair Driver Seat Belt Tensioner Line 1 or Line 2 circuits short to ground. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with the Service information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SQUIB 1 CIRCUIT OPEN

When Monitored and Set Condition:

DRIVER SQUIB 1 CIRCUIT OPEN

When Monitored: With the ignition on, the ACM monitors the resistance of the Driver Squib 1 circuits.

Set Condition: The ACM detects an open circuit or high resistance in the Driver Squib 1 circuits.

POSSIBLE CAUSES
DRIVER AIRBAG SQUIB 1 CIRCUIT OPEN
CLOCKSPRING SQUIB 1 CIRCUIT OPEN
DRIVER SQUIB 1 LINE 1 OR LINE 2 CIRCUITS OPEN
ACM, DRIVER SQUIB 1 CIRCUIT OPEN
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

DRIVER SQUIB 1 CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Driver Airbag Squib connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Driver Airbag connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show DRIVER SQUIB 1 CIRCUIT OPEN? Yes → Go To 3 No → Replace the Driver Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Driver Airbag connector(s). Disconnect the Clockspring connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Clockspring connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show DRIVER SQUIB 1 CIRCUIT OPEN? Yes → Go To 4 No → Replace the Clockspring in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Clockspring connector(s). Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector(s). Measure the resistance of the Driver Squib 1 Line 1 and Line 2 circuits between the ACM Adaptor and the Clockspring connector(s). Is the resistance below 1.0 ohm on both circuits? Yes → Replace the Airbag Control Module in accordance with Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1. No → Repair open or high resistance in the Driver Squib 1 Line 1 or Line 2 circuits. Perform AIRBAG VERIFICATION TEST - VER 1.	All

DRIVER SQUIB 1 CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SQUIB 1 CIRCUIT SHORT

When Monitored and Set Condition:

DRIVER SQUIB 1 CIRCUIT SHORT

When Monitored: With the ignition on, the ACM monitors the resistance of the Driver Squib 1 circuits.

Set Condition: The ACM has detected low resistance on the Driver Squib 1 circuits.

POSSIBLE CAUSES
DRIVER AIRBAG SQUIB 1 CIRCUIT SHORT
CLOCKSPRING, DRIVER SQUIB 1 CIRCUITS SHORT
DRIVER AIRBAG SQUIB 1 LINE 1 SHORT TO LINE 2
ACM, DRIVER SQUIB LINE 1 SHORT TO LINE 2
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting airbag system components the Ignition must be turned off and the Battery must be disconnected.**	All

DRIVER SQUIB 1 CIRCUIT SHORT — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Driver Airbag connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Driver Airbag connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show DRIVER SQUIB 1 CIRCUIT SHORT? Yes → Go To 3 No → Replace the Driver Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Driver Airbag connector(s). Disconnect the Clockspring connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Clockspring connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show DRIVER SQUIB 1 CIRCUIT SHORT? Yes → Go To 4 No → Replace the Clockspring in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Clockspring connector(s). Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector(s). Measure the resistance between the Driver Squib 1 Line 1 and Line 2 at the Clockspring connector. Is the resistance below 10K ohms? Yes → Repair the Driver Squib 1 Line 1 circuit shorted to Driver Squib 1 Line 2 circuit. Perform AIRBAG VERIFICATION TEST - VER 1. No → WARNING: MAKE SURE THE BATTERY IS DISCONNECTED, THEN WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Airbag Control Module in accordance with Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All

DRIVER SQUIB 1 CIRCUIT SHORT — Continued

TEST	ACTION	APPLICABILITY
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SQUIB 1 SHORT TO BATTERY

When Monitored and Set Condition:

DRIVER SQUIB 1 SHORT TO BATTERY

When Monitored: With the ignition on, the ACM monitors the voltage of the Driver Squib 1 circuits.

Set Condition: The ACM has detected high voltage on the Driver Squib 1 circuits.

POSSIBLE CAUSES
DRIVER AIRBAG SQUIB 1 SHORT TO BATTERY
CLOCKSPRING, DRIVER SQUIB 1 SHORT TO BATTERY
DRIVER SQUIB 1 LINE 1 OR LINE 2 SHORT TO BATTERY
ACM, DRIVER SQUIB 1 SHORT TO BATTERY
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED ACM DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

DRIVER SQUIB 1 SHORT TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Driver Airbag Squib connector(s). **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Driver Airbag connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show DRIVER SQUIB 1 SHORT TO BATTERY? Yes → Go To 3 No → Replace the Driver Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Driver Airbag connector(s). Disconnect the Clockspring connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Clockspring connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show DRIVER SQUIB 1 SHORT TO BATTERY ? Yes → Go To 4 No → Replace the Clockspring in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** **WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** Disconnect the Load Tool from the Clockspring connector(s). Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** Measure the voltage on the Driver Squib 1 Line 1 and Line 2 circuits between the Clockspring connector and ground. Is there any voltage present? Yes → Repair the Driver Squib 1 Line 1 or Line 2 circuits shorted to battery. Perform AIRBAG VERIFICATION TEST - VER 1. No → WARNING: MAKE SURE THE BATTERY IS DISCONNECTED, THEN WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Airbag Control Module in accordance with Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All

DRIVER SQUIB 1 SHORT TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SQUIB 1 SHORT TO GROUND

When Monitored and Set Condition:

DRIVER SQUIB 1 SHORT TO GROUND

When Monitored: With the ignition on, the ACM monitors the resistance of the Driver Squib 1 circuits.

Set Condition: When the ACM detects a short to ground in either Driver Squib 1 circuits.

POSSIBLE CAUSES
DRIVER AIRBAG SQUIB 1 SHORT TO GROUND
CLOCKSPRING, DRIVER SQUIB 1 SHORT TO GROUND
DRIVER SQUIB 1 LINE 1 OR LINE 2 SHORTED TO GROUND
ACM, DRIVER SQUIB 1 SHORT TO GROUND
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

DRIVER SQUIB 1 SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Driver Airbag Squib connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Driver Airbag connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show DRIVER SQUIB 1 SHORT TO GROUND? Yes → Go To 3 No → Replace the Driver Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Driver Airbag connector(s). Disconnect the Clockspring connector. **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Clockspring connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show DRIVER SQUIB 1 SHORT TO GROUND? Yes → Go To 4 No → Replace the Clockspring in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Clockspring connector. Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector. Measure the resistance of the Driver Squib 1 Line 1 and Line 2 circuits between Clockspring connector and ground. Is the resistance below 10K ohms on either circuit? Yes → Repair Driver Squib 1 Line 1 or Line 2 circuits shorted to ground. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All

DRIVER SQUIB 1 SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SQUIB 2 CIRCUIT OPEN

When Monitored and Set Condition:

DRIVER SQUIB 2 CIRCUIT OPEN

When Monitored: With the ignition on, the ACM monitors the resistance of the Driver Squib 2 circuits.

Set Condition: The ACM detects an open circuit or high resistance in the Driver Squib 2 circuits.

POSSIBLE CAUSES
DRIVER AIRBAG SQUIB 2 CIRCUIT OPEN
CLOCKSPRING, DRIVER SQUIB 2 CIRCUIT OPEN
DRIVER SQUIB 2 LINE 1 OR LINE 2 CIRCUITS OPEN
ACM, DRIVER SQUIB 2 CIRCUIT OPEN
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

DRIVER SQUIB 2 CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Driver Airbag Squib connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Driver Airbag connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show DRIVER SQUIB 2 CIRCUIT OPEN? Yes → Go To 3 No → Replace the Driver Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Clockspring connector. Disconnect the Clockspring connector. **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Clockspring connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show DRIVER SQUIB 2 CIRCUIT OPEN? Yes → Go To 4 No → Replace the Clockspring in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Clockspring connector(s). Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector(s) Measure the resistance of the Driver Squib 2 Line 1 and Line 2 circuits between the ACM Adaptor and the Clockspring connector. Is the resistance below 1.0 ohm on both circuits? Yes → Replace the Airbag Control Module in accordance with the Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1. No → Repair open or high resistance in the Driver Squib 2 Line 1 or Line 2 circuits. Perform AIRBAG VERIFICATION TEST - VER 1.	All

DRIVER SQUIB 2 CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SQUIB 2 CIRCUIT SHORT

When Monitored and Set Condition:

DRIVER SQUIB 2 CIRCUIT SHORT

When Monitored: With the ignition on, the ACM monitors the resistance of the Driver Squib 2 circuits.

Set Condition: The ACM detects low resistance on the Driver Squib 2 circuits.

POSSIBLE CAUSES
DRIVER AIRBAG SQUIB 2 CIRCUIT SHORT
CLOCKSPRING, DRIVER SQUIB 2 CIRCUIT SHORT
DRIVER SQUIB 2 LINE 1 SHORT TO LINE 2
ACM, DRIVER SQUIB 2 CIRCUIT SHORT
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

DRIVER SQUIB 2 CIRCUIT SHORT — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Driver Airbag connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Driver Airbag connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRB show DRIVER SQUIB 2 CIRCUIT SHORT? Yes → Go To 3 No → Replace Driver Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Driver Airbag connector(s). Disconnect the Clockspring connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Clockspring connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRB show DRIVER SQUIB 2 CIRCUIT SHORT? Yes → Go To 4 No → Replace Clockspring in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Clockspring connector(s). Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector(s). Measure the resistance between the Driver Squib 2 Line 1 and Line 2 circuits at the Clockspring connector. Is the resistance below 10K ohms? Yes → Repair the Driver Squib 2 Line 1 circuit shorted to Driver Squib 2 Line 2 circuit. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All

DRIVER SQUIB 2 CIRCUIT SHORT — Continued

TEST	ACTION	APPLICABILITY
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SQUIB 2 SHORT TO BATTERY

When Monitored and Set Condition:

DRIVER SQUIB 2 SHORT TO BATTERY

When Monitored: With the ignition on, the ACM monitors the voltage of the Driver Squib 2 circuits.

Set Condition: The ACM detects high voltage on the Driver Squib 2 circuits.

POSSIBLE CAUSES
DRIVER AIRBAG SQUIB 2 SHORT TO BATTERY
CLOCKSPRING, DRIVER SQUIB 2 SHORT TO BATTERY
DRIVER SQUIB 2 LINE 1 OR LINE 2 SHORT TO BATTERY
ACM, DRIVER SQUIB 2 SHORT TO BATTERY
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

DRIVER SQUIB 2 SHORT TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Driver Airbag connector(s). **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Driver Airbag connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show DRIVER SQUIB 2 SHORT TO BATTERY? Yes → Go To 3 No → Replace the Driver Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Driver Airbag connector(s). Disconnect the Clockspring connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Clockspring connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRB show DRIVER SQUIB 2 SHORT TO BATTERY ? Yes → Go To 4 No → Replace the Clockspring in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Clockspring connector(s). Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** Measure the voltage on the Driver Squib 2 Line 1 and Line 2 from the Clockspring connector to ground. Is there any voltage present? Yes → Repair the Driver Squib 2 Line 1 or Line 2 circuits shorted to battery. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All

DRIVER SQUIB 2 SHORT TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
DRIVER SQUIB 2 SHORT TO GROUND

When Monitored and Set Condition:

DRIVER SQUIB 2 SHORT TO GROUND

When Monitored: With the ignition on, the ACM monitors the resistance of the Driver Squib 2 circuits.

Set Condition: The ACM detects a short to ground in either Driver Squib 2 circuits.

POSSIBLE CAUSES
DRIVER AIRBAG SQUIB 2 SHORT TO GROUND
CLOCKSPRING, DRIVER SQUIB 2 SHORT TO GROUND
DRIVER SQUIB 2 LINE 1 OR LINE 2 SHORT TO GROUND
ACM, DRIVER SQUIB 2 SHORT TO GROUND
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

DRIVER SQUIB 2 SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Driver Airbag connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Driver Airbag connectors(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRB show DRIVER SQUIB 2 SHORT TO GROUND? Yes → Go To 3 No → Replace the Driver Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Driver Airbag connector(s). Disconnect the Clockspring connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Clockspring connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRB show DRIVER SQUIB 2 SHORT TO GROUND? Yes → Go To 4 No → Replace the Clockspring in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Clockspring connector. Disconnect the Airbag Control Module connector. **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector. Measure the resistance of the Driver Squib 2 Line 1 and Line 2 circuits between Clockspring connector and ground. Is the resistance below 10K ohms on either circuit? Yes → Repair Driver Squib 2 Line 1 or Line 2 circuits shorted to ground. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All

DRIVER SQUIB 2 SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
INTERROGATE LEFT SIACM

When Monitored and Set Condition:

INTERROGATE LEFT SIACM

When Monitored: With ignition on, the ACM monitors the PCI Bus for a Left SIACM status message containing the airbag warning lamp ON or OFF request. The status message is sent to the ACM once each second or upon any change in the active DTCs.

Set Condition: The Code will set, if the ACM receives an Lamp ON status message from the Left SIACM. NOTE: This indicates that a diagnostic trouble code is present in the Left SIACM.

POSSIBLE CAUSES
INTERROGATE LEFT SIACM
ACM, NO ACTIVE LEFT SIACM DTCS
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure that the battery is fully charged.** Ensure the battery is fully charged. **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Turn the ignition on. With the DRBIII® read the Left SIACM active DTC's. Did the DRBIII® show any active DTCs? Yes → Refer to symptom list for problems related to Left SIACM. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 3	All

INTERROGATE LEFT SIACM — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** If there are no possible causes remaining, view repair. Repair Replace the Airbag Control Module in accordance with Service Instructions. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
INTERROGATE RIGHT SIACM

When Monitored and Set Condition:

INTERROGATE RIGHT SIACM

When Monitored: With ignition on, the ACM monitors the PCI Bus for a Right SIACM status message containing the airbag warning indicator On or OFF request. The status message is sent to the ACM once each second or upon any change in the active DTCs.

Set Condition: The Code will set, if the ACM receives an Lamp ON status message from the Right SIACM. NOTE: This indicates that a diagnostic trouble code is present in the Right SIACM.

POSSIBLE CAUSES
INTERROGATE RIGHT SIACM
NO ACTIVE RIGHT SIACM DTCS
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure that the battery is fully charged.** Ensure the battery is fully charged. **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Turn the ignition on. With the DRBIII® read the Right SIACM active DTC,s. Did the DRBIII® show any active DTC,s? Yes → Refer to symptom list for problems related to Right SIACM. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 3	All

INTERROGATE RIGHT SIACM — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** If there are no possible causes remaining, view repair. Repair Replace the Airbag Control Module in accordance with Service Instructions. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom List:

LOSS OF IGNITION RUN - START
ORC RUN - START DRIVER OPEN
ORC RUN - START DRIVER OVER CURRENT
ORC RUN - START DRIVER OVER TEMP
ORC RUN - START DRIVER OVER VOLT
ORC RUN - START DRIVER SHORT TO GROUND
SIACM RUN - START DRIVER OPEN
SIACM RUN - START DRIVER OVER CURRENT
SIACM RUN - START DRIVER OVER TEMP
SIACM RUN - START DRIVER OVER VOLT
SIACM RUN - START DRIVER SHORT TO GROUND

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be RUN - START CIRCUIT TEST.

When Monitored and Set Condition:

LOSS OF IGNITION RUN - START

When Monitored: With the ignition in the Run-Start position the module monitors the Run-Start Driver circuit for proper system voltage.

Set Condition: If the voltage on the Run-Start Driver circuit drops below 4.5 volts, the code will set.

ORC RUN - START DRIVER OPEN

When Monitored: When the ignition is turned OFF, the microprocessor controlled transistor (high side driver) places a diagnostic voltage on the ORC Run Only circuit for 60 seconds. An open high side driver (HSD) circuit voltage is between 2.4 and 5.0 volts.

Set Condition: This code will set within 10 second, if the microprocessor senses 2.4 to 5.0 volts on the HSD. Note: the diagnostic voltage will only last for 60 seconds after the ignition is turned off.

ORC RUN - START DRIVER OVER CURRENT

When Monitored: The FCM uses a microprocessor controlled transistor (high side driver) to supply power to the ORC. The microprocessor monitors the high side driver (HSD) internal temperature when the ignition is in the Run or Start position.

Set Condition: The code will set within 1 second, if the microprocessor senses high HSD internal temperature. The high temperature is caused by over current.

LOSS OF IGNITION RUN - START — Continued

ORC RUN - START DRIVER OVER TEMP

When Monitored: The FCM uses a microprocessor controlled transistor (high side driver) to supply power to the ORC. The microprocessor monitors the high side driver (HSD) internal temperature when the ignition is in the Run or Start position.

Set Condition: The code will set within 2.5 second, if the microprocessor senses high HSD internal temperature. The high temperature is caused by over current.

ORC RUN - START DRIVER OVER VOLT

When Monitored: The FCM uses a microprocessor controlled transistor (high side driver) to supply power to the ORC. The microprocessor monitors the high side driver (HSD) battery voltage when the ignition is in the Run or Start position.

Set Condition: The code will set if the microprocessor senses HSD battery voltage is over 30 volts.

ORC RUN - START DRIVER SHORT TO GROUND

When Monitored: The FCM uses a microprocessor controlled transistor (high side driver) to supply power to the ORC. The microprocessor monitors the high side driver (HSD) circuit for short to ground when the ignition is in the Run or Start position.

Set Condition: The code will set within 1 second, if the microprocessor senses high HSD internal temperature. The high temperature is caused by short to ground.

SIACM RUN - START DRIVER OPEN

When Monitored: When the ignition is turned OFF, the microprocessor controlled transistor (high side driver) places a diagnostic voltage on the SIACM Run-Start circuit for 60 seconds. An open high side driver (HSD) circuit voltage is between 2.4 and 5.0 volts.

Set Condition: This code will set within 10 second, if the microprocessor senses 2.4 to 5.0 volts on the HSD. Note: the diagnostic voltage will only last for 60 seconds after the ignition is turned off.

SIACM RUN - START DRIVER OVER CURRENT

When Monitored: The FCM uses a microprocessor controlled transistor (high side driver) to supply power to the SIACM. The microprocessor monitors the high side driver (HSD) internal temperature when the ignition is in the Run or Start position.

Set Condition: The code will set within 1 second, if the microprocessor senses high HSD internal temperature. The high temperature is caused by over current.

SIACM RUN - START DRIVER OVER TEMP

When Monitored: The FCM uses a microprocessor controlled transistor (high side driver) to supply power to the SIACM. The microprocessor monitors high side driver (HSD) internal temperature when the ignition is in the Run or Start position.

Set Condition: The code will set within 2.5 second, if the microprocessor senses high HSD internal temperature. The high temperature is caused by over current.

LOSS OF IGNITION RUN - START — Continued

SIACM RUN - START DRIVER OVER VOLT

When Monitored: The FCM uses a microprocessor controlled transistor (high side driver) to supply power to the SIACM circuit. The microprocessor monitors the battery voltage when the ignition is in the run or start position.

Set Condition: The code will set if the microprocessor senses the battery voltage is over 30 volts.

SIACM RUN - START DRIVER SHORT TO GROUND

When Monitored: The FCM uses a microprocessor controlled transistor (high side driver) to supply power to the SIACM. The microprocessor monitors high side driver (HSD) internal temperature when the ignition is in the Run or Start position.

Set Condition: The code will set within 1 second, if the microprocessor senses high HSD internal temperature. The high temperature is caused by over current.

POSSIBLE CAUSES
ORC, LOSS OF IGNITION RUN - START
ACM, ORC RUN - START OPEN
FCM, ORC RUN - START OPEN
IPM, ORC RUN - START DRIVER OPEN
ORC RUN - START DRIVER CIRCUIT OPEN
FCM, ORC RUN - START SHORT
LEFT SIDE IMPACT AIRBAG CONTROL MODULE
RIGHT SIDE IMPACT AIRBAG CONTROL MODULE
IPM, ORC RUN - START SHORT
ORC RUN - START CIRCUIT SHORT
ACM, ORC RUN - START DRIVER CIRCUIT SHORT
FCM, SIACM RUN - START OPEN
RIGHT SIACM AND SIACM RUN - START CIRCUIT OPEN
FCM, SIACM RUN - START OPEN
FCM, SIACM RUN - START CIRCUIT SHORT
IPM, SIACM RUN - START CIRCUIT OPEN
RSIACM, RUN - START CIRCUIT OPEN
SIACM RUN - START CIRCUIT OPEN
IPM, SIACM RUN - START CIRCUIT SHORT
LSIACM, SIACM RUN - START CIRCUIT SHORT
LEFT SIACM AND SIACM RUN - START CIRCUIT OPEN
HIGH BATTERY VOLTAGE

LOSS OF IGNITION RUN - START — Continued

POSSIBLE CAUSES
FCM, RUN - START OVER VOLTAGE
RIGHT SIACM, SIACM RUN - START CIRCUIT SHORT
SIACM RUN - START CIRCUIT SHORT
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Ensure the battery is fully charged. Turn the ignition on. **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT MODULE AND DTC TYPE: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 20 LEFT SIACM - ACTIVE DTC WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Left Side Impact Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1. LEFT SIACM - STORED DTC Go To 20 RIGHT SIACM - ACTIVE DTC WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Right Side Impact Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1. RIGHT SIACM - STORED DTC Go To 20 FCM - ACTIVE DTC Go To 3 FCM - STORED DTC Go To 20 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	With the DRBIII®, read the active FCM DTC's. Are there any active ORC RUN - START DRIVER DTC's? Yes → Go To 3 No → WARRING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1.	All

LOSS OF IGNITION RUN - START — Continued

TEST	ACTION	APPLICABILITY
3	Select the FCM active RUN - START DTC displayed on the DRB. 1. ORC RUN-START DRIVER OPEN Go To 4 2. ORC RUN-START DRIVER OVER VOLTAGE Go To 15 3. ORC RUN-START DRIVER SHORT TO GROUND Go To 7 4. ORC RUN-START DRIVER OVER CURRENT Go To 7 5. ORC RUN-START DRIVER OVER TEMP Go To 7 6. SIACM RUN - START DRIVER OPEN Go To 10 7. SIACM RUN - START DRIVER OVER VOLT Go To 15 8. SIACM RUN - START SHORT TO GROUND Go To 16 9. SIACM RUN - START DRIVER OVER TEMP Go To 16 10. SIACM RUN-START DRIVER OVER CURRENT Go To 16	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** **WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** Disconnect the Airbag Control Module connector. Connect the appropriate Load Tool ACM Adaptor to the Airbag Control Module connector(s). Connect a test light to ground and the ORC Run-Start Driver circuit at the ACM adaptor. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** Turn the ignition off, wait 90 seconds, then turn the ignition on. With the DRBIII®, read the active FCM DTC's. Does the DRB show an active ORC RUN - START DRIVER OPEN code? Yes → Go To 5 No → WARNING: MAKE SURE THE BATTERY IS DISCONNECTED, THEN WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1.	All

LOSS OF IGNITION RUN - START — Continued

TEST	ACTION	APPLICABILITY
5	Disconnect the Front Control Module. **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Measure the resistance of the ORC Run - Start Driver circuit between the Front Control Module connector and the ACM Adapter. Is the resistance below 1.0 ohms? Yes → Replace the Front Control Module. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 6	All
6	Gain access to the connectors on the bottom of the IPM. Disconnect the IPM C7 connector. **NOTE: Check connectors - Clean and repair as necessary.** Measure the resistance of the ORC Run Only Driver circuit between the IPM C7 connector and the Airbag Control Module adaptor. Is the resistance below 1.0 ohms? Yes → Replace the IPM. Perform AIRBAG VERIFICATION TEST - VER 1. No → Repair the open ORC Run - Start Driver circuit. Perform AIRBAG VERIFICATION TEST - VER 1.	All
7	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Front Control Module connector. **NOTE: Check connectors - Clean and repair as necessary.** Measure the resistance of the ORC Run - Start Driver circuit between the Front Control Module connector and ground. Is the resistance below 500K ohms? Yes → Go To 8 No → Replace the Front Control Module. Perform AIRBAG VERIFICATION TEST - VER 1.	All
8	Gain access to the connectors on the bottom of the IPM. Disconnect the IPM C7 connector. **NOTE: Check connectors - Clean and repair as necessary.** Measure the resistance of the ORC Run - Start Driver circuit between the IPM C7 connector and ground. Is the resistance below 500K ohms? Yes → Go To 9 No → Replace the IPM. Perform AIRBAG VERIFICATION TEST - VER 1.	All

LOSS OF IGNITION RUN - START — Continued

TEST	ACTION	APPLICABILITY
9	Disconnect the Airbag Control Module connector. **WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool ACM Adaptor to the Airbag Control Module connector. Measure the resistance of the ORC Run - Start Driver circuit between the IPM C7 connector and ground. Is the resistance below 500K ohms? Yes → Repair the ORC Run - Start Driver circuit shorted to ground. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with Service Instructions. WARNING: make sure the battery is disconnected and wait 2 minutes before proceeding. Perform AIRBAG VERIFICATION TEST - VER 1.	All
10	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** **WARNING: IF THE SIDE IMPACT AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** Disconnect the Left Side Impact Airbag Control Module. **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** **NOTE: When the ignition key is turned off, the FCM will supply a diagnostic voltage to the SIACM Run-Start Driver circuit for approximately 60 seconds.** Turn the ignition off. Measure the diagnostic voltage of the SIACM Run - Start Driver circuit between the Left Side Impact Airbag Control Module connector and ground. Select the results from the list below? Is the voltage between 1.0 and 2.2 volts Replace the Front Control Module. Perform AIRBAG VERIFICATION TEST - VER 1. Is the voltage between 2.4 and 5.0 volts Go To 11 No Voltage present? Go To 12	All

LOSS OF IGNITION RUN - START — Continued

TEST	ACTION	APPLICABILITY
11	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** **WARNING: IF THE SIDE IMPACT AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** Disconnect the Right Side Impact Airbag Control Module. **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** **NOTE: When the ignition key is turned off, the FCM will supply a diagnostic voltage to the SIACM Run-Start Driver circuit for approximately 60 seconds.** Turn the ignition off. Measure the diagnostic voltage of the SIACM Run - Start Driver circuit at the Right Side Impact Airbag Control Module connector. Is there any voltage present? Yes → WARNING: Make sure the battery is disconnected and wait 2 minutes. Replace the Left Side Impact Airbag Control Module and repair the open SIACM Run - Start Driver circuit between the splice and the Right Side Impact Airbag control Module connector. Perform AIRBAG VERIFICATION TEST - VER 1. No → WARNING: Make sure the battery is disconnected and wait 2 minutes. Replace the Left Side Impact Airbag Control Module and repair the open SIACM Run - Start Driver circuit between the splice and the Right Side Impact Airbag control Module connector. Perform AIRBAG VERIFICATION TEST - VER 1.	All
12	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** **WARNING: IF THE SIDE IMPACT AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** Disconnect the Right Side Impact Airbag Control Module. **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** Measure the voltage of the SIACM Run - Start Driver circuit between the Right Side Impact Airbag Control Module connector and ground. Is there any voltage present? Yes → WARNING: Make sure the battery is disconnected and wait 2 minutes. Replace the Right Side Impact Airbag Control Module and repair the open SIACM Run - Start Driver circuit between the splice and the Left Side Impact Airbag Control Module connector. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 13	All
13	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Front Control Module. **NOTE: Check connectors - Clean and repair as necessary.** Measure the resistance of the SIACM Run - Start Driver circuit between the Front Control Module connector and the Right SIACM connector. Is the resistance below 1.0 ohms? Yes → Replace the Front Control Module. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 14	All

LOSS OF IGNITION RUN - START — Continued

TEST	ACTION	APPLICABILITY
14	Gain access to the connectors on the bottom of the IPM. Disconnect the IPM C7 connector. **NOTE: Check connectors - Clean and repair as necessary.** Measure the resistance of the SIACM Run - Start Driver circuit between the IPM C7 connector and the Right SIACM connectors. Is the resistance below 1.0 ohms? Yes → Replace the IPM. Perform AIRBAG VERIFICATION TEST - VER 1. No → Repair the open SIACM Run - Start Driver circuit. Perform AIRBAG VERIFICATION TEST - VER 1.	All
15	Measure the battery voltage. Is the voltage above 30.0 volts? Yes → Refer to Charging Category for the P1594 Charging System Too High symptom. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform AIRBAG VERIFICATION TEST - VER 1.	All
16	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Front Control Module. **NOTE: Check connectors - Clean and repair as necessary.** Measure the resistance of the SIACM Run-Start Driver circuit between the Front Control Module connector and ground. Is the resistance below 500K ohms? Yes → Go To 17 No → Replace the Front Control Module. Perform AIRBAG VERIFICATION TEST - VER 1.	All
17	Gain access to the connectors on the bottom of the IPM. Disconnect the IPM C7 connector. **NOTE: Check connectors - Clean and repair as necessary.** Measure the resistance of the SIACM Run - Start Driver circuit between the IPM C7 connector and ground. Is the resistance below 500K ohms? Yes → Go To 18 No → Replace the IPM. Perform AIRBAG VERIFICATION TEST - VER 1.	All
18	**WARNING: IF THE SIDE IMPACT AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** Disconnect the Left Side Impact Airbag Control Module. **NOTE: Check connectors - Clean and repair as necessary.** Measure the resistance of the SIACM Run - Start Driver circuit between the FCM connector and ground. Is the resistance below 500K ohms? Yes → Go To 19 No → Replace the Left Side Impact Airbag Control Module.. Perform AIRBAG VERIFICATION TEST - VER 1.	All

LOSS OF IGNITION RUN - START — Continued

TEST	ACTION	APPLICABILITY
19	**WARNING: IF THE SIDE IMPACT AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** Disconnect the Right Side Impact Airbag Control Module. **NOTE: Check connectors - Clean and repair as necessary.** Measure the resistance of the SIACM Run - Start Driver circuit between the FCM connector and ground. Is the resistance below 500K ohms? Yes → Repair the shorted SIACM Run - Start Driver circuit. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Right Side Impact Airbag Control Module in accordance with Service Instructions. WARNING: make sure the battery is disconnected and wait 2 minutes before proceeding. Perform AIRBAG VERIFICATION TEST - VER 1.	All
20	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom List:

LOSS OF IGNITION RUN ONLY
ORC RUN ONLY DRIVER OPEN
ORC RUN ONLY DRIVER OVER CURRENT
ORC RUN ONLY DRIVER OVER TEMP
ORC RUN ONLY DRIVER OVER VOLT
ORC RUN ONLY DRIVER SHORT TO GROUND

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be RUN ONLY CIRCUIT TEST.

When Monitored and Set Condition:

LOSS OF IGNITION RUN ONLY

When Monitored: With the ignition in the run only position the ORC monitors the ORC Run Only Driver circuit for proper system voltage.

Set Condition: If the voltage on the ORC Run Only Driver circuit drops below 4.5 volts, the code will set.

ORC RUN ONLY DRIVER OPEN

When Monitored: When the ignition is turned OFF, the microprocessor controlled transistor (high side driver) places a diagnostic voltage on the ORC Run Only circuit for 60 seconds. An open high side driver (HSD) circuit voltage is between 2.4 and 5.0 volts.

Set Condition: This code will set within 10 second, if the microprocessor senses 2.4 to 5.0 volts on the HSD. Note: the diagnostic voltage will only last for 60 seconds after the ignition is turned off.

ORC RUN ONLY DRIVER OVER CURRENT

When Monitored: The FCM uses a microprocessor controlled transistor (high side driver) to supply power to the ORC. The microprocessor monitors the high side driver (HSD) internal temperature when the ignition is in the Run position.

Set Condition: The code will set within 1 second, if the microprocessor senses high HSD internal temperature. The high temperature is caused by over current.

ORC RUN ONLY DRIVER OVER TEMP

When Monitored: When the ignition is turned OFF, the microprocessor controlled transistor (high side driver) places a diagnostic voltage on the ORC Run Only circuit for 60 seconds. An open high side driver (HSD) circuit voltage is between 2.4 and 5.0 volts.

Set Condition: This code will set within 10 second, if the microprocessor senses 2.4 to 5.0 volts on the HSD. Note: the diagnostic voltage will only last for 60 seconds after the ignition is turned off.

LOSS OF IGNITION RUN ONLY — Continued

ORC RUN ONLY DRIVER OVER VOLT

When Monitored: The FCM uses a microprocessor controlled transistor (high side driver) to supply power to the ORC. The microprocessor monitors the high side driver (HSD) battery voltage when the ignition is in the Run position.

Set Condition: The code will set if the microprocessor senses HSD battery voltage is over 30 volts.

ORC RUN ONLY DRIVER SHORT TO GROUND

When Monitored: The FCM uses a microprocessor controlled transistor (high side driver) to supply power to the ORC. The microprocessor monitors the high side driver (HSD) circuit for short to ground when the ignition is in the Run position.

Set Condition: The code will set within 1 second, if the microprocessor senses high HSD internal temperature. The high temperature is caused by short to ground.

POSSIBLE CAUSES
ACM, LOSS OF IGNITION RUN ONLY
ACM, ORC RUN ONLY CIRCUIT OPEN
FCM, ORC RUN ONLY CIRCUIT OPEN
IPM, ORC RUN ONLY CIRCUIT OPEN
ORC RUN ONLY DRIVER CIRCUIT OPEN
FCM, ORC RUN ONLY CIRCUIT SHORT
IPM, ORC RUN ONLY CIRCUIT SHORT
ACM, ORC RUN ONLY CIRCUIT SHORT
ORC RUN ONLY CIRCUIT SHORT
HIGH BATTERY VOLTAGE
ORC RUN ONLY OVER VOLTAGE
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

LOSS OF IGNITION RUN ONLY — Continued

TEST	ACTION	APPLICABILITY
1	Ensure the battery is fully charged. Turn the ignition on. **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ONE: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 11 FCM - ACTIVE DTC Go To 3 FCM - STORED DTC Go To 11 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	With the DRBIII®, read the active FCM DTCs. Are there any active ORC RUN ONLY DRIVER codes? Yes → Go To 3 No → WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	Select the active FCM RUN ONLY DTC displayed on the DRB. 1. ORC RUN ONLY DRIVER OPEN Go To 4 2. ORC RUN ONLY DRIVER OVER VOLTAGE Go To 7 3. ORC RUN-START SHORT TO GROUND Go To 8 4. ORC RUN ONLY DRIVER OVER CURRENT Go To 8 5. ORC RUN ONLY DRIVER OVER TEMP Go To 8	All

LOSS OF IGNITION RUN ONLY — Continued

TEST	ACTION	APPLICABILITY
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** **WARNING: IF THE OCCUPANT RESTRAINT CONTROLLER IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector. Connect a test light to ground and the ORC Run Only Driver circuit at the Airbag Control Module connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** Turn the ignition off, wait 90 seconds and then turn the ignition ON. With the DRBIII®, read the active FCM DTCs. Does the DRB show an active ORC RUN ONLY DRIVER OPEN code? Yes → Go To 5 No → WARNING: MAKE SURE THE BATTERY IS DISCONNECTED, THEN WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1.	All
5	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Front Control Module. **NOTE: Check connectors - Clean and repair as necessary.** Measure the resistance of the ORC Run - Start Driver circuit between the Front Control Module connector and the Airbag Control Module adapter. Is the resistance below 1.0 ohms? Yes → Replace the Front Control Module. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 6	All
6	Gain access to the connectors on the bottom of the IPM. Disconnect the IPM C7 connector. **NOTE: Check connectors - Clean and repair as necessary.** Measure the resistance of the ORC Run Only Driver circuit between the IPM C7 connector and the Airbag Control Module adapter. Is the resistance below 1.0 ohms? Yes → Replace the IPM. Perform AIRBAG VERIFICATION TEST - VER 1. No → Repair the open ORC Run Only Driver circuit. Perform AIRBAG VERIFICATION TEST - VER 1.	All
7	Measure the battery voltage. Is the voltage above 30.0 volts? Yes → Refer to Charging Category for the P1594 Charging System Too High symptom. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform AIRBAG VERIFICATION TEST - VER 1.	All

LOSS OF IGNITION RUN ONLY — Continued

TEST	ACTION	APPLICABILITY
8	Disconnect the Front Control Module. Measure the resistance of the ORC Run Only Driver circuit between the Front Control Module connector and ground. Is the resistance below 500K ohms? Yes → Go To 9 No → Replace the Front Control Module. Perform AIRBAG VERIFICATION TEST - VER 1.	All
9	Gain access to the connectors on the bottom of the IPM. Disconnect the IPM C7 connector. **NOTE: Check connectors - Clean and repair as necessary.** Measure the resistance of the ORC Run Only Driver circuit between the IPM C7 connector and ground. Is the resistance below 500K ohms? Yes → Go To 10 No → Replace the IPM. Perform AIRBAG VERIFICATION TEST - VER 1.	All
10	Disconnect the Airbag Control Module connector(s). **WARNING: IF THE OCCUPANT RESTRAINT CONTROLLER IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector. Measure the resistance of the ORC Run Only Driver circuit between the IPM C7 connector and ground. Is the resistance below 500K ohms? Yes → WARNING: MAKE SURE THE BATTERY IS DISCONNECTED, THEN WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1. No → Repair the ORC Run Only Driver circuit shorted to ground. Perform AIRBAG VERIFICATION TEST - VER 1.	All

LOSS OF IGNITION RUN ONLY — Continued

TEST	ACTION	APPLICABILITY
11	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
MODULE NOT CONFIGURED FOR SAB

When Monitored and Set Condition:

MODULE NOT CONFIGURED FOR SAB

When Monitored: With ignition on, the ORC monitors the PCI Bus for a message containing an ″A″ in the 4 th position of the VIN. This character identifies the type of safety equipment and should match the VIN. The PCM transmits the VIN every 3.5 seconds.

Set Condition: The code will set, if the ORC detects a Side Impact Airbag Module active on the PCI Bus and the 4 th character of the VIN message is not an ″A″.

POSSIBLE CAUSES
PCM, PCI COMMUNICATION FAILURE
CHECK PCM VIN
STORED CODE OR INTERMITTENT CONDITION
ACM, ORC NOT CONFIGURED FOR SIDE AIRBAGS
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure that the battery is fully charged.** Ensure the battery is fully charged. **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Turn the ignition on. Connect the DRB to the data link connector and select PASSIVE RESTRAINTS, AIRBAG, SYSTEM TEST With the DRBIII®, read the PCM Active on the Bus Does the DRB show PCM Active on the Bus:? Yes → Go To 3 No → Refer to category COMMUNICATION and select the related symptom. Perform AIRBAG VERIFICATION TEST - VER 1.	All

MODULE NOT CONFIGURED FOR SAB — Continued

TEST	ACTION	APPLICABILITY
3	With the DRB read the Vehicle Identification Number in the Powertrain Control Module. Compare the VIN displayed on the DRB screen and the Vehicle VIN plate. Does the VIN plate and the PCM VIN match? Yes → Go To 4 No → Replace the Powertrain Control Module and program with the correct vehicle identification number. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** **WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** If there are no possible causes remaining, view repair. Repair Replace the Airbag Control Module in accordance with Service Instructions. WARNING: make sure the battery is disconnected and wait 2 minutes before proceeding. Perform AIRBAG VERIFICATION TEST - VER 1. **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
NO CLUSTER MESSAGE

When Monitored and Set Condition:

NO CLUSTER MESSAGE

When Monitored: With ignition on, the ACM monitors the PCI Bus for a message from the MIC containing the airbag warning indicator status. The MIC transmits the message one time at ignition on, lamp state change, or in response to the ACM message.

Set Condition: If the MIC message is not received for 10 consecutive seconds, the code will set.

POSSIBLE CAUSES
MIC, COMMUNICATION FAILURE
ACM, NO CLUSTER MESSAGES
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Turn the ignition on. With the DRBIII®, ensure PCI Bus communications with the Instrument Cluster. Is the Instrument Cluster communicating on the PCI Bus? Yes → Go To 3 No → Refer to category COMMUNICATION CATEGORY and select the related symptom NO RESPONSE or INSTRUMENT CLUSTER BUS +/- SIGNAL OPEN.	All

NO CLUSTER MESSAGE — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** If there are no possible causes remaining, view repair. Repair WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Replace the Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1. **NOTE: When reconnecting airbag system components the Ignition must be turned off and the Battery must be disconnected.**	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
NO LEFT SIACM MESSAGE

When Monitored and Set Condition:

NO LEFT SIACM MESSAGE

When Monitored: With ignition on, the ACM monitors the PCI Bus for the Left Side Impact Airbag Control Module status message. The Left SIACM transmits the status message to the ACM at 1 - second intervals.

Set Condition: If the ACM fails to see the Left SIACM status message on the PCI Bus for 15 seconds.

POSSIBLE CAUSES
NO LEFT SIACM MESSAGE
ACM, NO LEFT SIACM MESSAGE
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the battery is fully charged.** Turn the ignition on. **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting airbag system components the Ignition must be turned off and the Battery must be disconnected.**	All
2	With the DRBIII® select PASSIVE RESTRAINTS, SIDE AIRBAG then LEFT SIDE from the DRB menu. Does the DRBIII® show NO RESPONSE or BUS +/- SIGNAL OPEN? Yes → Refer to the Communication category for the related symptom. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 3	All
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** If there are no possible causes remaining, view repair. Repair Replace the Airbag Control Module in accordance with Service Instructions. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All

NO LEFT SIACM MESSAGE — Continued

TEST	ACTION	APPLICABILITY
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
NO ODOMETER MESSAGE

When Monitored and Set Condition:

NO ODOMETER MESSAGE

When Monitored: With ignition on, the ACM monitors the PCI Bus for the Odometer message from the Body Control Module. The PCM transmits the odometer message at 1 second intervals.

Set Condition: The code will set, if the ACM does not see the odometer message for 10 seconds.

POSSIBLE CAUSES
PCM, PCI COMMUNICATION FAILURE
NO ODOMETER MESSAGE
STORED CODE OR INTERMITTENT CONDITION
ACM, NO ODOMETER MESSAGE
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure that the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** Turn the ignition on. SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Connect the DRBIII® to the data link connector and select PASSIVE RESTRAINTS, AIRBAG, SYSTEM TEST. With the DRBIII®, read the PCM Active on the Bus:. Does the DRB show PCM ACTIVE ON THE BUS? Yes → Go To 3 No → Refer to category ″ COMMUNICATION CATEGORY″ and select the related symptom. Perform AIRBAG VERIFICATION TEST - VER 1.	All

NO ODOMETER MESSAGE — Continued

TEST	ACTION	APPLICABILITY
3	With the DRB select ENGINE, MISCELLANEOUS, SELECT MISC FUNCTION, and then CHECK VIN to read the Vehicle Identification Number in the Powertrain Control Module. Compare the VIN displayed on the DRB screen and the Vehicle VIN plate. Does the VIN plate and the PCM VIN match? Yes → Go To 4 No → Replace the Powertrain Control Module and program with the correct vehicle identification number. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** **WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** If there are no possible causes remaining, view repair. Repair WARNING: make sure the battery is disconnected and wait 2 minutes before proceeding. Replace the Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1. **NOTE: When reconnecting airbag system components the Ignition must be turned off and the Battery must be disconnected.**	All
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
NO PCI TRANSMISSION

When Monitored and Set Condition:

NO PCI TRANSMISSION

When Monitored: With the ignition on and the module transmitting information on the PCI BUS.

Set Condition: The code will set if the onboard diagnostic cannot detect the module transmitting information on the PCI BUS for 4 consecutive seconds. NOTE: Any PCI Bus Failure will may cause a stored code to set.

POSSIBLE CAUSES
AIRBAG CONTROL MODULE - ACM
LEFT SIDE IMPACT AIRBAG CONTROL MODULE - LSIACM
RIGHT SIDE IMPACT AIRBAG CONTROL MODULE - RSIACM
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

NO PCI TRANSMISSION — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure that the battery is fully charged.** IF THE MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Turn the ignition on. From the list below, select the appropriate module and DTC type for the this diagnostic trouble code. **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** Select the appropriate module and type of DTC ACM - ACTIVE WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Airbag Control Module in accordance with the Service Instructions. ACM - STORED Go To 2 LEFT SIACM - ACTIVE WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Left Side Impact Airbag Control Module in accordance with the Service Instructions. LEFT SIACM - STORED Go To 2 RIGHT SIACM - ACTIVE WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Right Side Impact Airbag Control Module in accordance with the Service Instructions. RIGHT SIACM - STORED Go To 2	All

NO PCI TRANSMISSION — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
NO PCM MESSAGE

When Monitored and Set Condition:

NO PCM MESSAGE

When Monitored: With ignition on, the Side Impact Airbag Control Module monitors the PCI Bus for the PCM VIN message.

Set Condition: If the Side Impact Airbag Control Module fails to see the PCM message on the PCI Bus for 15 seconds the code will set.

POSSIBLE CAUSES
PCM, PCI COMMUNICATION FAILURE
NO PCM MESSAGE
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT
SIACM, NO PCM MESSAGE

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure that the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** Turn the ignition on. SELECT ONE: LEFT SIACM - ACTIVE DTC Go To 2 LEFT SIACM - STORED DTC Go To 5 RIGHT SIACM - ACTIVE Go To 2 RIGHT SIACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Connect the DRBIII® to the data link connector and select PASSIVE RESTRAINTS, AIRBAG, SYSTEM TEST. With the DRBIII®, read the PCM Active on the Bus:. Does the DRB show PCM ACTIVE ON THE BUS? Yes → Go To 3 No → Refer to category ″ COMMUNICATION CATEGORY″ and select the related symptom. Perform AIRBAG VERIFICATION TEST - VER 1.	All

NO PCM MESSAGE — Continued

TEST	ACTION	APPLICABILITY
3	With the DRB select ENGINE, MISCELLANEOUS, SELECT MISC FUNCTION, and then CHECK VIN to read the Vehicle Identification Number in the Powertrain Control Module. Compare the VIN displayed on the DRB screen and the Vehicle VIN plate. Does the VIN plate and the PCM VIN match? Yes → Go To 4 No → Replace the Powertrain Control Module and program with the correct vehicle identification number. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** **WARNING: IF THE SIDE IMPACT AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** If there are no possible causes remaining, view repair. Repair WARNING: MAKE SURE THE BATTERY IS DISCONNECTED, THEN WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Side Impact Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1.	All
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
NO RIGHT SIACM MESSAGE

When Monitored and Set Condition:

NO RIGHT SIACM MESSAGE

When Monitored: With ignition on, the ACM monitors the PCI Bus for the Right Side Impact Airbag Control Module status message. The Right SIACM transmits the status message to the ACM at 1 - second intervals.

Set Condition: If the ACM fails to see the Right SIACM status message on the PCI Bus for 15 seconds.

POSSIBLE CAUSES
NO RIGHT SIACM MESSAGE
ACM, NO RIGHT SIACM MESSAGE
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the battery is fully charged.** Turn the ignition on. **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	With the DRBIII® select SIDE AIRBAG and the RIGHT SIDE AIRBAG from the DRBIII® menu. Does the DRBIII® show NO RESPONSE or BUS +/- SIGNAL OPEN? Yes → Refer to the COMMUNICATION category for the related symptom. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 3	All

NO RIGHT SIACM MESSAGE — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** If there are no possible causes remaining, view repair. Repair Replace the Airbag Control Module in accordance with Service Instructions. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1. **NOTE: When reconnecting airbag system components the Ignition must be turned off and the Battery must be disconnected.**	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SEAT BELT SWITCH CIRCUIT OPEN

When Monitored and Set Condition:

PASSENGER SEAT BELT SWITCH CIRCUIT OPEN

When Monitored: The ACM monitors the Seat Belt Buckle Switch circuit for an open condition.

Set Condition: The code will set if the ACM does not detect the correct circuit voltage.

POSSIBLE CAUSES
PASSENGER SBS OPEN
PASSENGER SEAT BELT SWITCH CIRCUITS OPEN
ACM, PASSENGER SEAT BELT SWITCH CIRCUIT OPEN
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Turn the ignition off. Disconnect the Passenger Seat Belt Switch. **NOTE: Check connectors - Clean and repair as necessary.** Turn the ignition on. Measure the voltage between Passenger Seat Belt Switch Line 1 and Line 2 circuits and ground. Is there voltage present on both circuits? Yes → Replace the Passenger Seat Belt Switch Buckle Assembly. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 3	All

PASSENGER SEAT BELT SWITCH CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector. Measure the resistance of the Driver SBS Line 1 and line 2 circuits between the Passenger SBS harness connector and Airbag Load Tool Adaptor. Is the resistance below 1.0 ohms on both circuits? Yes → Replace the Airbag Control Module in accordance with the Service information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1. No → Repair the open Passenger Seat Belt Switch Line 1 or Line 2. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SEAT BELT SWITCH SHORT TO BATTERY

When Monitored and Set Condition:

PASSENGER SEAT BELT SWITCH SHORT TO BATTERY

When Monitored: The ACM monitors the Seat Belt Buckle Switch circuit for an short to battery.

Set Condition: The code will set if the ACM detects high circuit voltage.

POSSIBLE CAUSES
PASSENGER SEAT BELT SWITCH CIRCUITS SHORTED TO BATTERY
PASSENGER SEAT BELT SWITCH SHORT TO BATTERY
ACM, PASSENGER SEAT BELT SWITCH SHORT TO BATTERY
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Turn the ignition off. **NOTE: Ensure the battery is fully charged.** Disconnect the Passenger Seat Belt Switch connector. **NOTE: Check connectors - Clean and repair as necessary.** Turn the ignition on. With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRB show PASSENGER SBS CIRCUIT OPEN? Yes → Replace the Passenger Seat Belt Switch Buckle Assembly. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 3	All

PASSENGER SEAT BELT SWITCH SHORT TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** Measure the voltage on the Passenger SBS Line 1 and Line 2 circuits at the Passenger SBS connector. Is there any voltage present? Yes → Repair the Passenger Seat Belt Switch line 1 or line 2 shorted to battery. Perform AIRBAG VERIFICATION TEST - VER 1. No → WARNING: MAKE SURE THE BATTERY IS DISCONNECTED, THEN WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Airbag Control Module in accordance with the Service information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SEAT BELT SWITCH SHORT TO GROUND

When Monitored and Set Condition:

PASSENGER SEAT BELT SWITCH SHORT TO GROUND

When Monitored: The ACM monitors the Seat Belt Buckle Switch circuit for a shorted together or shorted to ground condition.

Set Condition: The code will set if the ACM detects low circuit voltage.

POSSIBLE CAUSES
PASSENGER SEAT BELT SWITCH SHORT TOGETHER OR TO GROUND
PASSENGER SEAT BELT SWITCH CIRCUITS SHORTED TOGETHER
PASSENGER SEAT BELT SWITCH CIRCUITS SHORTED TO GROUND
ACM, PASSENGER SEAT BELT SWITCH SHORT TO GROUND
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	TURN THE IGNITION ON. THIS IS A TEST. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Turn Ignition off. Disconnect the Passenger Seat Belt Switch connector. **NOTE: Check connectors - Clean and repair as necessary.** Turn Ignition on. With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRB show PASSENGER SBS CIRCUIT OPEN? Yes → Replace the Passenger Seat Belt Switch Buckle Assembly. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 3	All

PASSENGER SEAT BELT SWITCH SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Measure the resistance between the Driver SBS Line 1 and line 2 circuit at the Passenger SBS connector. Is the resistance below 10K ohms? Yes → Repair the Passenger Seat Belt Switch Line 1 and Line 2 shorted together. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 4	All
4	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Airbag Control Module connector **NOTE: Check connectors - Clean and repair as necessary.** Measure the resistance of the Passenger SBS Line 1 and line 2 circuit between the Passenger SBS connector and ground. Is the resistance below 10K ohms on either circuit? Yes → Repair the Passenger Seat Belt Switch line 1 or line 2 shorted to ground. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with the Service information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SEAT BELT TENSIONER CIRCUIT OPEN

When Monitored and Set Condition:

PASSENGER SEAT BELT TENSIONER CIRCUIT OPEN

When Monitored: With the ignition on, the ACM monitors the resistance of the Passenger Seat Belt Tensioner circuits.

Set Condition: When the ACM detects an open circuit or high resistance in the Passenger Seat Belt Tensioner circuits.

POSSIBLE CAUSES
PASSENGER SEAT BELT TENSIONER CIRCUIT OPEN
PASSENGER SEAT BELT TENSIONER LINE 1 OR LINE 2 CIRCUIT OPEN
ACM, PASSENGER SEAT BELT TENSIONER CIRCUIT OPEN
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Passenger Seat Belt Tensioner connector. **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Passenger Seat Belt Tensioner connector. **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® display PASSENGER SBT CIRCUIT OPEN? Yes → Go To 3 No → Replace the Passenger Seat Belt Tensioner in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All

PASSENGER SEAT BELT TENSIONER CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Passenger SBT connector. Disconnect the Airbag control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool ACM Adaptor to the Airbag Control Module connector. Measure the resistance of the Passenger Seat Belt Tensioner Line 1 and Line 2 circuits between the Load Tool Adaptor and the Passenger SBT connector. Is the resistance below 1.0 ohms on either circuit ? Yes → Replace the Airbag Control Module in accordance with the Service information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1. No → Repair open or high resistance in Passenger Seat Belt Tensioner Line 1 or Line 2 circuits. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SEAT BELT TENSIONER CIRCUIT SHORT

When Monitored and Set Condition:

PASSENGER SEAT BELT TENSIONER CIRCUIT SHORT

When Monitored: With the ignition on, the ACM monitors the resistance between the Passenger Seat Belt Tensioner circuits.

Set Condition: When the ACM detects low resistance in the Passenger Seat Belt Tensioner circuits.

POSSIBLE CAUSES
PASSENGER SEAT BELT TENSIONER LINE 1 SHORT TO LINE 2
PASSENGER SEAT BELT TENSIONER CIRCUIT SHORT
ACM, PASSENGER SEAT BELT TENSIONER CIRCUIT SHORT
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Passenger Seat Belt Tensioner connector. **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Passenger Seat Belt Tensioner connector. **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show PASSENGER SEAT BELT TENSIONER CIRCUIT SHORT? Yes → Go To 3 No → Replace the Passenger Seat Belt Tensioner in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All

PASSENGER SEAT BELT TENSIONER CIRCUIT SHORT — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Passenger Seat Belt Tensioner connector. Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool ACM Adaptor to the Airbag Control Module connector(s). Measure the resistance between the Passenger SBT Line 1 and line 2 circuit at the Passenger Seat Belt Tensioner connector. Is the resistance below 10K ohms? Yes → Repair the Passenger Seat Belt Tensioner Line 1 short to Line 2 circuit. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with the Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SEAT BELT TENSIONER SHORT TO BATTERY

When Monitored and Set Condition:

PASSENGER SEAT BELT TENSIONER SHORT TO BATTERY

When Monitored: When the ignition is on, the ACM monitors the voltage of the Passenger Seat Belt Tensioner circuits.

Set Condition: When the ACM detects voltage on the Passenger Seat Belt Tensioner circuits.

POSSIBLE CAUSES
PASSENGER SEAT BELT TENSIONER SHORT TO BATTERY
PASSENGER SEAT BELT TENSIONER LINE 1 OR LINE 2 SHORT TO BATTERY
ACM, PASSENGER SBT SHORT TO BATTERY
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Passenger Seat Belt Tensioner connector. **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Passenger Seat Belt Tensioner connector. **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® display PASSENGER SBT SHORT TO BATTERY? Yes → Go To 3 No → Replace the Passenger Seat Belt Tensioner in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All

PASSENGER SEAT BELT TENSIONER SHORT TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Passenger Seat Belt Tensioner connector. Disconnect the Airbag Control Module Connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool ACM Adaptor to the Airbag Control Module connector(s). **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** Measure the voltage of the Passenger SBT Line 1 and Line 2 circuits between the Passenger Seat Belt Tensioner connector and ground. Is there any voltage on either circuit? Yes → Repair the Passenger Seat Belt Tensioner Line 1 or Line 2 short to battery. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with the Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SEAT BELT TENSIONER SHORT TO GROUND

When Monitored and Set Condition:

PASSENGER SEAT BELT TENSIONER SHORT TO GROUND

When Monitored: With the ignition on, the ACM monitors the resistance of the Passenger Seat Belt Tensioner circuits.

Set Condition: When the ACM detects a short to ground in either Passenger Seat Belt Tensioner circuits.

POSSIBLE CAUSES
PASSENGER SEAT BELT TENSIONER SHORT TO GROUND
PASSENGER SEAT BELT TENSIONER LINE 1 OR LINE 2 SHORTED TO GROUND
ACM, PASSENGER SBT SHORT TO GROUND
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Passenger Seat Belt Tensioner connector. **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Passenger Seat Belt Tensioner connector. **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® display PASSENGER SBT SHORT TO GROUND? Yes → Go To 3 No → Replace the Passenger Seat Belt Tensioner in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All

PASSENGER SEAT BELT TENSIONER SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Passenger Seat Belt Tensioner connector. Disconnect the Airbag Control Module Connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool ACM Adaptor to the Airbag Control Module connector(s). Measure the resistance of the Passenger Seat Belt Tensioner Line 1 and Line 2 circuits between the Passenger SBT connector and ground. Is the resistance below 10K Ohms on either circuit? Yes → Repair the Passenger Seat Belt Tensioner Line 1 or Line 2 short to ground. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with the Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SQUIB 1 CIRCUIT OPEN

When Monitored and Set Condition:

PASSENGER SQUIB 1 CIRCUIT OPEN

When Monitored: With the ignition on, the ACM monitors the resistance of the Passenger Squib 1 circuits.

Set Condition: When the ACM detects an open circuit or high resistance on the Passenger Squib 1 circuits.

POSSIBLE CAUSES
PAB SQUIB 1 CIRCUIT OPEN
PAB SQUIB 1 LINE 1 OR LINE 2 CIRCUIT OPEN
ACM, PAB SQUIB 1 CIRCUIT OPEN
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

PASSENGER SQUIB 1 CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Passenger Airbag connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the Load Tool to the Passenger Airbag connector(s). **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show PASSENGER SQUIB 1 CIRCUIT OPEN? Yes → Go To 3 No → Replace the Passenger Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Passenger Airbag connector(s). Disconnect the Airbag Control module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the Load Tool ACM Adaptor to the Airbag Control Module connector(s). Measure the resistance of the Passenger Squib 1 Line 1 and Line 2 circuit between the ACM Adaptor and the Passenger Airbag connector. Is the resistance below 1.0 ohms on both circuits? Yes → Replace the Airbag Control Module in accordance with Service Instructions. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1. No → Repair open or high resistance in Passenger Squib 1 Line 1 or Line 2 circuits. Perform AIRBAG VERIFICATION TEST - VER 1.	All

PASSENGER SQUIB 1 CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SQUIB 1 CIRCUIT SHORT

When Monitored and Set Condition:

PASSENGER SQUIB 1 CIRCUIT SHORT

When Monitored: With the ignition on, the ACM monitors the resistance between the Passenger Squib 1 circuits.

Set Condition: When the ACM detects low resistance in the Passenger Squib 1 circuits.

POSSIBLE CAUSES
PAB SQUIB 1 CIRCUIT SHORT
PAB SQUIB 1 LINE 1 SHORT TO LINE 2
ACM, PAB SQUIB 1 CIRCUIT SHORT
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Passenger Airbag connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Passenger Airbag connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show PASSENGER SQUIB 1 CIRCUIT SHORT? Yes → Go To 3 No → Replace the Passenger Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All

PASSENGER SQUIB 1 CIRCUIT SHORT — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Passenger Airbag connector(s). Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adapter to the Airbag Control Module connector(s). Measure the resistance between Passenger Squib 1 Line 1 and Line 2 circuits at the Passenger Airbag connector. Is the resistance below 10K ohms? Yes → Repair Passenger Squib 1 Line 1 circuit short to Passenger Squib 1 Line 2 circuit. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SQUIB 1 SHORT TO BATTERY

When Monitored and Set Condition:

PASSENGER SQUIB 1 SHORT TO BATTERY

When Monitored: With the ignition on, the ACM monitors the voltage on the Passenger Squib 1 circuits.

Set Condition: When the ACM detects voltage on the Passenger Squib 1 circuits.

POSSIBLE CAUSES
PAB SQUIB 1 CIRCUITS SHORT TO BATTERY
PAB SQUIB 1 LINE 1 OR LINE 2 SHORT TO BATTERY
ACM, PAB SQUIB 1 CIRCUIT SHORT TO BATTERY
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Passenger Airbag connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Passenger Airbag connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show PASSENGER SQUIB 1 CIRCUIT SHORT TO BATTERY? Yes → Go To 3 No → Replace Passenger Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All

PASSENGER SQUIB 1 SHORT TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Passenger Airbag connector(s). Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector(s). **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** Measure the voltage on the Passenger Squib 1 Line 1 and Line 2 circuits between the Passenger Airbag connector and ground. Is there any voltage present? Yes → Repair Passenger Squib 1 Line 1 or Line 2 circuit short to battery. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with Service Instructions. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SQUIB 1 SHORT TO GROUND

When Monitored and Set Condition:

PASSENGER SQUIB 1 SHORT TO GROUND

When Monitored: With the ignition on, the ACM monitors the resistance of the Passenger Squib 1 circuits.

Set Condition: When the ACM detects a short to ground in either Passenger Squib 1 circuits.

POSSIBLE CAUSES
PAB SQUIB 1 CIRCUITS SHORT TO GROUND
PAB SQUIB 1 LINE 1 OR LINE 2 SHORT TO GROUND
ACM, PAB SQUIB 1 SHORT TO GROUND
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

PASSENGER SQUIB 1 SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Passenger Airbag connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Passenger Airbag connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show PASSENGER SQUIB 1 SHORT TO GROUND? Yes → Go To 3 No → Replace the Passenger Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Passenger Airbag connector(s). Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector. Measure the resistance of the Passenger Squib 1 Line 1 or Line 2 circuit between the Passenger Airbag Module Connector and ground. Is the resistance below 10K ohms on either circuit? Yes → Repair Passenger Squib 1 Line 1 and Line 2 circuits for a short to ground. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All

PASSENGER SQUIB 1 SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SQUIB 2 CIRCUIT OPEN

When Monitored and Set Condition:

PASSENGER SQUIB 2 CIRCUIT OPEN

When Monitored: With the ignition on, the ACM monitors the resistance of the Passenger Squib 2 circuits.

Set Condition: When the ACM detects an open circuit or high resistance on the Passenger Squib 2 circuits.

POSSIBLE CAUSES
PASSENGER AIRBAG SQUIB 2 CIRCUIT OPEN
PASSENGER SQUIB 2 LINE 1 OR LINE 2 CIRCUIT OPEN
ACM, PASSENGER SQUIB 2 CIRCUIT OPEN
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

PASSENGER SQUIB 2 CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Passenger Airbag connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Passenger Airbag connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show PASSENGER SQUIB 2 CIRCUIT OPEN? Yes → Go To 3 No → Replace the Passenger Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Passenger Airbag connector(s). Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool adaptor to the Airbag Control Module connector(s). Measure the resistance of the Passenger Squib 2 Line 1 and Line 2 circuits between the ACM Adaptor and the Passenger Airbag connector. Is the resistance below 1.0 ohms on both circuits? Yes → Replace the Airbag Control Module in accordance with Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1. No → Repair open or high resistance in Passenger Squib 2 Line 1 or Line 2 circuits. Perform AIRBAG VERIFICATION TEST - VER 1.	All

PASSENGER SQUIB 2 CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SQUIB 2 CIRCUIT SHORT

When Monitored and Set Condition:

PASSENGER SQUIB 2 CIRCUIT SHORT

When Monitored: With the ignition on, the ACM monitors the resistance between the Passenger Squib 2 circuits.

Set Condition: When the ACM detects low resistance in the Passenger Squib 2 circuits.

POSSIBLE CAUSES
PASSENGER AIRBAG SQUIB 2 CIRCUIT SHORT
PASSENGER SQUIB 2 LINE 1 SHORT TO LINE 2
ACM, PASSENGER SQUIB 2 CIRCUIT SHORT
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Passenger Airbag connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Passenger Airbag connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show PASSENGER SQUIB 2 CIRCUIT SHORT? Yes → Go To 3 No → Replace Passenger Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All

PASSENGER SQUIB 2 CIRCUIT SHORT — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Passenger Airbag connector(s). Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector(s). Measure the resistance between the Passenger Squib 2 Line 1 and line 2 circuits at the Passenger Airbag connector(s). Is the resistance below 10K ohms? Yes → Repair Passenger Squib 2 Line 1 circuit short to Passenger Squib 2 Line 2 circuit. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SQUIB 2 SHORT TO BATTERY

When Monitored and Set Condition:

PASSENGER SQUIB 2 SHORT TO BATTERY

When Monitored: With the ignition on, the ACM monitors the voltage of the Passenger Squib 2 circuits.

Set Condition: When the ACM detects voltage on the Passenger Squib 2 circuits.

POSSIBLE CAUSES
PASSENGER AIRBAG SQUIB 2 CIRCUIT SHORT TO BATTERY
PASSENGER SQUIB 2 LINE 1 OR LINE 2 SHORT TO BATTERY
ACM, PASSENGER SQUIB 2 CIRCUIT SHORT TO BATTERY
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Passenger Airbag connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Passenger Airbag connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show PASSENGER SQUIB 2 SHORT TO BATTERY? Yes → Go To 3 No → Replace Passenger Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All

PASSENGER SQUIB 2 SHORT TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Passenger Airbag connector(s). Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** Measure the voltage on the Passenger Squib 2 Line 1 and Line 2 circuits between the Passenger Airbag connector and ground. Is there any voltage present? Yes → Repair Passenger Squib 2 Line 1 or Line 2 circuit shorted to battery. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
PASSENGER SQUIB 2 SHORT TO GROUND

When Monitored and Set Condition:

PASSENGER SQUIB 2 SHORT TO GROUND

When Monitored: With the ignition on, the ACM monitors the resistance of the Passenger Squib 2 circuits.

Set Condition: When the ACM detects a short to ground in either Passenger Squib 2 circuits.

POSSIBLE CAUSES
PASSENGER AIRBAG SQUIB 2 CIRCUIT SHORT TO GROUND
PASSENGER SQUIB 2 LINE 1 OR LINE 2 SHORT TO GROUND
ACM, PASSENGER SQUIB 2 CIRCUIT SHORT TO GROUND
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

PASSENGER SQUIB 2 SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Passenger Airbag connector(s). **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Passenger Airbag connector(s). **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the active Airbag Control Module DTC's. Does the DRBIII® show PASSENGER SQUIB 2 CIRCUIT SHORT TO GROUND? Yes → Go To 3 No → Replace the Passenger Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED AIRBAG FACE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Disconnect the Load Tool from the Passenger Airbag connector(s). Disconnect the Airbag Control Module connector(s). **NOTE: Check connectors - Clean repair as necessary.** Connect the appropriate Load Tool Adaptor to the Airbag Control Module connector(s). Measure the resistance of the Passenger Squib 2 Line 1 and Line 2 circuits between the Passenger Airbag Module connector and ground. Is the resistance below 10K ohms on either circuit? Yes → Repair Passenger Squib 2 Line 1 or Line 2 circuit for a short to ground. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Airbag Control Module in accordance with Service Information. WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All

PASSENGER SQUIB 2 SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
SEAT SQUIB CIRCUIT OPEN

When Monitored and Set Condition:

SEAT SQUIB CIRCUIT OPEN

When Monitored: With the ignition on, the SIACM monitors the resistance of the Seat Squib circuits.

Set Condition: When the SIACM detects an open circuit or high resistance on the Seat Squib circuits.

POSSIBLE CAUSES
SEAT AIRBAG CIRCUIT OPEN
SEAT SQUIB LINE 1 OR LINE 2 CIRCUIT OPEN
SIACM, SEAT SQUIB CIRCUIT OPEN
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure that the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** Select the appropriate module and DTC type combination: LEFT SIACM - ACTIVE DTC Go To 2 LEFT SIACM - STORED DTC Go To 4 RIGHT SIACM - ACTIVE DTC Go To 2 RIGHT SIACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

SEAT SQUIB CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Seat Airbag connector. **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED SEAT BACK PADDED SIDE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Seat Airbag connector. **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read the SIACM active DTC's. Does the DRB show SEAT SQUIB CIRCUIT OPEN? Yes → Go To 3 No → Replace Seat Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Load Tool from the Seat Airbag Connector. **NOTE: Check connectors - Clean and repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED SEAT BACK PADDED SIDE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Disconnect the Side Impact Airbag Control Module Connector. If the SIACM connector is equipped with shorting clips or bars connect the appropriate Airbag Load Tool SIACM Adapter to the connector. Measure the resistance of the Seat Squib Line 1 and Line 2 circuits between the Load Tool SIACM adaptor and the Seat Airbag connector. Is the resistance below 1.0 ohms on both circuits? Yes → Replace the Side Impact Airbag Control Module in accordance with the Service information. WARNING: IF THE SIDE IMPACT AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1. No → Repair open or high resistance in the Seat Squib Line 1 or Line 2 circuits. Perform AIRBAG VERIFICATION TEST - VER 1.	All

SEAT SQUIB CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
SEAT SQUIB CIRCUIT SHORT

When Monitored and Set Condition:

SEAT SQUIB CIRCUIT SHORT

When Monitored: With the ignition on, the SIACM monitors the resistance between the Seat Squib circuits.

Set Condition: When the SIACM detects a low resistance between the Seat Squib circuits.

POSSIBLE CAUSES
SEAT AIRBAG CIRCUIT SHORT
SEAT SQUIB LINE 1 SHORT TO LINE 2
SIACM, SEAT SQUIB CIRCUIT SHORT
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure that the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** Select the appropriate module and DTC type combination: LEFT SIACM - ACTIVE DTC Go To 2 LEFT SIACM - STORED DTC Go To 4 RIGHT SIACM - ACTIVE DTC Go To 2 RIGHT SIACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

SEAT SQUIB CIRCUIT SHORT — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Seat Airbag connector. **NOTE: Check connectors - Clean repair as necessary.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED SEAT BACK PADDED SIDE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Connect the appropriate Load Tool to the Seat Airbag connector. **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRB, read the SIACM active DTC's. Does the DRB show SEAT SQUIB CIRCUIT SHORT? Yes → Go To 3 No → Replace Seat Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Side Impact Airbag Control Module connector **NOTE: Check connectors - Clean and repair as necessary.** If the SIACM connector is equipped with shorting clips or bars connect the appropriate Airbag Load Tool Adapter to the connector. Measure the resistance between the Seat Squib Line 1 and Line 2 circuits at the Seat Airbag connector. Is the resistance below 10K ohms? Yes → Repair Seat Squib Line 1 shorted to Line 2 circuit. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Side Impact Airbag Control Module in accordance with Service Information. WARNING: IF THE SIDE IMPACT AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All

SEAT SQUIB CIRCUIT SHORT — Continued

TEST	ACTION	APPLICABILITY
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
SEAT SQUIB SHORT TO BATTERY

When Monitored and Set Condition:

SEAT SQUIB SHORT TO BATTERY

When Monitored: With the ignition on, the SIACM monitors the voltage of the Seat Squib circuits.

Set Condition: When the SIACM detects voltage on the Seat Squib circuits.

POSSIBLE CAUSES
SEAT AIRBAG SHORT TO BATTERY
SEAT SQUIB LINE 1 OR LINE 2 SHORTED TO BATTERY
SIACM, SEAT SQUIB SHORT TO BATTERY
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure that the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** Select the appropriate module and DTC type combination: LEFT SIACM - ACTIVE DTC Go To 2 LEFT SIACM - STORED DTC Go To 4 RIGHT SIACM - ACTIVE DTC Go To 2 RIGHT SIACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

SEAT SQUIB SHORT TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Seat Airbag connector. **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED SEAT BACK PADDED SIDE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Seat Airbag connector. **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read SIACM active DTC's. Does the DRBIII® display SEAT SQUIB SHORT TO BATTERY? Yes → Go To 3 No → Replace Seat Airbag in accordance with the Service Information. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED SEAT BACK PADDED SIDE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Disconnect the Airbag Load Tool. Disconnect the Side Impact Airbag Control Module connector. **NOTE: Check connectors - Clean and repair as necessary.** If the SIACM connector is equipped with shorting clips or bars connect the appropriate Airbag Load Tool SIACM Adapter to the connector. **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** Measure the voltage of the Seat Squib Line 1 and Line 2 circuits between the Seat Airbag connector and ground. Is any voltage present on either circuit? Yes → Repair Seat Squib Line 1 or Line 2 shorted to battery. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Side Impact Airbag Control Module in accordance with Service Information. WARNING: IF THE SIDE IMPACT AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All

SEAT SQUIB SHORT TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
SEAT SQUIB SHORT TO GROUND

When Monitored and Set Condition:

SEAT SQUIB SHORT TO GROUND

When Monitored: With the ignition on, the SIACM monitors the resistance of the Seat Squib circuits.

Set Condition: When the SIACM detects low resistance in the Seat Squib circuits.

POSSIBLE CAUSES
SEAT AIRBAG SHORT TO GROUND
SEAT SQUIB LINE 1 OR LINE 2 SHORTED TO GROUND
SIACM, SEAT SQUIB SHORT TO GROUND
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: Ensure that the battery is fully charged.** **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** Select the appropriate module and DTC type combination: LEFT SIACM - ACTIVE DTC Go To 2 LEFT SIACM - STORED DTC Go To 4 RIGHT SIACM - ACTIVE DTC Go To 2 RIGHT SIACM - STORED DTC Go To 4 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

SEAT SQUIB SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Seat Airbag connector. **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED SEAT BACK PADDED SIDE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** **NOTE: Check connectors - Clean and repair as necessary.** Connect the appropriate Load Tool to the Seat Airbag connector. **WARNING: TURN IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII®, read SIACM active DTC's. Does the DRBIII® display SEAT SQUIB SHORT TO GROUND? Yes → Go To 3 No → Replace the Seat Airbag in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1.	All
3	**WARNING: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** **WARNING: DO NOT PLACE AN INTACT UNDEPLOYED SEAT BACK PADDED SIDE DOWN ON A HARD SURFACE, THE AIRBAG WILL PROPEL INTO THE AIR IF ACCIDENTALLY DEPLOYED, AND COULD RESULT IN SERIOUS OR FATAL INJURY.** Disconnect the Airbag Load Tool. Disconnect the Side Impact Airbag Control Module connector. **NOTE: Check connectors - Clean and repair as necessary.** If the SIACM connector is equipped with shorting clips or bars connect the appropriate Airbag Load Tool SIAM Adapter to the connector. Measure the resistance of the Seat Squib Line 1 and Line 2 circuits between the Curtain Squib connector and ground. Is the resistance below 10K ohms on either circuit? Yes → Repair Seat Squib Line 1 or Line 2 shorted to ground. Perform AIRBAG VERIFICATION TEST - VER 1. No → Replace the Side Impact Airbag Control Module in accordance with Service Instructions. WARNING: IF THE SIDE IMPACT AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED. Perform AIRBAG VERIFICATION TEST - VER 1.	All

SEAT SQUIB SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
4	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
VEHICLE BODY STYLE UNKNOWN

When Monitored and Set Condition:

VEHICLE BODY STYLE UNKNOWN

When Monitored: When the ignition is on, the ACM monitors the PCI Bus for the VIN message containing the vehicle body style from the Powertrain Control Module. The PCM transmits the VIN message every 14 seconds.

Set Condition: With ignition on, If the ACM does not receive 2 consecutive matching (vehicle Body Style) VIN messages on the bus the code will set.

POSSIBLE CAUSES
PCM, PCI COMMUNICATION FAILURE
VEHICLE BODY STYLE UNKNOWN
ACM, VEHICLE BODY STYLE UNKNOWN
STORED CODE OR INTERMITTENT CONDITION
ACTIVE CODE PRESENT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Ensure the battery is fully charged. **NOTE: For the purpose of this test, the AECM and ORC modules will be referred to as an ACM.** SELECT ACTIVE or STORED DTC: ACM - ACTIVE DTC Go To 2 ACM - STORED DTC Go To 5 **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	Connect the DRBIII® to the data link connector and select PASSIVE RESTRAINTS, AIRBAG, SYSTEM TEST. With the DRBIII®, read the PCM Active on the Bus:. Does the DRB show PCM ACTIVE ON THE BUS:? Yes → Go To 3 No → Refer to category COMMUNICATION CATEGORY and select the related symptom. Perform AIRBAG VERIFICATION TEST - VER 1.	All

VEHICLE BODY STYLE UNKNOWN — Continued

TEST	ACTION	APPLICABILITY
3	With the DRB select ENGINE, MISCELLANEOUS, SELECT MISC FUNCTION, and then CHECK VIN to read the Vehicle Identification Number in the Powertrain Control Module. Compare the VIN displayed on the DRB screen and the Vehicle VIN plate. Does the VIN plate and the PCM VIN match? Yes → Go To 4 No → Replace the Powertrain Control Module and program with the correct vehicle identification number. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	**WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** **WARNING: IF THE AIRBAG CONTROL MODULE IS DROPPED AT ANY TIME, IT MUST BE REPLACED.** If there are no possible causes remaining, view repair. Repair Replace the Airbag Control Module in accordance with Service Instructions. WARNING: make sure the battery is disconnected and wait 2 minutes before proceeding. Perform AIRBAG VERIFICATION TEST - VER 1. **NOTE: When reconnecting airbag system components the Ignition must be turned off and the Battery must be disconnected.**	All
5	With the DRBIII®, record and erase all DTC's from all Airbag modules. If equipped with Passenger Airbag On - Off switch, read the DTC's in all switch positions. If any ACTIVE codes are present they must be resolved before diagnosing any stored codes. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Look for chaffed, pierced, pinched, or partially broken wires and broken, bent, pushed out, spread, corroded, or contaminated terminals. The following additional checks may assist you in identifying a possible intermittent problem. Reconnect any disconnected components and harness connector. **WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** With the DRBIII® monitor active codes as you work through the following steps. **WARNING: MAINTAIN A SAFE DISTANCE FROM ALL AIRBAGS WHILE PERFORMING THE FOLLOWING STEPS.** Wiggle the wiring harness and connectors of the related airbag circuit or component. If codes are related to the Driver circuits, rotate the steering wheel from stop to stop. You have just attempted to simulate the condition that initially set the trouble code message. Did the DTC become active? Yes → Select appropriate symptom from Symptom List. No → No problem found at this time. Erase all codes before returning vehicle to customer.	All

Symptom:
*AIRBAG INDICATOR ON WITHOUT ACTIVE TROUBLE CODES

POSSIBLE CAUSES
AIRBAG WARNING INDICATOR ON WITHOUT ACTIVE TROUBLE CODES
INSTRUMENT CLUSTER PROBLEMS

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure the battery is fully charged.** Turn the ignition on. Make sure that all active DTC's have been repaired before performing this procedure. With the DRBIII® select the PASSIVE RESTRAINTS, AIRBAG, MONITOR DISPLAY and read the WARNING LAMP STATES. With no active DTCs, Does the LAMP REQ by ACM monitor show ON? Yes → WARNING: MAKE SURE THE BATTERY IS DISCONNECTED, THEN WAIT TWO MINUTES BEFORE PROCEEDING. Replace the Airbag Control Module in accordance with Service Instructions. Perform AIRBAG VERIFICATION TEST - VER 1. No → Refer to INSTRUMENT CLUSTER CATEGORY symptom list for problems related to Instrument Cluster. Perform AIRBAG VERIFICATION TEST - VER 1. **NOTE: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

Symptom:
ALL OUTPUTS SHORT

When Monitored and Set Condition:

ALL OUTPUTS SHORT

When Monitored: Ignition in RUN and IOD fuse installed.

Set Condition: The radio has sensed a short on the output for more than 10 seconds.

POSSIBLE CAUSES
DETERMINE FAULT
FRONT SHORTED SPEAKER
REAR SHORTED SPEAKER
(+) CIRCUIT SHORTED TO GROUND
(-) CIRCUIT SHORTED TO GROUND
SPEAKER (+) & (-) CIRCUITS SHORTED TOGETHER
SPEAKER SECTION OF RADIO

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Turn the Radio on. With the DRBIII®, erase the audio DTC's. Cycle the ignition switch from off to on and wait 10 seconds. With the DRBIII®, read the audio DTC's. Does the DRBIII® display ALL OUTPUTS SHORT? Yes → Go To 2 No → Refer to the wiring diagrams located in the service information to help isolate a possible intermittent short. Perform BODY VERIFICATION TEST - VER 1.	All

ALL OUTPUTS SHORT — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. **NOTE: Perform this procedure after disconnecting each front speaker connector.** Disconnect each front speaker harness connector one at a time. Turn the ignition on. Turn the radio on. With the DRBIII®, erase the audio DTCs. Cycle the ignition switch from off to on and wait 10 seconds. With the DRBIII®, read DTC's. Does the DRBIII® display ALL OUTPUTS SHORT with all the front speakers disconnected? Yes → Go To 3 No → Replace the Speaker that when disconnected the DTC did not reset. Note: On the premium system, check the I/P speaker circuits between the front door speaker and the I/P speaker for a short to ground or shorted together condition before replacing speaker. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. **NOTE: Perform this procedure after disconnecting each rear speaker connector.** Disconnect each rear speaker harness connector one at a time. Turn the ignition on. Turn the radio on. With the DRBIII®, erase the audio DTCs. Cycle the ignition switch from off to on and wait 10 seconds. With the DRBIII®, read DTC's. Does the DRBIII® display ALL OUTPUTS SHORT with all the rear speakers disconnected? Yes → Go To 4 No → Replace Speaker that when disconnected the DTC did not reset. Note: On the premium system, check the rear speaker ckts between the rear door speaker and the rear pillar speaker for a short to ground or shorted together condition before replacing speaker. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect each front and rear speaker harness connector. Disconnect the Radio C1 harness connector. Measure the resistance between ground and each speaker (+) circuit. Is the resistance below 1000.0 (1K) ohms? Yes → Repair the speaker (+) circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All

ALL OUTPUTS SHORT — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect each front and rear speaker harness connector. Disconnect the Radio C1 harness connector. Measure the resistance between ground and each speaker (-) circuit. Is the resistance below 1000.0 (1K) ohms? Yes → Repair the speaker (-) circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off. Disconnect each front and rear speaker harness connector. Disconnect the Radio C1 harness connector. Measure the resistance between each speaker (+) circuit and each speaker (-) circuit. Is the resistance below 1000.0 (1K) ohms for any of the measurements? Yes → Repair the speaker circuits shorted together. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Radio. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

CASSETTE PLAYER INOP
CD MECHANICAL FAILURE
REAR TRANSMITTER FAILURE
***AM/FM SWITCH INOPERATIVE**
***ANY STATION PRESET SWITCH INOPERATIVE**
***BALANCE INOPERATIVE**
***CD EJECT SWITCH INOPERATIVE**
***EQUALIZER INOPERATIVE**
***FADER INOPERATIVE**
***FF/RW SWITCH INOPERATIVE**
***HOUR/MINUTE SWITCHES INOPERATIVE**
***PAUSE/PLAY SWITCH INOPERATIVE**
***PWR SWITCH INOPERATIVE**
***SCAN SWITCH INOPERATIVE**
***SEEK SWITCH INOPERATIVE**
***SET SWITCH INOPERATIVE**
***TAPE EJECT SWITCH INOPERATIVE**
***TIME SWITCH INOPERATIVE**
***TUNE SWITCH INOPERATIVE**

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be CASSETTE PLAYER INOP.

When Monitored and Set Condition:

CASSETTE PLAYER INOP

When Monitored: Continuously with the ignition and radio turned on.

Set Condition: The code will set if the radio detects a internal cassette failure.

CD MECHANICAL FAILURE

When Monitored: Continuously with the ignition and CD player turned on.

Set Condition: The code will set if the radio detects a CD mechanical failure.

REAR TRANSMITTER FAILURE

When Monitored: Continuously with the ignition and radio turned on.

Set Condition: The code will set if the radio detects a internal rear transmitter failure.

POSSIBLE CAUSES
INTERNAL FAILURE

CASSETTE PLAYER INOP — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: If a DTC is set, erase the DTC and attempt to reset the DTC. If DTC resets, follow this test.** This is an internal radio failure. View repair Repair Replace the Radio. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
CD CHANGER MECHANICAL FAILURE

When Monitored and Set Condition:

CD CHANGER MECHANICAL FAILURE

When Monitored: Continuously with the ignition and CD Changer turned on.

Set Condition: The code will set if the CD Changer detects a mechanical failure.

POSSIBLE CAUSES
INTERNAL FAILURE

TEST	ACTION	APPLICABILITY
1	**NOTE: Erase DTC and attempt to reset. If DTC resets, follow this test.** This is an internal CD Changer failure. View repair Repair Replace the CD Changer. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
CD CHANGER READ FAILURE

When Monitored and Set Condition:

CD CHANGER READ FAILURE

When Monitored: Continuously with the ignition and CD Changer turned on.

Set Condition: The code will set if a CD that is not formatted as a music CD is installed in the CD Changer.

POSSIBLE CAUSES
CD CHANGER READ FAILURE

TEST	ACTION	APPLICABILITY
1	Replace the problem CD with a good, clean, unscratched, music CD. Turn the radio on and select the good CD. With the DRBIII®, read DTC's. Does the DRBIII® display CD CHANGER READ FAILURE? Yes → Replace the CD Changer. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
CD CHANGER TEMPERATURE HIGH

When Monitored and Set Condition:

CD CHANGER TEMPERATURE HIGH

When Monitored: Continuously with the ignition and CD Changer turned on.

Set Condition: The code will set if the temperature inside the CD Changer is above +65° C (+145° F).

POSSIBLE CAUSES
HIGH TEMPERATURE FAILURE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the audio DTC's. Start the engine and allow the engine to reach normal operating temperature. If the vehicle has been in the hot sunlight or extreme cold move the vehicle indoors and open the doors to allow the inside temperature to stabilize. The CD Changer will operate between -23° C and 65° C (-10° F and +145° F). With the DRBIII®, read DTC's. Does the DRBIII® display CD CHANGER TEMPERATURE HIGH? Yes → Replace the CD Changer. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
CD PLAY FAILURE

When Monitored and Set Condition:

CD PLAY FAILURE

When Monitored: Continuously with the ignition and the radio CD player turned on.

Set Condition: The code will set if a CD that is not formatted as a music CD or is scratched, dirty so the radio can not play the CD.

POSSIBLE CAUSES
CD PLAY FAILURE

TEST	ACTION	APPLICABILITY
1	Replace the problem CD with a good, clean, unscratched, music CD. Turn the radio CD player on. With the DRBIII®, read DTC's. Does the DRBIII® display CD PLAY FAILURE? Yes → Replace the Radio. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
CD READ FAILURE

When Monitored and Set Condition:

CD READ FAILURE

When Monitored: Continuously with the ignition and the radio CD player turned on.

Set Condition: The code will set if a CD that is not formatted as a music CD is installed in the radio CD player.

POSSIBLE CAUSES
CD READ FAILURE

TEST	ACTION	APPLICABILITY
1	Replace the problem CD with a good, clean, unscratched, music CD. Turn the radio CD player on. With the DRBIII®, read DTC's. Does the DRBIII® display CD READ FAILURE? Yes → Replace the Radio. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
CD TEMPERATURE HIGH

When Monitored and Set Condition:

CD TEMPERATURE HIGH

When Monitored: Continuously with the ignition and the radio CD player turned on.

Set Condition: The code will set if the temperature inside the radio CD player is above +70° C (+156° F).

POSSIBLE CAUSES
HIGH TEMPERATURE FAILURE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the audio DTC's. Start the engine and allow the engine to reach normal operating temperature. If the vehicle has been in the hot sunlight or extreme cold move the vehicle indoors and open the doors to allow the inside temperature to stabilize. The radio CD player will operate between -23° C and 70° C (-10° F and +156° F). With the DRBIII®, read DTC's. Does the DRBIII® display CD TEMPERATURE HIGH? Yes → Replace the Radio. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
LOW VOLTAGE LEVEL

When Monitored and Set Condition:

LOW VOLTAGE LEVEL

When Monitored:

Set Condition: The radio detects lower than normal voltage.

POSSIBLE CAUSES
CHECK CHARGING SYSTEM
CHECK VOLTAGE LEVEL AT RADIO
RADIO

TEST	ACTION	APPLICABILITY
1	Check the charging system in accordance with the service information. Is the charging system operating properly? Yes → Go To 2 No → Refer to the appropriate service information and repair as necessary. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Radio harness connector. Start the engine. Measure the voltage of each Fused B+ circuit and the Fused Ignition Switch Output circuit. Is the voltage above or approximately 14 volts for each measurement? Yes → Go To 3 No → Repair the circuit for high resistance. Perform BODY VERIFICATION TEST - VER 1.	All
3	**Note: Reconnect all previously disconnected components.** Turn the ignition and Radio on. With the DRBIII®, erase the audio DTC's. Start the engine. With the DRBIII®, read the audio DTC's. Did this DTC reset? Yes → Replace the Radio. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom List:

NBS OUTPUT 1 OPEN
NBS OUTPUT 2 OPEN

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be NBS OUTPUT 1 OPEN.

When Monitored and Set Condition:

NBS OUTPUT 1 OPEN

When Monitored: Continuously.

Set Condition: If the FCM detects no voltage present on the NBS relay control circuit.

NBS OUTPUT 2 OPEN

When Monitored: Continuously.

Set Condition: If the FCM detects no voltage present on the NBS relay control circuit.

POSSIBLE CAUSES
CHECK DTCS
FUSED B+ CIRCUIT OPEN
NBS RELAY OPEN
NBS RELAY CONTROL CIRCUIT OPEN
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: If neither DTC will reset or is active, refer to the wiring diagrams located in the service information to help isolate a possible intermittent condition.** With the DRB, read the FCM DTC's. Are both the NBS Output 1 Open and the NBS Output 2 Open DTC's set? Yes → Go To 2 No → Replace the Front Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
2	Remove the NBS Relay from the IPM. Using a 12-volt test light connected to ground, probe cavity 86 of the NBS Relay connector. Is the test light illuminated? Yes → Go To 3 No → Check IPM Fuse #14 for an open. If OK, replace the Integrated Power Module (IPM). Perform BODY VERIFICATION TEST - VER 1.	All

NBS OUTPUT 1 OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Install a substitute relay in place of the NBS Relay. With the DRB, erase DTCs. Turn the ignition on. Turn the Radio on. With the DRB, read DTCs. Did these DTCs reset? Yes → Go To 4 No → Replace the original NBS Relay. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Remove the Front Control Module from the IPM. Remove the NBS Relay from the IPM. Measure the resistance of the NBS Relay Control circuit between the FCM connector cavity 11 and the NBS Relay connector cavity 85. Is the resistance below 5.0 ohms? Yes → Replace the Front Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Replace the power distribution center portion of the IPM in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

NBS OUTPUT 1 SHORT TO BATT
NBS OUTPUT 2 SHORT TO BATT

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be NBS OUTPUT 1 SHORT TO BATT.

When Monitored and Set Condition:

NBS OUTPUT 1 SHORT TO BATT

When Monitored: With the ignition on and the Radio on.

Set Condition: The FCM detects excessive current when attempting to close the NBS relay.

NBS OUTPUT 2 SHORT TO BATT

When Monitored: With the ignition on and the Radio on.

Set Condition: The FCM detects excessive current when attempting to close the NBS relay.

POSSIBLE CAUSES
CHECK DTCS
NBS RELAY SHORTED
NBS RELAY CONTROL CIRCUIT SHORTED TO BATTERY
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Turn the Radio on. **NOTE: If neither DTC will reset or is active, refer to the wiring diagrams located in the service information to help isolate a possible intermittent condition.** With the DRB, read the FCM DTC's. Are both the NBS Output 1 Short to Batt and the NBS Output 2 Short to Batt DTC's set? Yes → Go To 2 No → Replace the Front Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

NBS OUTPUT 1 SHORT TO BATT — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. Install a substitute relay in place of the NBS Relay. With the DRB, erase DTCs. Turn the ignition on. Turn the Radio on. With the DRB, read DTCs. Did these DTCs reset? Yes → Go To 3 No → Replace the original NBS Relay. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Remove the Front Control Module from the IPM. Remove the NBS Relay from the IPM. Turn the ignition on. Using a 12-volt test light connected to ground, probe the NBS Relay connector cavity 85. Is the test light illuminated? Yes → Replace the power distribution center portion of the IPM in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
NO ANTENNA CONNECTION

When Monitored and Set Condition:

NO ANTENNA CONNECTION

When Monitored: With the ignition on and the radio in seek up/down mode.

Set Condition: With the radio in seek or scan mode for two minutes and the radio does not detect an antenna connection or does not receive a radio station signal.

POSSIBLE CAUSES
BAD ANTENNA CONNECTION
TEST ANTENNA
RADIO

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Radio Antenna connector. Inspect the Radio Antenna connection. Was the Antenna connection clean and tight? Yes → Go To 2 No → Repair Antenna connection as needed. Perform BODY VERIFICATION TEST - VER 1.	All
2	Refer to the Audio System in the service information and test the Antenna in accordance with the service procedure. Is the Antenna ok? Yes → Go To 3 No → Repair or replace the Antenna assembly as necessary. Perform BODY VERIFICATION TEST - VER 1.	All
3	**Note: Reconnect all previously disconnected components.** Turn the ignition and Radio on. With the DRBIII®, erase the audio DTC's, put the radio in seek up and seek down mode for approximately 2 minutes before proceeding. With the DRBIII®, read the audio DTC's. Did this DTC reset? Yes → Replace the Radio. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
POWER AMP SHUTDOWN

When Monitored and Set Condition:

POWER AMP SHUTDOWN

When Monitored: Ignition in RUN and IOD fuse installed.

Set Condition: The radio has sensed a short on the output for more than 10 seconds.

POSSIBLE CAUSES
DETERMINE FAULT
FRONT SHORTED SPEAKER
REAR SHORTED SPEAKER
(+) CIRCUIT SHORTED TO GROUND
(-) CIRCUIT SHORTED TO GROUND
SPEAKER (+) & (-) CIRCUITS SHORTED TOGETHER
SPEAKER SECTION OF RADIO

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Turn the Radio on. With the DRBIII®, erase the audio DTC's. Cycle the ignition switch from off to on and wait 10 seconds. With the DRBIII®, read the audio DTC's. Does the DRBIII® display POWER AMP SHUTDOWN? Yes → Go To 2 No → Refer to the wiring diagrams located in the service information to help isolate a possible intermittent short. Perform BODY VERIFICATION TEST - VER 1.	All

POWER AMP SHUTDOWN — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. **NOTE: Perform this procedure after disconnecting each front speaker connector.** Disconnect each front speaker harness connector one at a time. Turn the ignition on. Turn the radio on. With the DRBIII®, erase the audio DTCs. Cycle the ignition switch from off to on and wait 10 seconds. With the DRBIII®, read DTC's. Does the DRBIII® display POWER AMP SHUTDOWN with all the front speakers disconnected? Yes → Go To 3 No → Replace the Speaker that when disconnected the DTC did not reset. Note: On the premium system, check the I/P speaker circuits between the front door speaker and the I/P speaker for a short to ground or shorted together condition before replacing speaker. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. **NOTE: Perform this procedure after disconnecting each rear speaker connector.** Disconnect each rear speaker harness connector one at a time. Turn the ignition on. Turn the radio on. With the DRBIII®, erase the audio DTCs. Cycle the ignition switch from off to on and wait 10 seconds. With the DRBIII®, read DTC's. Does the DRBIII® display POWER AMP SHUTDOWN with all the rear speakers disconnected? Yes → Go To 4 No → Replace Speaker that when disconnected the DTC did not reset. Note: On the premium system, check the rear speaker ckts between the rear door speaker and the rear pillar speaker for a short to ground or shorted together condition before replacing speaker. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect each front and rear speaker harness connector. Disconnect the Radio C1 harness connector. Measure the resistance between ground and each speaker (+) circuit. Is the resistance below 1000.0 (1K) ohms? Yes → Repair the speaker (+) circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All

POWER AMP SHUTDOWN — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect each front and rear speaker harness connector. Disconnect the Radio C1 harness connector. Measure the resistance between ground and each speaker (-) circuit. Is the resistance below 1000.0 (1K) ohms? Yes → Repair the speaker (-) circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off. Disconnect each front and rear speaker harness connector. Disconnect the Radio C1 harness connector. Measure the resistance between each speaker (+) circuit and each speaker (-) circuit. Is the resistance below 1000.0 (1K) ohms for any of the measurements? Yes → Repair the speaker circuits shorted together. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Radio. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
REMOTE RADIO SWITCH STUCK

When Monitored and Set Condition:

REMOTE RADIO SWITCH STUCK

When Monitored: With the ignition on.

Set Condition: The code will set if the BCM detects a stuck switch or a short to ground on the Radio Control MUX circuit for more than 10 seconds.

POSSIBLE CAUSES
INTERMITTENT CONDITION
LEFT REMOTE RADIO SWITCH SHORTED TO GROUND
RIGHT REMOTE RADIO SWITCH SHORTED TO GROUND
RADIO CONTROL MUX CIRCUIT SHORTED TO GROUND AT THE SWITCH
RADIO CONTROL MUX CIRCUIT SHORTED TO THE RETURN CIRCUIT AT THE SWITCH
CLOCKSPRING SHORTED TO GROUND
RADIO CONTROL MUX CIRCUIT SHORTED TO GROUND
RADIO CONTROL MUX CKT SHORTED TO THE RADIO CONTROL MUX RETURN CKT
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRB, read DTC's. Did this DTC reset? Yes → Go To 2 No → Refer to the wiring diagrams located in the service information to help isolate a possible intermittent short. Perform BODY VERIFICATION TEST - VER 1.	All
2	**WARNING: Turn the ignition off, disconnect the battery and wait 2 minutes before proceeding.** **CAUTION: Do not place an intact undeployed airbag module face down on a hard surface, the airbag module will propel into the air if accidently deployed.** Remove the Driver Airbag Module. Disconnect the Left Remote Radio Switch harness connector. Turn the ignition on, reconnect the battery. With the DRB, enter Body Computer then Sensors and monitor the Radio Control SW voltage. Is the voltage approximately 5.0 volts? Yes → Replace the Left Remote Radio Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

REMOTE RADIO SWITCH STUCK — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: Turn the ignition off, disconnect the battery and wait 2 minutes before proceeding.** **CAUTION: Do not place an intact undeployed airbag module face down on a hard surface, the airbag module will propel into the air if accidently deployed.** Remove the Driver Airbag Module. Disconnect the Right Remote Radio Switch harness connector. Turn the ignition on, reconnect the battery. With the DRB, enter Body Computer then Sensors and monitor the Radio Control SW voltage Is the voltage approximately 5.0 volts? Yes → Replace the Right Remote Radio Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the Clockspring C4 harness connector. Turn the ignition on. With the DRB, enter Body Computer then Sensors and monitor the Radio Control SW voltage. Is the voltage approximately 5.0 volts? Yes → Go To 5 No → Go To 6	All
5	Turn the ignition off. Disconnect the Clockspring C4 harness connector. **NOTE: Ensure both remote radio switches are disconnected.** Measure the resistance between ground and each Radio Control MUX circuit at the clockspring C4 harness connector. Is the resistance below 5.0 ohms? Yes → Repair the Radio Control MUX circuit for a short to ground between the clockspring and the remote radio switches. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Radio Control MUX circuit for a short to the Radio Control MUX Return circuit between the clockspring and the remote radio switches. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the Clockspring C1 harness connector. Turn the ignition on. With the DRB, enter Body Computer then Sensors and monitor the Radio Control SW voltage. Is the voltage approximately 5.0 volts? Yes → Replace the Clockspring in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All

REMOTE RADIO SWITCH STUCK — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Disconnect the Clockspring C1 harness connector. Disconnect the BCM C5 harness connector. Measure the resistance between ground and the Radio Control MUX circuit. Is the resistance below 5.0 ohms? Yes → Repair the Radio Control MUX circuit for a short to ground between the clockspring and the BCM. Perform BODY VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off. Disconnect the Clockspring C1 harness connector. Disconnect the BCM C4 and C5 harness connectors. Measure the resistance between the Radio Control MUX circuit and the Radio Control MUX Return circuit. Is the resistance below 5.0 ohms? Yes → Repair the Radio Control MUX circuit for a short to the Radio Control MUX Return circuit between the clockspring and the BCM. Perform BODY VERIFICATION TEST - VER 1. No → Go To 9	All
9	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
*REMOTE RADIO CONTROLS INOPERATIVE

POSSIBLE CAUSES
OPEN RADIO CONTROL MUX CIRCUIT AT THE SWITCH
OPEN RADIO CONTROL MUX RETURN CIRCUIT AT THE SWITCH
REMOTE RADIO SWITCH
BODY CONTROL MODULE - INTERNAL SHORT
OPEN CLOCKSPRING
OPEN RADIO CONTROL MUX CIRCUIT
OPEN RADIO CONTROL MUX RETURN CIRCUIT
BODY CONTROL MODULE - OPEN INTERNAL

TEST	ACTION	APPLICABILITY
1	**NOTE: If any DTCs are set, diagnose the DTC before continuing.** Turn the ignition and radio on. Operate both remote radio switches. Are both remote radio control switches inoperative? Yes → Go To 2 No → Go To 7	All
2	Turn the ignition off. Disconnect the Clockspring C1 harness connector. Turn the ignition on. With the DRB, enter Body Computer then Sensors and monitor the Radio Control SW voltage. Is the voltage approximately 5.0 volts? Yes → Go To 3 No → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Clockspring C1 harness connector. Turn the ignition on. Connect a jumper wire between cavity 1 and cavity 2 at the Clockspring C1 connector. With the DRB, enter Body Computer then Sensors and monitor the Radio Control SW voltage. Is the voltage approximately 0.0 volts? Yes → Check the circuits between the clockspring connector and the splice for an open. If ok, replace the Clockspring. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

*REMOTE RADIO CONTROLS INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Clockspring C1 harness connector. Disconnect the BCM C5 harness connector. Measure the resistance of the Radio Control MUX circuit between the BCM connector and the Clockspring connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Radio Control MUX circuit for an open between the clockspring and the BCM. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the Clockspring C1 harness connector. Disconnect the BCM C4 harness connector. Measure the resistance of the Radio Control MUX Return circuit between the BCM connector and the Clockspring connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Radio Control MUX Return circuit for an open between the clockspring and the BCM. Perform BODY VERIFICATION TEST - VER 1.	All
6	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All
7	**WARNING: Turn the ignition off, disconnect the battery and wait 2 minutes before proceeding.** **CAUTION: Do not place an intact undeployed airbag module face down on a hard surface, the airbag module will propel into the air if accidently deployed.** Remove the Driver Airbag Module. Disconnect both remote radio switch harness connectors. Turn the ignition on, reconnect the battery. Measure the voltage of the Radio Control MUX circuit at the inoperative remote radio switch. Is the voltage approximately 5.0 volts? Yes → Go To 8 No → Repair the Radio Control MUX circuit for an open between the inoperative switch and the splice. Perform BODY VERIFICATION TEST - VER 1.	All

*REMOTE RADIO CONTROLS INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
8	**WARNING: Turn the ignition off, disconnect the battery and wait 2 minutes before proceeding.** **CAUTION: Do not place an intact undeployed airbag module face down on a hard surface, the airbag module will propel into the air if accidently deployed.** Remove the Driver Airbag Module. Disconnect both remote radio switch harness connectors. Disconnect the Clockspring C4 harness connector. Measure the resistance of the Radio Control MUX Return circuit between the inoperative remote radio switch and the clockspring connector. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the Radio Control MUX Return circuit for an open between the inoperative switch and the clockspring. Perform BODY VERIFICATION TEST - VER 1.	All
9	If there are no possible causes remaining, view repair. Repair Replace the inoperative Remote Radio Switch. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
AC PRESSURE TOO HIGH (ACTIVE)

When Monitored and Set Condition:

AC PRESSURE TOO HIGH (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed. Also monitored during the Cooldown Test.

Set Condition: This DTC is set if the ATC reads the A/C Pressure Sensor value and it is above 250 A/D counts.

POSSIBLE CAUSES
PCM/ECM DTC(S) PRESENT
ATC

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure that the A/C refrigerant system is properly charged per the Service Information.** Turn the ignition on. With the DRBIII®, read PCM/ECM DTCs. Does the DRBIII® display any PCM/ECM DTCs? Yes → Refer to Powertrain Diagnostic information for the related symptom(s). With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

AC PRESSURE TOO HIGH (STORED)
DRIVER BLEND DOOR NOT RESPONDING (STORED)
DRIVER BLEND DOOR RANGE TOO LARGE (STORED)
DRIVER BLEND DOOR TRAVEL TOO SMALL (STORED)
EVAP TEMP SENSOR OPEN (STORED)
EVAP TEMP SENSOR SHORTED (STORED)
FRONT IR SENSOR AND CONTROL HEAD MISMATCH (STORED)
FRONT IR SENSOR CHANGE TOO LARGE (STORED)
FRONT IR SENSOR HIGH (STORED)
FRONT IR SENSOR LOW (STORED)
FRONT IR SENSOR NOT CALIBRATED (STORED)
FRONT KEYBOARD COMMUNICATION FAULT (STORED)
FRONT KEYBOARD FAULT (STORED)
FRONT MODE DOOR NOT RESPONDING (STORED)
FRONT MODE DOOR TRAVEL TOO LARGE (STORED)
FRONT MODE DOOR TRAVEL TOO SMALL (STORED)
PASS BLEND DOOR NOT RESPONDING (STORED)
PASS BLEND DOOR TRAVEL TOO LARGE (STORED)
PASS BLEND DOOR TRAVEL TOO SMALL (STORED)
PCI BUS SHORTED HIGH (STORED)
PCI BUS SHORTED LOW (STORED)
REAR BLEND DOOR NOT RESPONDING (STORED)
REAR BLEND DOOR RANGE TOO LARGE (STORED)
REAR BLEND DOOR TRAVEL TOO SMALL (STORED)
REAR FAN POT OPEN (STORED)
REAR FAN POT SHORTED (STORED)
REAR KEYBOARD FAULT (STORED)
REAR MODE DOOR NOT RESPONDING (STORED)
REAR MODE DOOR TRAVEL TOO LARGE (STORED)
REAR MODE DOOR TRAVEL TOO SMALL (STORED)
REAR MODE POT OPEN (STORED)
REAR MODE POT SHORTED (STORED)
RECIRC DOOR NOT RESPONDING (STORED)
RECIRC DOOR TRAVEL TOO LARGE (STORED)
RECIRC DOOR TRAVEL TOO SMALL (STORED)

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be AC PRESSURE TOO HIGH (STORED).

When Monitored and Set Condition:

AC PRESSURE TOO HIGH (STORED) — Continued

AC PRESSURE TOO HIGH (STORED)

When Monitored: With the ignition on and the IOD fuse installed. Also monitored during the Cooldown Test.

Set Condition: This DTC is set if the ATC reads the A/C Pressure Sensor value and it is above 250 A/D counts.

DRIVER BLEND DOOR NOT RESPONDING (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC does not receive feedback pulses within 5 seconds of the drive voltage being applied.

DRIVER BLEND DOOR RANGE TOO LARGE (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is greater than expected.

DRIVER BLEND DOOR TRAVEL TOO SMALL (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is less than expected.

EVAP TEMP SENSOR OPEN (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is displayed if the ATC detects an abnormally high voltage on the evaporator temperature sensor signal.

EVAP TEMP SENSOR SHORTED (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is displayed if the ATC detects an abnormally low voltage on the evaporator temperature sensor signal.

FRONT IR SENSOR AND CONTROL HEAD MISMATCH (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the correct ATC head is not paired with the correct IR module (i.e. left hand ATC head paired with right hand IR module).

FRONT IR SENSOR CHANGE TOO LARGE (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC will set if the ATC head detects a temperature difference greater than 50 degrees between the front IR sensors.

AC PRESSURE TOO HIGH (STORED) — Continued

FRONT IR SENSOR HIGH (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC reads the Front IR Sensor value and it is above 250 A/D counts.

FRONT IR SENSOR LOW (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC reads the Front IR Sensor value and it is below 5 A/D counts.

FRONT IR SENSOR NOT CALIBRATED (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC cannot read the IR sensor values or the IR sensor values are not within a defined range of the HVAC air door motor counts.

FRONT KEYBOARD COMMUNICATION FAULT (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC will set if there is an internal fault in the ATC head.

FRONT KEYBOARD FAULT (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC will set if there is an internal fault in the ATC head.

FRONT MODE DOOR NOT RESPONDING (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC does not receive feedback pulses within 5 seconds of the drive voltage being applied.

FRONT MODE DOOR TRAVEL TOO LARGE (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is greater than expected.

FRONT MODE DOOR TRAVEL TOO SMALL (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is less than expected.

PASS BLEND DOOR NOT RESPONDING (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC does not receive feedback pulses within 5 seconds of the drive voltage being applied.

AC PRESSURE TOO HIGH (STORED) — Continued

PASS BLEND DOOR TRAVEL TOO LARGE (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is greater than expected.

PASS BLEND DOOR TRAVEL TOO SMALL (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is less than expected.

PCI BUS SHORTED HIGH (STORED)

When Monitored: With the ignition on.

Set Condition: This DTC is set if the ATC detects a short to voltage on the PCI Bus circuit.

PCI BUS SHORTED LOW (STORED)

When Monitored: With the ignition on.

Set Condition: This DTC is set if the ATC detects a short to ground on the PCI Bus circuit.

REAR BLEND DOOR NOT RESPONDING (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC does not receive feedback pulses within 5 seconds of the drive voltage being applied.

REAR BLEND DOOR RANGE TOO LARGE (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is greater than expected.

REAR BLEND DOOR TRAVEL TOO SMALL (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is less than expected.

REAR FAN POT OPEN (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC reads the rear blower switch value and it is above 250 A/D counts.

REAR FAN POT SHORTED (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC reads the rear fan switch value and it is below 5 A/D counts.

AC PRESSURE TOO HIGH (STORED) — Continued

REAR KEYBOARD FAULT (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC will set if there is an internal fault in the ATC head.

REAR MODE DOOR NOT RESPONDING (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC does not receive feedback pulses within 5 seconds of the drive voltage being applied.

REAR MODE DOOR TRAVEL TOO LARGE (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is greater than expected.

REAR MODE DOOR TRAVEL TOO SMALL (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is less than expected.

REAR MODE POT OPEN (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC reads the rear mode select switch value and it is above 250 A/D counts.

REAR MODE POT SHORTED (STORED)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC reads the rear mode select switch value and it is below 5 A/D counts.

RECIRC DOOR NOT RESPONDING (STORED)

When Monitored: Ignition in RUN and IOD fuse installed.

Set Condition: This DTC is set when the ATC does not receive feedback pulses within 5 seconds of the drive voltage being applied.

RECIRC DOOR TRAVEL TOO LARGE (STORED)

When Monitored: Ignition in RUN and IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is greater than expected.

AC PRESSURE TOO HIGH (STORED) — Continued

RECIRC DOOR TRAVEL TOO SMALL (STORED)

When Monitored: Ignition in RUN and IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is less than expected.

POSSIBLE CAUSES
CHECK FOR ACTIVE ATC DTCS
AC COOLDOWN TEST FAULT MESSAGE(S) PRESENT
STORED CODES TEST COMPLETE

TEST	ACTION	APPLICABILITY
1	**NOTE: Active codes must be resolved before diagnosing stored codes.** **NOTE: Anytime a code becomes active proceed to the conclusion question.** **NOTE: If multiple codes appear, diagnose those that relate to a short circuit first.** Start the engine. Press the ATC Power switch on. Turn the front blower control to the low speed position. If equipped, turn the rear blower control to the Rear Control position. Set the Driver, Pass, and, if equipped, Rear temperature controls to 60°F (16°C). Monitor the DRBIII® for active ATC DTCs while performing the following test steps. Press the recirculation mode switch on, wait 30 seconds, and then press it off. Press the A/C mode switch on, wait 30 seconds, and then press it off. Press the rear defogger switch on, wait 30 seconds, and then press it off. Set the Driver temperature control to the max heat setting, wait 30 seconds, and then set it to the max cool setting. Repeat this step for the Pass and, if equipped, Rear temperature controls. Turn the mode control to each position for 30 seconds and then turn it back to the panel position. Press the Auto HI switch, wait 30 seconds, and then press the Auto LO switch. When function is complete, turn the front blower control to the low speed position. If equipped, on the Rear ATC Control, set the rear temperature control to the max heat setting, wait 30 seconds, and then set it to the max cool setting. If equipped, on the Rear ATC Control, turn the mode control to each position for 30 seconds. With the DRBIII® in ATC, Miscellaneous, reset the ATC. Does the DRBIII® display any active ATC DTCs? Yes → Return to the symptom list and choose the symptom(s) Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All

AC PRESSURE TOO HIGH (STORED) — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **NOTE: For RG vehicles equipped with a Diesel Cabin Heater Assist (DCHA), refer to Venting the DCHA's Exhaust under Cabin Heater in the General Information portion of this manual for proper exhaust venting instructions.** **NOTE: The AC Cooldown Test is actuated with the DRBIII®. The test checks A/C system performance based on evaporator temperature sensor input. It also forces the ATC to initiate a Cabin Heater Activation request when the vehicle is equipped with a DCHA.** **NOTE: The A/C related portion of this test will not run if ambient temp is below 12°C (53°F). However, the forced Cabin Heater activation will occur even if the A/C portion of this test fails to initiate because test criteria was not met.** **NOTE: The A/C related portion of this test will pass if evap temp drops 6.7°C (20°F) within 2 minutes of starting this test.** **NOTE: Only A/C related messages display on the DRBIII® after running this test. These messages will clear after paging back out of this test. Therefore, it is important to note all of the test messages before doing so.** **NOTE: Running this test will cause the DELAY & Snowflake on the ATC to flash for 162 seconds (RG with DCHA only). If the A/C related portion of this test fails, the DELAY & Snowflake will continue to flash until the vehicle is driven more than 3 miles.** Start the engine. Press the ATC's Power switch on. Turn the Mode control to the panel position. Verify that the front blower motor and, if equipped, rear blower motor operate correctly in all speeds from each control. Diagnose and repair all blower related faults before proceeding with this test. Turn the Front Blower control to the high speed position. Set the Driver, Pass, and, if equipped, Rear temperature controls to 72°F (22°C). **CAUTION: Do not activate the A/C Cooldown Test with the engine off. Failure to follow these instructions may result in internal damage to the DCHA Heater Module.** **NOTE: Do not disconnect the vehicle's battery or the DCHA's main power supply while the DCHA is in operation or in run-down mode. Failure to follow these instructions may result in excess emissions from the DCHA during heater operation.** **NOTE: Before actuating the AC Cooldown Test, verify that the A/C compressor is not running, If the compressor is running, turn the A/C off and allow the evaporator to warm up before proceeding with the test.** **NOTE: The DCHA, if equipped, will operate for approximately 7 minutes. 3 minutes to run and 4 minutes to purge.** With the DRBIII® in ATC, Systems Tests, perform the AC Cooldown Test. Does the DRBIII® display any Cooldown Test fault messages? Yes → Return to the symptom list and choose the symptom(s) Perform BODY VERIFICATION TEST - VER 1. No → No problem found at this time. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
COOLDOWN TEST FAILED

When Monitored and Set Condition:

COOLDOWN TEST FAILED

When Monitored: When executing the Cooldown Test.

Set Condition: This DTC is set if the A/C system is unable to bring the evaporator temperature down 6.7°C (20°F) within two minutes.

POSSIBLE CAUSES
OTHER COOLDOWN TEST FAULT MESSAGES PRESENT
ATC DTC(S) PRESENT
CHECK THE PCM/ECM FOR DTCS
A/C SYSTEM TESTING

TEST	ACTION	APPLICABILITY
1	**CAUTION: The work area ambient temperature must be above 15.6°C (60°F) to test A/C system operation.** Are any other fault messages displayed with the Cooldown Test Failed message? Yes → Return to the symptom list and choose the symptom(s). After the repair is complete, rerun the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	**CAUTION: The work area ambient temperature must be above 15.6°C (60°F) to test A/C system operation.** Turn the ignition on. With the DRBIII®, read ATC DTCs. Does the DRBIII® display any ATC DTCs? Yes → Return to the symptom list and choose the symptom(s). After the repair is complete, rerun the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

COOLDOWN TEST FAILED — Continued

TEST	ACTION	APPLICABILITY
3	**CAUTION: The work area ambient temperature must be above 15.6°C (60°F) to test A/C system operation.** Turn the ignition on. With the DRBIII®, check the PCM/ECM for DTCs. Are any PCM/ECM DTCs present? Yes → Refer to Powertrain Diagnostic information for the related symptom(s). After the repair is complete, rerun the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Refer to the Service Information for additional Cooldown Test related diagnostic information and testing procedures. After the repair is complete, rerun the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
DRIVER BLEND DOOR NOT RESPONDING (ACTIVE)

When Monitored and Set Condition:

DRIVER BLEND DOOR NOT RESPONDING (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC does not receive feedback pulses within 5 seconds of the drive voltage being applied.

POSSIBLE CAUSES
DRIVER BLEND DOOR DRIVER CIRCUIT (A) SHORTED TO GROUND
DRIVER BLEND DOOR DRIVER CIRCUIT (B) SHORTED TO GROUND
DRIVER BLEND DOOR DRIVER CIRCUITS (A) AND (B) SHORTED TOGETHER
DRIVER BLEND DOOR DRIVER CIRCUIT (A) OPEN
DRIVER BLEND DOOR DRIVER CIRCUIT (B) OPEN
ATC
DRIVER BLEND DOOR ACTUATOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Driver Blend Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance between ground and the Driver Blend Door Driver (A) circuit. Is the resistance above 100k ohms? Yes → Go To 2 No → Repair the Driver Blend Door Driver (A) circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Driver Blend Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance between ground and the Driver Blend Door Driver (B) circuit. Is the resistance above 100k ohms? Yes → Go To 3 No → Repair the Driver Blend Door Driver (B) circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

DRIVER BLEND DOOR NOT RESPONDING (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Driver Blend Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance between the Driver Blend Door Driver (A) and (B) circuits. Is the resistance above 100k ohms? Yes → Go To 4 No → Repair the Driver Blend Door Driver (A) and (B) circuits for a short together. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Driver Blend Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance of the Driver Blend Door Driver (A) circuit. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Driver Blend Door Driver (A) circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the Driver Blend Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance of the Driver Blend Door Driver (B) circuit. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Driver Blend Door Driver (B) circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the ATC C1 harness connector. Measure the resistance between the Driver Blend Door Driver (A) and (B) circuits. Is the resistance between 26.0 and 46.0 ohms? Yes → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Driver Blend Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
DRIVER BLEND DOOR TRAVEL TOO LARGE (ACTIVE)

When Monitored and Set Condition:

DRIVER BLEND DOOR TRAVEL TOO LARGE (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is greater than expected.

POSSIBLE CAUSES
CHECK THE ATC FOR DTCS
DRIVER BLEND DOOR ACTUATOR
DRIVER BLEND DOOR LINKAGE
ATC

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, read the active ATC DTCs. Is the DRIVER BLEND DOOR NOT RESPONDING DTC set? Yes → Return to the symptom list and choose the symptom. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Remove the Driver Blend Door Actuator. By hand, attempt to rotate the driver blend door motor in both directions. Did the blend door actuator turn in either direction? Yes → Replace the Driver Blend Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Remove the Driver Blend Door Actuator. Rotate the blend door (door only). Note: This should rotate approximately 45 degrees from stop to stop. Inspect the blend door linkage for excessive wear or missing linkage. Were any mechanical problems found? Yes → Repair or replace the driver blend door/linkage as necessary. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
DRIVER BLEND DOOR TRAVEL TOO SMALL (ACTIVE)

When Monitored and Set Condition:

DRIVER BLEND DOOR TRAVEL TOO SMALL (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is less than expected.

POSSIBLE CAUSES
CHECK THE ATC FOR DTCS
ATC
OBSTRUCTED BLEND DOOR
DRIVER BLEND DOOR ACTUATOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, read the active ATC DTCs. Is the DRIVER BLEND DOOR NOT RESPONDING DTC set? Yes → Return to the symptom list and choose the symptom. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Disconnect the Driver Blend Door Actuator harness connector. Connect a 12-volt Test Light between the Driver Blend Door Actuator harness connector cavities. Turn the ignition on. While monitoring the test light, press the driver blend control to change the setting from lo to hi. **Note: Observe test light for approximately 30 seconds.** Does the test light start to flash and stay flashing? Yes → Go To 3 No → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

DRIVER BLEND DOOR TRAVEL TOO SMALL (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
3	Remove the Driver Blend Door Actuator. Rotate the blend door (door only). Note: This should rotate approximately 45 degrees from stop to stop. Does the blend door move smoothly in both directions? Yes → Replace the Driver Blend Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Repair or replace the driver blend door as necessary. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

EEPROM CHECKSUM ERROR (ACTIVE)

When Monitored and Set Condition:

EEPROM CHECKSUM ERROR (ACTIVE)

When Monitored: Ignition in RUN and IOD fuse installed after a battery disconnect.

Set Condition: This DTC is set if the calculated check sum does not match the stored value.

POSSIBLE CAUSES
ATC - EEPROM CHECKSUM ERROR

TEST	ACTION	APPLICABILITY
1	When this code is present, the ATC must be replaced. View repair. Repair Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
EVAP TEMP SENSOR OPEN (ACTIVE)

When Monitored and Set Condition:

EVAP TEMP SENSOR OPEN (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed. Also, during the Cooldown Test.

Set Condition: This DTC is displayed if the ATC detects an abnormally high voltage on the evaporator temperature sensor signal. Evap Temp Sensor Open is also displayed as a Cooldown Test Message if the ATC detects an abnormally high voltage on the evaporator temperature sensor signal during the Cooldown Test.

POSSIBLE CAUSES
EVAPORATOR TEMPERATURE SENSOR SIGNAL CIRCUIT SHORTED TO VOLTAGE
EVAPORATOR TEMP SENSOR SIGNAL CKT SHORTED TO BLOWER MOTOR CONTROL CKT
EVAP TEMP SENSOR SIGNAL CKT SHORTED TO REAR BLOWER MOTOR CONTROL CKT
ATC
EVAPORATOR TEMPERATURE SENSOR SIGNAL CIRCUIT OPEN
SENSOR GROUND CIRCUIT OPEN
EVAPORATOR TEMPERATURE SENSOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the ATC C2 harness connector. Turn the ignition on. Measure the voltage of the Evaporator Temperature Sensor Signal circuit. Is there any voltage present? Yes → Repair the Evaporator Temperature Sensor Signal circuit for a short to voltage. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Disconnect the ATC C2 harness connector. Measure the resistance between the Evaporator Temperature Sensor Signal circuit and the Blower Motor Control circuit. Is the resistance below 10K ohms? Yes → Repair the Evaporator Temperature Sensor Signal circuit for a short to the Blower Motor Control circuit. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

EVAP TEMP SENSOR OPEN (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the ATC C2 harness connector. Measure the resistance between the Evaporator Temperature Sensor Signal circuit and the Rear Blower Motor Control circuit. Is the resistance below 10K ohms? Yes → Repair the Evaporator Temperature Sensor Signal circuit for a short to the Rear Blower Motor Control circuit. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the ATC C2 harness connector. Measure the resistance between the Evaporator Temperature Sensor Signal circuit and the Sensor Ground circuit. The approximate circuit resistance should be: 5,900 ohms @ 38°C (100°F). 6,600 ohms @ 35°C (95°F). 7,400 ohms @ 32°C (90°F). 8,300 ohms @ 29°C (85°F). 9,400 ohms @ 27°C (80°F). 10,600 ohms @ 24°C (75°F). 11,900 ohms @ 21°C (70°F). 13,500 ohms @ 18°C (65°F). 15,300 ohms @ 16°C (60°F). 17,500 ohms @ 13°C (55°F). 19,900 ohms @ 10°C (50°F). 22,800 ohms @ 7°C (45°F). 26,100 ohms @ 4°C (40°F). 30,000 ohms @ 2°C (35°F). 34,600 ohms @ -1°C (30°F). Is the resistance within the specifications? Yes → Replace the ATC in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the ATC C2 harness connector. Disconnect the in-line C202 harness connector. Measure the resistance of the Evaporator Temperature Sensor Signal circuit between the ATC C2 harness connector and the in-line C202 harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Evaporator Temperature Sensor Signal circuit between the ATC C2 harness connector and the in-line C202 harness connector (HVAC side) for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

EVAP TEMP SENSOR OPEN (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the ATC C2 harness connector. Disconnect the in-line C202 harness connector. Measure the resistance of the Sensor Ground circuit between the ATC C2 harness connector and the in-line C202 harness connector. Is the resistance below 5.0 ohms? Yes → Check the wiring harness between the in-line C202 harness connector (plenum side) and the Evap Temp Sensor for an open. Repair as necessary. If Ok, replace the Evaporator Temperature Sensor. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Sensor Ground circuit between the ATC C2 harness connector and the in-line C202 harness connector (HVAC side) for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
EVAP TEMP SENSOR SHORTED (ACTIVE)

When Monitored and Set Condition:

EVAP TEMP SENSOR SHORTED (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed. Also, during the Cooldown Test.

Set Condition: This DTC is displayed if the ATC detects an abnormally low voltage on the evaporator temperature sensor signal. Evap Temp Sensor Shorted is also displayed as a Cooldown Test Message if the ATC detects an abnormally low voltage on the evaporator temperature sensor signal during the Cooldown Test.

POSSIBLE CAUSES
EVAPORATOR TEMPERATURE SENSOR
EVAPORATOR TEMPERATURE SENSOR SIGNAL CIRCUIT SHORT TO GROUND
EVAPORATOR TEMPERATURE SENSOR SIGNAL CIRCUIT SHORT TO SENSOR GROUND CIRCUIT
ATC

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the in-line C202 harness connector. Turn the ignition on. With the DRBIII® in Automatic Temperature Control, monitor Active DTCs. Does the DRBIII® display: Evap Sensor Open? Yes → Check the Evap Temp Sensor Signal circuit between the in-line C202 harness connector (plenum side) and the Evap Temp Sensor for a short to ground. Repair as necessary. If Ok, replace the Evaporator Temperature Sensor. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Disconnect the ATC C2 harness connector. Disconnect the in-line C202 harness connector. Measure the resistance between ground and the Evaporator Temperature Sensor Signal circuit (HVAC side). Is the resistance above 100k ohms? Yes → Go To 3 No → Repair the Evaporator Temperature Sensor Signal circuit between the ATC C2 harness connector and the in-line C202 harness connector (HVAC side) for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

EVAP TEMP SENSOR SHORTED (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the ATC C2 harness connector. Disconnect the in-line C202 harness connector. Measure the resistance between the Evaporator Temperature Sensor Signal circuit and the Sensor Ground circuit (HVAC side). Is the resistance above 100k ohms? Yes → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Evaporator Temperature Sensor Signal circuit between the ATC C2 harness connector and the in-line C202 harness connector (HVAC side) for a short to Sensor Ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

FRONT AND REAR BLOWER OUTPUT 1 OPEN
FRONT AND REAR BLOWER OUTPUT 2 OPEN

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be FRONT AND REAR BLOWER OUTPUT 1 OPEN.

When Monitored and Set Condition:

FRONT AND REAR BLOWER OUTPUT 1 OPEN

When Monitored: Continuously.

Set Condition: If the FCM detects no voltage present on the Front/Rear Blower Motor Relay Control circuit.

FRONT AND REAR BLOWER OUTPUT 2 OPEN

When Monitored: Continuously.

Set Condition: If the FCM detects no voltage present on the Front/Rear Blower Motor Relay Control circuit.

POSSIBLE CAUSES
FRONT & REAR BLOWER OUTPUT 1/2 OPEN

TEST	ACTION	APPLICABILITY
1	View repair. Repair Refer to symptom Front and Rear Blower Output 1 Open or symptom Front and Rear Blower Output 2 Open in the Heating & A/C category. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

FRONT AND REAR BLOWER OUTPUT 1 SHORT TO BATT
FRONT AND REAR BLOWER OUTPUT 2 SHORT TO BATT

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be FRONT AND REAR BLOWER OUTPUT 1 SHORT TO BATT.

When Monitored and Set Condition:

FRONT AND REAR BLOWER OUTPUT 1 SHORT TO BATT

When Monitored: With the ignition on.

Set Condition: The FCM detects excessive current when attempting to close the Front/ Rear Blower Motor Relays.

FRONT AND REAR BLOWER OUTPUT 2 SHORT TO BATT

When Monitored: With the ignition on.

Set Condition: The FCM detects excessive current when attempting to close the Front/ Rear Blower Motor Relays.

POSSIBLE CAUSES
FRONT & REAR BLOWER OUTPUT 1/2 SHORT TO BATT

TEST	ACTION	APPLICABILITY
1	View repair. Repair Refer to symptom Front and Rear Blower Output 1 Short to Batt or symptom Front and Rear Blower Output 2 Short to Batt in the Heating & A/C category. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

FRONT IR SENSOR AND CONTROL HEAD MISMATCH (ACTIVE)
FRONT IR SENSOR CHANGE TOO LARGE (ACTIVE)
FRONT IR SENSOR HIGH (ACTIVE)
FRONT IR SENSOR LOW (ACTIVE)

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be FRONT IR SENSOR AND CONTROL HEAD MISMATCH (ACTIVE).

When Monitored and Set Condition:

FRONT IR SENSOR AND CONTROL HEAD MISMATCH (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the correct ATC head is not paired with the correct IR module (i.e. left hand ATC head paired with right hand IR module).

FRONT IR SENSOR CHANGE TOO LARGE (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC will set if the ATC head detects a temperature difference greater than 50 degrees between the front IR sensors.

FRONT IR SENSOR HIGH (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC reads the Front IR Sensor value and it is above 250 A/D counts.

FRONT IR SENSOR LOW (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC reads the Front IR Sensor value and it is below 5 A/D counts.

POSSIBLE CAUSES
ATC REMOTE SENSOR

TEST	ACTION	APPLICABILITY
1	This DTC indicates a fault in the ATC Remote Sensor. View repair. Repair Replace the ATC Remote Sensor. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

FRONT IR SENSOR NOT CALIBRATED (ACTIVE)
FRONT KEYBOARD FAULT (ACTIVE)

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be FRONT IR SENSOR NOT CALIBRATED (ACTIVE).

When Monitored and Set Condition:

FRONT IR SENSOR NOT CALIBRATED (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC cannot read the IR sensor values or the IR sensor values are not within a defined range of the HVAC air door motor counts.

FRONT KEYBOARD FAULT (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC will set if there is an internal fault in the ATC head.

POSSIBLE CAUSES
ATC - PROTECTED IGNITION CIRCUIT FAULT
KDB 2 CLOCK CIRCUIT SHORTED TO VOLTAGE
KDB 2 DATA CIRCUIT SHORTED TO GROUND
KDB 2 DATA CIRCUIT SHORTED TO VOLTAGE
PROTECTED IGNITION CIRCUIT OPEN
SENSOR RETURN CIRCUIT OPEN
KDB 2 CLOCK CIRCUIT SHORTED TO GROUND
KDB 2 DATA CIRCUIT OPEN
ATC - KDB 2 DATA CIRCUIT FAULT
ATC - SENSOR RETURN CIRCUIT FAULT
KDB 2 CLOCK CIRCUIT OPEN
ATC - KDB 2 CLOCK CIRCUIT FAULT
ATC REMOTE SENSOR

FRONT IR SENSOR NOT CALIBRATED (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the ATC Remote Sensor harness connector. Turn the ignition on. Measure the voltage of the Protected Ignition circuit. Is the voltage above 10.0 volts? Yes → Go To 2 No → Go To 16	All
2	Turn the ignition off. Disconnect the ATC Remote Sensor harness connector. Turn the ignition on. Measure the voltage of the KDB 2 Data circuit. Is the voltage above 10.0 volts? Yes → Go To 3 No → Go To 13	All
3	Turn the ignition off. Disconnect the ATC Remote Sensor harness connector. Disconnect the ATC C3 harness connector. Turn the ignition on. Measure the voltage of the KDB 2 Data circuit. Is the voltage above 1.0 volt? Yes → Repair the KDB 2 Data circuit for a short to voltage. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the ATC Remote Sensor harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. Select Lab Scope. Select Live. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the arrows to set the voltage range to 20 volts, the Offset to 4.0, and the Probe to x10. Press F2 again and set the divisions to 40ms/Div, then press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the KDB 2 Clock circuit in the ATC Remote Sensor harness connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. **NOTE: The lab scope pattern should look similar to the example given in the support material and cycle from approximately 0 volts to 8.0 volts.** Did the lab scope pattern and voltage react as noted above? Yes → Go To 5 No → Go To 9	All

FRONT IR SENSOR NOT CALIBRATED (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect the ATC Remote Sensor harness connector. Measure the resistance between ground and the Sensor Return circuit. Is the resistance below 10 ohms? Yes → Go To 6 No → Go To 7	All
6	If there are no possible causes remaining, view repair. Repair Replace the ATC Remote Sensor. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
7	Turn the ignition off. Disconnect the ATC Remote Sensor harness connector. Measure the resistance of the Sensor Return circuit. Is the resistance below 5.0 ohms? Yes → Go To 8 No → Repair the Sensor Return circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
8	If there are no possible causes remaining, view repair. Repair Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
9	Turn the ignition off. Disconnect the ATC Remote Sensor harness connector. Disconnect the ATC C3 harness connector. Turn the ignition on. Measure the voltage of the KDB 2 Clock circuit. Is the voltage above 1.0 volt? Yes → Repair the KDB 2 Clock circuit for a short to voltage. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 10	All
10	Turn the ignition off. Disconnect the ATC Remote Sensor harness connector. Disconnect the ATC C3 harness connector. Measure the resistance between ground and the KDB 2 Clock circuit. Is the resistance above 100k ohms? Yes → Go To 11 No → Repair the KDB 2 Clock circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

FRONT IR SENSOR NOT CALIBRATED (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
11	Turn the ignition off. Disconnect the ATC Remote Sensor harness connector. Disconnect the ATC C3 harness connector. Measure the resistance of the KDB 2 Clock circuit. Is the resistance below 5.0 ohms? Yes → Go To 12 No → Repair the KDB 2 Clock circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
12	If there are no possible causes remaining, view repair. Repair Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
13	Turn the ignition off. Disconnect the ATC Remote Sensor harness connector. Disconnect the ATC C3 harness connector. Measure the resistance between ground and the KDB 2 Data circuit. Is the resistance above 100k ohms? Yes → Go To 14 No → Repair the KDB 2 Data circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
14	Turn the ignition off. Disconnect the ATC Remote Sensor harness connector. Disconnect the ATC C3 harness connector. Measure the resistance of the KDB 2 Data circuit. Is the resistance below 5.0 ohms? Yes → Go To 15 No → Repair the KDB 2 Data circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
15	If there are no possible causes remaining, view repair. Repair Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

FRONT IR SENSOR NOT CALIBRATED (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
16	Turn the ignition off. Disconnect the ATC Remote Sensor harness connector. Disconnect the ATC C3 harness connector. Measure the resistance of the Protected Ignition circuit. Is the resistance below 5.0 ohms? Yes → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Protected Ignition circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
FRONT KEYBOARD COMMUNICATION FAULT (ACTIVE)

When Monitored and Set Condition:

FRONT KEYBOARD COMMUNICATION FAULT (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC will set if there is an internal fault in the ATC head.

POSSIBLE CAUSES
ATC

TEST	ACTION	APPLICABILITY
1	This DTC indicates a fault in the ATC. View repair. Repair Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
FRONT MODE DOOR NOT RESPONDING (ACTIVE)

When Monitored and Set Condition:

FRONT MODE DOOR NOT RESPONDING (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC does not receive feedback pulses within 5 seconds of the drive voltage being applied.

POSSIBLE CAUSES
MODE DOOR DRIVER CIRCUIT (A) SHORTED TO GROUND
MODE DOOR DRIVER CIRCUIT (B) SHORTED TO GROUND
MODE DOOR DRIVER CIRCUITS (A) AND (B) SHORTED TOGETHER
MODE DOOR DRIVER CIRCUIT (A) OPEN
MODE DOOR DRIVER CIRCUIT (B) OPEN
ATC
MODE DOOR ACTUATOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Mode Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance between ground and the Mode Door Driver (A) circuit. Is the resistance above 100k ohms? Yes → Go To 2 No → Repair the Mode Door Driver (A) circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Mode Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance between ground and the Mode Door Driver (B) circuit. Is the resistance above 100k ohms? Yes → Go To 3 No → Repair the Mode Door Driver (B) circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

FRONT MODE DOOR NOT RESPONDING (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Mode Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance between the Mode Door Driver (B) circuit and the Mode Door Driver (A) circuit. Is the resistance above 100k ohms? Yes → Go To 4 No → Repair the Mode Door Driver (A) and (B) circuits for a short together. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Mode Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance of the Mode Door Driver (A) circuit. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Mode Door Driver (A) circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the Mode Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance of the Mode Door Driver (B) circuit. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Mode Door Driver (B) circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the ATC C1 harness connector. Measure the resistance between the Mode Door Driver (A) circuit and the Mode Door Driver (B) circuit. Is the resistance between 26.0 and 46.0 ohms? Yes → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Mode Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
FRONT MODE DOOR TRAVEL TOO LARGE (ACTIVE)

When Monitored and Set Condition:

FRONT MODE DOOR TRAVEL TOO LARGE (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is greater than expected.

POSSIBLE CAUSES
CHECK THE ATC FOR DTCS
MODE DOOR ACTUATOR
MODE DOOR LINKAGE
ATC

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, read the active ATC DTCs. Is the FRONT MODE DOOR NOT RESPONDING DTC set? Yes → Return to the symptom list and choose the symptom. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Remove the Mode Door Actuator. By hand, attempt to rotate the Mode Door Actuator in both directions. Did the Mode Door Actuator turn in either direction? Yes → Replace the Mode Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Remove the Mode Door Actuator. Rotate the mode doors (doors only). Note: These should rotate approximately 45 degrees from stop to stop. Inspect the mode door linkage for excessive wear or missing linkage. Were any mechanical problems found? Yes → Repair or replace the mode door/linkage as necessary. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
FRONT MODE DOOR TRAVEL TOO SMALL (ACTIVE)

When Monitored and Set Condition:

FRONT MODE DOOR TRAVEL TOO SMALL (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is less than expected.

POSSIBLE CAUSES
CHECK THE ATC FOR DTCS
ATC
OBSTRUCTED MODE DOOR
MODE DOOR ACTUATOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, read the active ATC DTCs. Is the FRONT MODE DOOR NOT RESPONDING DTC set? Yes → Return to the symptom list and choose the symptom. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Disconnect the Mode Door Actuator harness connector. Connect a 12-volt Test Light between the Mode Door Actuator harness connector cavities. Turn the ignition on. While monitoring the test light, turn the mode control knob to each position. **Note: Observe test light for approximately 30 seconds.** Does the test light start to flash and stay flashing? Yes → Go To 3 No → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
3	Remove the Mode Door Actuator. Rotate the mode doors (doors only). Note: These should rotate approximately 45 degrees from stop to stop. Do the mode doors move smoothly in both directions? Yes → Replace the Mode Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Repair or replace the mode door as necessary. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INVALID CONDITIONS FOR COOLDOWN TEST, EVAP TEMPERATURE TOO LOW

When Monitored and Set Condition:

INVALID CONDITIONS FOR COOLDOWN TEST, EVAP TEMPERATURE TOO LOW

When Monitored: When executing the Cooldown Test.

Set Condition: This message will be displayed if the A/C - Heater Control Module sees evaporator temperature below 12.7°C (55°F) when executing the Cooldown Test.

POSSIBLE CAUSES
EVAPORATOR TEMPERATURE TOO LOW
ATC DTC(S) PRESENT
CHECK THE PCM/ECM FOR DTCS
EVAPORATOR TEMPERATURE SENSOR
SENSOR GROUND CIRCUIT HIGH RESISTANCE
EVAPORATOR TEMPERATURE SENSOR SIGNAL CIRCUIT HIGH RESISTANCE
AUTOMATIC TEMPERATURE CONTROL

TEST	ACTION	APPLICABILITY
1	**CAUTION: The work area ambient temperature must be above 15.6°C (60°F) to test A/C system operation.** Start the engine. Turn the A/C off. Turn the Blower on high. Allow the blower to run for 5 minutes to ensure that the Evaporator Temperature Sensor temperature is above 12.7°C (55°F). With the DRBIII®, actuate the Cooldown Test. Does the DRBIII® display: Cooldown Test Too Cold To Start? Yes → Go To 2 No → Perform additional testing as necessary. Perform BODY VERIFICATION TEST - VER 1.	All
2	**CAUTION: The work area ambient temperature must be above 15.6°C (60°F) to test A/C system operation.** Turn the ignition on. With the DRBIII®, read ATC DTCs. Does the DRBIII® display any ATC DTCs? Yes → Return to the symptom list and choose the symptom(s). After the repair is complete, with the DRBIII®, erase the DTC(s). Cycle the ignition switch. With the DRBIII®, reset the ATC. With the DRBIII®, actuate the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INVALID CONDITIONS FOR COOLDOWN TEST, EVAP TEMPERATURE TOO LOW — Continued

TEST	ACTION	APPLICABILITY
3	**CAUTION: The work area ambient temperature must be above 15.6°C (60°F) to test A/C system operation.** Turn the ignition on. With the DRBIII®, check the PCM/ECM for DTCs. Are any DTCs present? Yes → Refer to the Powertrain Diagnostic information for the related symptom(s). After the repair is complete, with the DRBIII®, erase the DTC(s). Cycle the ignition switch. With the DRBIII®, reset the ATC. With the DRBIII®, accuate the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the Evaporator Temperature Sensor harness connector. Turn the ignition on. With the DRBIII® in Sensor Display, read the Evaporator Temperature Sensor voltage. Is the voltage above 4.9 volts? Yes → Go To 5 No → Go To 6	All
5	Turn the ignition off. Disconnect the Evaporator Temperature Sensor harness connector. Connect a jumper wire between the Evaporator Temperature Sensor Signal circuit and the Sensor Ground circuit at the Evaporator Temperature Sensor harness connector. Turn the ignition on. With the DRBIII® in Sensor Display, read the Evaporator Temperature Sensor voltage. Is the voltage 0.0 volts? Yes → Replace the Evaporator Temperature Sensor in accordance with the Service Information. After the repair is complete, with the DRBIII®, reset the ATC. With the DRBIII®, accuate the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	**NOTE: Ensure that the Evaporator Temperature Sensor harness connector is connected to the Evaporator Temperature Sensor.** **NOTE: Ensure that the voltmeter leads meet the terminals in the connector and that there is good terminal to wire connection.** **NOTE: Ensure the voltmeter leads are connected for positive polarity.** Back probe the Sensor Ground circuit between the Evaporator Temperature Sensor harness connector and the ATC harness connector. Turn the ignition on. Is the voltage below 0.10 volt? Yes → Go To 7 No → Repair the high resistance in the Sensor Ground circuit. After the repair is complete, with the DRBIII®, reset the ATC. With the DRBIII®, accuate the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1.	All

INVALID CONDITIONS FOR COOLDOWN TEST, EVAP TEMPERATURE TOO LOW — Continued

TEST	ACTION	APPLICABILITY
7	**NOTE: Ensure that the Evaporator Temperature Sensor harness connector is connected to the Evaporator Temperature Sensor.** **NOTE: Ensure the voltmeter leads meet the terminals in the connector and that there is good terminal to wire connection.** **NOTE: Ensure the voltmeter leads are connected for positive polarity** Back probe the Evaporator Temperature Sensor Signal circuit between the Evaporator Temperature Sensor harness connector and the ATC harness connector. Turn the ignition on. Is the voltage below 0.10 volt? Yes → Replace the Automatic Temperature Control. After the repair is complete, with the DRBIII®, reset the ATC. With the DRBIII®, accuate the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Repair the high resistance in the Evaporator Temperature Sensor Signal circuit. After the repair is complete, with the DRBIII®, reset the ATC. With the DRBIII®, accuate the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
PASS BLEND DOOR NOT RESPONDING (ACTIVE)

When Monitored and Set Condition:

PASS BLEND DOOR NOT RESPONDING (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC does not receive feedback pulses within 5 seconds of the drive voltage being applied.

POSSIBLE CAUSES
PASSENGER BLEND DOOR DRIVER CIRCUIT (A) SHORTED TO GROUND
PASSENGER BLEND DOOR DRIVER CIRCUIT (B) SHORTED TO GROUND
PASSENGER BLEND DOOR DRIVER CIRCUITS (A) AND (B) SHORTED TOGETHER
PASSENGER BLEND DOOR DRIVER CIRCUIT (A) OPEN
PASSENGER BLEND DOOR DRIVER CIRCUIT (B) OPEN
ATC
PASSENGER BLEND DOOR ACTUATOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the ATC C1 harness connector. Measure the resistance between ground and the Passenger Blend Door Driver (A) circuit. Is the resistance above 100k ohms? Yes → Go To 2 No → Repair the Passenger Blend Door Driver (A) circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the ATC C1 harness connector. Measure the resistance between ground and the Passenger Blend Door Driver (B) circuit. Is the resistance above 100k ohms? Yes → Go To 3 No → Repair the Passenger Blend Door Driver (B) circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

PASS BLEND DOOR NOT RESPONDING (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Passenger Blend Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance between the Passenger Blend Door Driver (A) and (B) circuits. Is the resistance above 100k ohms? Yes → Go To 4 No → Repair the Passenger Blend Door Driver (A) and (B) circuits for a short together. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Passenger Blend Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance of the Passenger Blend Door Driver (A) circuit. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Passenger Blend Door Driver (A) circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the Passenger Blend Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance of the Passenger Blend Door Driver (B) circuit. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Passenger Blend Door Driver (B) circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the ATC C1 harness connector. Measure the resistance between the Passenger Blend Door Driver (A) and (B) circuits. Is the resistance between 26.0 and 46.0 ohms? Yes → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Passenger Blend Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
PASS BLEND DOOR TRAVEL TOO LARGE (ACTIVE)

When Monitored and Set Condition:

PASS BLEND DOOR TRAVEL TOO LARGE (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is greater than expected.

POSSIBLE CAUSES
CHECK THE ATC FOR DTCS
PASSENGER BLEND DOOR ACTUATOR
PASSENGER BLEND DOOR LINKAGE
ATC

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, read the active ATC DTCs. Is the PASSENGER BLEND DOOR NOT RESPONDING DTC set? Yes → Return to the symptom list and choose the symptom. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Remove the Passenger Blend Door Actuator. By hand, attempt to rotate the Passenger Blend Door Actuator in both directions. Did the blend door actuator turn in either direction? Yes → Replace the Passenger Blend Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Remove the Passenger Blend Door Actuator. Rotate the blend door (door only). Note: This should rotate approximately 45 degrees from stop to stop. Inspect the blend door linkage for excessive wear or missing linkage. Were any mechanical problems found? Yes → Repair or replace the blend door/linkage as necessary. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
PASS BLEND DOOR TRAVEL TOO SMALL (ACTIVE)

When Monitored and Set Condition:

PASS BLEND DOOR TRAVEL TOO SMALL (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is less than expected.

POSSIBLE CAUSES
CHECK THE ATC FOR DTCS
ATC
OBSTRUCTED BLEND DOOR
PASSENGER BLEND DOOR ACTUATOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, read the active ATC DTCs. Is the PASSENGER BLEND DOOR NOT RESPONDING DTC set? Yes → Return to the symptom list and choose the symptom. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Disconnect the Passenger Blend Door Actuator harness connector. Connect a 12-volt Test Light between the Passenger Blend Door Driver (A) and (B) circuits in the Passenger Blend Door Actuator harness connector. Turn the ignition on. While monitoring the test light, press the passenger blend control to change the setting from lo to hi. **Note: Observe test light for approximately 30 seconds.** Does the test light start to flash and stay flashing? Yes → Go To 3 No → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

PASS BLEND DOOR TRAVEL TOO SMALL (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
3	Remove the Passenger Blend Door Actuator. Rotate the blend door (door only). Note: This should rotate approximately 45 degrees from stop to stop. Does the blend door move smoothly in both directions? Yes → Replace the Passenger Blend Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Repair or replace the Passenger Blend Door as necessary. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

PCI BUS SHORTED HIGH (ACTIVE)
PCI BUS SHORTED LOW (ACTIVE)

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be PCI BUS SHORTED HIGH (ACTIVE).

When Monitored and Set Condition:

PCI BUS SHORTED HIGH (ACTIVE)

When Monitored: With the ignition on.

Set Condition: This DTC is set if the ATC detects a short to voltage on the PCI Bus circuit.

PCI BUS SHORTED LOW (ACTIVE)

When Monitored: With the ignition on.

Set Condition: This DTC is set if the ATC detects a short to ground on the PCI Bus circuit.

POSSIBLE CAUSES
DTC CONDITION

TEST	ACTION	APPLICABILITY
1	**NOTE: For this code to be active, the DRB will not be able to communicate with any modules on the vehicle (except the PCM/ECM).** **NOTE: If this code is set and active it will be necessary to replace the Automatic Temperature Control Module for displaying a false DTC.** **NOTE: If this code is NOT active do not perform this test.** If there are no possible causes remaining, view repair. Repair Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
REAR BLEND DOOR NOT RESPONDING (ACTIVE)

When Monitored and Set Condition:

REAR BLEND DOOR NOT RESPONDING (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC does not receive feedback pulses within 5 seconds of the drive voltage being applied.

POSSIBLE CAUSES
REAR BLEND DOOR DRIVER CIRCUIT (A) SHORTED TO GROUND
REAR BLEND DOOR DRIVER CIRCUIT (B) SHORTED TO GROUND
REAR BLEND DOOR DRIVER CIRCUITS (A) AND (B) SHORTED TOGETHER
REAR BLEND DOOR DRIVER CIRCUIT (A) OPEN
REAR BLEND DOOR DRIVER CIRCUIT (B) OPEN
ATC
REAR BLEND DOOR ACTUATOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Rear Blend Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance between ground and the Rear Blend Door Driver (A) circuit. Is the resistance above 100k ohms? Yes → Go To 2 No → Repair the Rear Blend Door Driver (A) circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Rear Blend Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance between ground and the Rear Blend Door Driver (B) circuit. Is the resistance above 100k ohms? Yes → Go To 3 No → Repair the Rear Blend Door Driver (B) circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

REAR BLEND DOOR NOT RESPONDING (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Rear Blend Door Actuator harness connector. Disconnect the ATC C1 harness connectors. Measure the resistance between the Rear Blend Door Driver (A) and (B) circuits. Is the resistance above 100k ohms? Yes → Go To 4 No → Repair the Rear Blend Door Driver (A) and (B) circuits for a short together. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Rear Blend Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance of the Rear Blend Door Driver (A) circuit. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Rear Blend Door Driver (A) circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the Rear Blend Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance of the Rear Blend Door Driver (B) circuit. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Rear Blend Door Driver (B) circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the ATC C1 harness connector. Measure the resistance between the Rear Blend Door Driver (A) and (B) circuits. Is the resistance between 26.0 and 46.0 ohms? Yes → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Rear Blend Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
REAR BLEND DOOR TRAVEL TOO LARGE (ACTIVE)

When Monitored and Set Condition:

REAR BLEND DOOR TRAVEL TOO LARGE (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is greater than expected.

POSSIBLE CAUSES
CHECK THE ATC FOR DTCS
REAR BLEND DOOR ACTUATOR
REAR BLEND DOOR LINKAGE
ATC

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, read the active ATC DTC's. Is the REAR BLEND DOOR NOT RESPONDING DTC set? Yes → Return to the symptom list and choose the symptom. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Remove the Rear Blend Door Actuator. By hand, attempt to rotate the Rear Blend Door Actuator in both directions. Did the blend door actuator turn in either direction? Yes → Replace the Rear Blend Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Remove the Rear Blend Door Actuator. Rotate the blend door (door only). Note: This should rotate approximately 45 degrees from stop to stop. Inspect the blend door linkage for excessive wear or missing linkage. Were any mechanical problems found? Yes → Repair or replace the rear blend door/linkage as necessary. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
REAR BLEND DOOR TRAVEL TOO SMALL (ACTIVE)

When Monitored and Set Condition:

REAR BLEND DOOR TRAVEL TOO SMALL (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is less than expected.

POSSIBLE CAUSES
CHECK THE ATC FOR DTCS
ATC
OBSTRUCTED BLEND DOOR
REAR BLEND DOOR ACTUATOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, read the active ATC DTCs. Is the REAR BLEND DOOR NOT RESPONDING DTC set? Yes → Return to the symptom list and choose the symptom. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Disconnect the Rear Blend Door Actuator harness connector. Connect a 12-volt Test Light across the Rear Blend Door Actuator harness connector. Turn the ignition on. While monitoring the test light, press the rear blend control to change the setting from lo to hi. **Note: Observe test light for approximately 30 seconds.** Does the test light start to flash and stay flashing? Yes → Go To 3 No → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
3	Remove the Rear Blend Door Actuator. Rotate the blend door (door only). Note: This should rotate approximately 45 degrees from stop to stop. Does the rear blend door move smoothly in both directions? Yes → Replace the Rear Blend Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Repair or replace the blend door as necessary. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

REAR FAN POT OPEN (ACTIVE)
REAR FAN POT SHORTED (ACTIVE)
REAR MODE POT OPEN (ACTIVE)
REAR MODE POT SHORTED (ACTIVE)

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be REAR FAN POT OPEN (ACTIVE).

When Monitored and Set Condition:

REAR FAN POT OPEN (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC reads the rear blower switch value and it is above 250 A/D counts.

REAR FAN POT SHORTED (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC reads the rear fan switch value and it is below 5 A/D counts.

REAR MODE POT OPEN (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC reads the rear mode select switch value and it is above 250 A/D counts.

REAR MODE POT SHORTED (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC reads the rear mode select switch value and it is below 5 A/D counts.

POSSIBLE CAUSES
REAR ATC SWITCH

TEST	ACTION	APPLICABILITY
1	This DTC indicates a fault in the Rear ATC Switch. View repair. Repair Replace the Rear ATC Switch. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
REAR KEYBOARD FAULT (ACTIVE)

When Monitored and Set Condition:

REAR KEYBOARD FAULT (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC will set if there is an internal fault in the ATC head.

POSSIBLE CAUSES
BCM
IGNITION SWITCH (RUN) CIRCUIT OPEN
KDB CLOCK CIRCUIT SHORTED TO VOLTAGE
KDB DATA CIRCUIT SHORTED TO GROUND
KDB DATA CIRCUIT SHORTED TO VOLTAGE
KDB CLOCK CIRCUIT SHORTED TO GROUND
KDB DATA CIRCUIT OPEN
ATC - KDB DATA CIRCUIT FAULT
KDB CLOCK CIRCUIT OPEN
ATC - KDB CLOCK CIRCUIT FAULT
REAR ATC SWITCH GROUND CIRCUIT OPEN
REAR AUTOMATIC TEMPERATURE CONTROL SWITCH

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Rear Automatic Temperature Control Switch harness connector. Measure the resistance of the Rear ATC Switch Ground circuit. Is the resistance below 5.0 ohms? Yes → Go To 2 No → Repair the Rear ATC Switch Ground circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Rear Automatic Temperature Control Switch harness connector. Turn the ignition on. Measure the voltage of the Ignition Switch (Run) circuit. Is the voltage above 10.0 volts? Yes → Go To 3 No → Go To 14	All

REAR KEYBOARD FAULT (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Rear Automatic Temperature Control Switch harness connector. Turn the ignition on. Measure the voltage of the KDB Data circuit. Is the voltage above 10.0 volts? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off. Disconnect the Rear Automatic Temperature Control Switch harness connector. Disconnect the ATC C2 harness connector. Turn the ignition on. Measure the voltage of the KDB Data circuit. Is the voltage above 1.0 volt? Yes → Repair the KDB Data circuit for a short to voltage. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Rear Automatic Temperature Control Switch harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. Select Lab Scope. Select Live. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the arrows to set the voltage range to 20 volts, the Offset to 4.0, and the Probe to x10. Press F2 again and set the divisions to 40ms/Div, then press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the KDB Clock circuit in the Rear Automatic Temperature Control Switch harness connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. **NOTE: The lab scope pattern should look similar to the example given in the support material and cycle from approximately 0 volts to 8.0 volts.** Did the lab scope pattern and voltage react as noted above? Yes → Go To 6 No → Go To 7	All
6	If there are no possible causes remaining, view repair. Repair Replace the Rear Automatic Temperature Control Switch. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

REAR KEYBOARD FAULT (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Disconnect the Rear Automatic Temperature Control Switch harness connector. Disconnect the ATC C2 harness connector. Turn the ignition on. Measure the voltage of the KDB Clock circuit. Is the voltage above 1.0 volt? Yes → Repair the KDB Clock circuit for a short to voltage. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off. Disconnect the Rear Automatic Temperature Control Switch harness connector. Disconnect the ATC C2 harness connector. Measure the resistance between ground and the KDB Clock circuit. Is the resistance above 100k ohms? Yes → Go To 9 No → Repair the KDB Clock circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
9	Turn the ignition off. Disconnect the Rear Automatic Temperature Control Switch harness connector. Disconnect the ATC C2 harness connector. Measure the resistance of the KDB Clock circuit. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the KDB Clock circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
10	If there are no possible causes remaining, view repair. Repair Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
11	Turn the ignition off. Disconnect the Rear Automatic Temperature Control Switch harness connector. Disconnect the ATC C2 harness connector. Measure the resistance between ground and the KDB Data circuit. Is the resistance above 100k ohms? Yes → Go To 12 No → Repair the KDB Data circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

REAR KEYBOARD FAULT (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
12	Turn the ignition off. Disconnect the Rear Automatic Temperature Control Switch harness connector. Disconnect the ATC C2 harness connector. Measure the resistance of the KDB Data circuit. Is the resistance below 5.0 ohms? Yes → Go To 13 No → Repair the KDB Data circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
13	If there are no possible causes remaining, view repair. Repair Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
14	Turn the ignition off. Disconnect the Rear Automatic Temperature Control Switch harness connector. Disconnect the BCM C4 harness connector. Measure the resistance of the Ignition Switch (Run) circuit. Is the resistance below 5.0 ohms? Yes → Replace the BCM. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Ignition Switch (Run) circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
REAR MODE DOOR NOT RESPONDING (ACTIVE)

When Monitored and Set Condition:

REAR MODE DOOR NOT RESPONDING (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set if the ATC does not receive feedback pulses within 5 seconds of the drive voltage being applied.

POSSIBLE CAUSES
REAR MODE DOOR DRIVER CIRCUIT (A) SHORTED TO GROUND
REAR MODE DOOR DRIVER CIRCUIT (B) SHORTED TO GROUND
REAR MODE DOOR DRIVER CIRCUITS (A) AND (B) SHORTED TOGETHER
REAR MODE DOOR DRIVER CIRCUIT (A) OPEN
REAR MODE DOOR DRIVER CIRCUIT (B) OPEN
ATC
REAR MODE DOOR ACTUATOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the ATC C1 harness connector. Measure the resistance between ground and the Rear Mode Door Driver (A) circuit. Is the resistance above 100k ohms? Yes → Go To 2 No → Repair the Rear Mode Door Driver (A) circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the ATC C1 harness connector. Measure the resistance between ground and the Rear Mode Door Driver (B) circuit. Is the resistance above 100k ohms? Yes → Go To 3 No → Repair the Rear Mode Door Driver (B) circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

REAR MODE DOOR NOT RESPONDING (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the ATC C1 harness connector. Measure the resistance between the Rear Mode Door Driver (A) and (B) circuits. Is the resistance above 100k ohms? Yes → Go To 4 No → Repair the Rear Mode Door Driver (A) and (B) circuits for a short together. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the ATC C1 harness connector. Disconnect the Rear Mode Door Actuator harness connector. Measure the resistance of the Rear Mode Door Driver (A) circuit. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Rear Mode Door Driver (A) circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the ATC C1 harness connector. Disconnect the Rear Mode Door Actuator harness connector. Measure the resistance of the Rear Mode Door Driver (B) circuit. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Rear Mode Door Driver (B) circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the ATC C1 harness connector. Measure the resistance between the Rear Mode Door Driver (A) and (B) circuits. Is the resistance between 26.0 and 46.0 ohms? Yes → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Rear Mode Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
REAR MODE DOOR TRAVEL TOO LARGE (ACTIVE)

When Monitored and Set Condition:

REAR MODE DOOR TRAVEL TOO LARGE (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is greater than expected.

POSSIBLE CAUSES
CHECK THE ATC FOR DTCS
REAR MODE DOOR ACTUATOR
REAR MODE DOOR LINKAGE
ATC

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, read the active ATC DTCs. Is the REAR MODE DOOR NOT RESPONDING DTC set? Yes → Return to the symptom list and choose the symptom. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Remove the Rear Mode Door Actuator. By hand, attempt to rotate the Rear Mode Door Actuator in both directions. Did the mode door actuator turn in either direction? Yes → Replace the Rear Mode Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Remove the Rear Mode Door Actuator. Rotate the mode door (door only). Note: This should rotate approximately 45 degrees from stop to stop. Inspect the rear mode door linkage for excessive wear or missing linkage. Were any mechanical problems found? Yes → Repair or replace the rear mode door/linkage as necessary. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
REAR MODE DOOR TRAVEL TOO SMALL (ACTIVE)

When Monitored and Set Condition:

REAR MODE DOOR TRAVEL TOO SMALL (ACTIVE)

When Monitored: With the ignition on and the IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is less than expected.

POSSIBLE CAUSES
CHECK THE ATC FOR DTCS
ATC
OBSTRUCTED MODE DOOR
REAR MODE DOOR ACTUATOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, read the active ATC DTCs. Is the REAR MODE DOOR NOT RESPONDING DTC set? Yes → Return to the symptom list and choose the symptom. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Disconnect the Rear Mode Door Actuator harness connector. Connect a 12-volt Test Light between the rear mode door driver (A) and (B) circuits in the Rear A/C Heater Unit harness connector. Turn the ignition on. While monitoring the test light, turn the rear mode control to each position. **Note: Observe test light for approximately 30 seconds.** Does the test light start to flash and stay flashing? Yes → Go To 3 No → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
3	Remove the Rear Mode Door Actuator. Rotate the blend door (door only). Note: This should rotate approximately 45 degrees from stop to stop. Does the rear mode door move smoothly in both directions? Yes → Replace the Rear Mode Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Repair or replace the Rear Mode Door as necessary. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RECIRC DOOR NOT RESPONDING (ACTIVE)

When Monitored and Set Condition:

RECIRC DOOR NOT RESPONDING (ACTIVE)

When Monitored: Ignition in RUN and IOD fuse installed.

Set Condition: This DTC is set when the ATC does not receive feedback pulses within 5 seconds of the drive voltage being applied.

POSSIBLE CAUSES
RECIRC DOOR DRIVER CIRCUIT (A) SHORTED TO GROUND
RECIRC DOOR DRIVER CIRCUIT (B) SHORTED TO GROUND
RECIRC DOOR DRIVER CIRCUITS (A) AND (B) SHORTED TOGETHER
RECIRC DOOR DRIVER CIRCUIT (A) OPEN
RECIRC DOOR DRIVER CIRCUIT (B) OPEN
ATC
RECIRCULATION DOOR ACTUATOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Recirculation Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance between ground and the Recirculation Door Driver (A) circuit. Is the resistance above 100k ohms? Yes → Go To 2 No → Repair the Recirculation Door Driver (A) circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Recirculation Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance between ground and the Recirculation Door Driver (B) circuit. Is the resistance above 100k ohms? Yes → Go To 3 No → Repair the Recirculation Door Driver (B) circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

RECIRC DOOR NOT RESPONDING (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Recirculation Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance between the Recirculation Door Driver (A) and (B) circuits. Is the resistance above 100k ohms? Yes → Go To 4 No → Repair the Recirculation Door Driver (A) and (B) circuits for a short together. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Recirculation Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance of the Recirculation Door Driver (A) circuit. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Recirculation Door Driver (A) circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the Recirculation Door Actuator harness connector. Disconnect the ATC C1 harness connector. Measure the resistance of the Recirculation Door Driver (B) circuit. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Recirculation Door Driver (B) circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the ATC C1 harness connector. Measure the resistance between the Recirculation Door Driver (A) and (B) circuits. Is the resistance between 26.0 and 46.0 ohms? Yes → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Recirculation Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RECIRC DOOR TRAVEL TOO LARGE (ACTIVE)

When Monitored and Set Condition:

RECIRC DOOR TRAVEL TOO LARGE (ACTIVE)

When Monitored: Ignition in RUN and IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is greater than expected.

POSSIBLE CAUSES
CHECK THE ATC FOR DTCS
RECIRCULATION DOOR ACTUATOR
RECIRCULATION DOOR LINKAGE
ATC

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, read the active ATC DTCs. Is the RECIRC DOOR NOT RESPONDING DTC set? Yes → Return to the symptom list and choose the symptom. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Remove the Recirculation Door Actuator. By hand, attempt to rotate the Recirculation Door Actuator in both directions. Did the Recirculation Door Actuator turn in either direction? Yes → Replace the Recirculation Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Remove the Recirculation Door Actuator. Rotate the recirculation door (door only). Note: This should rotate approximately 45 degrees from stop to stop. Inspect the recirculation door linkage for excessive wear or missing linkage. Were any mechanical problems found? Yes → Repair or replace the recirculation door/linkage as necessary. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RECIRC DOOR TRAVEL TOO SMALL (ACTIVE)

When Monitored and Set Condition:

RECIRC DOOR TRAVEL TOO SMALL (ACTIVE)

When Monitored: Ignition in RUN and IOD fuse installed.

Set Condition: This DTC is set when the ATC monitors the travel range during system initialization and the measured range is less than expected.

POSSIBLE CAUSES
CHECK THE ATC FOR DTCS
ATC
OBSTRUCTED RECIRC DOOR
RECIRCULATION DOOR ACTUATOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, read the active ATC DTCs. Is the RECIRC DOOR NOT RESPONDING DTC set? Yes → Return to the symptom list and choose the symptom. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Disconnect the Recirculation Door Actuator harness connector. Connect a 12-volt Test Light between the Recirculation Door Driver (A) and (B) circuits. Turn the ignition on. While monitoring the test light, press the recirculation control button from off to on. **Note: Observe test light for approximately 30 seconds.** Does the test light start to flash and stay flashing? Yes → Go To 3 No → Replace the ATC. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
3	Remove the Recirculation Door Actuator. Rotate the recirculation door (door only). Note: This should rotate approximately 45 degrees from stop to stop. Does the recirculation door move smoothly in both directions? Yes → Replace the Recirculation Door Actuator. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Repair or replace the recirculation door as necessary. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
*ATC HEAD LED(S)/BACK LIGHTING INOPERATIVE

POSSIBLE CAUSES
CHECK FOR ATC DTCS
CHECK FOR BCM DTCS
ATC - LED(S) INOPERATIVE
ATC - BACK LIGHTING INOPERATIVE
PANEL LAMPS DRIVER CIRCUIT OPEN
BODY CONTROL MODULE - PANEL LAMPS DRIVER OPEN

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read ATC DTCs. Does the DRBIII® display any ATC DTCs? Yes → Return to the symptom list and choose the symptom(s). With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition on. With the DRBIII®, read the BCM DTCs. Does DRBIII® display Headlamp Switch: Mismatch; STG; Open; or Panel Dim Output Short? Yes → Refer to symptoms Headlamp Switch Mismatch, Headlamp Switch Shorted To Ground, and Headlamp Switch Open in the Exterior Lighting catagory. Refer to symptom Panel Dimming Output Short in the Instrument Cluster catagory. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition on. Turn the ATC Power switch on. **NOTE: Compare with a known good ATC Head.** Operate all ATC switches (Front Fan, Rear System, Temp, Mode, A/C, Recirc, Rear Defog) while looking at the display and lights on the ATC Head. Are all of the LEDs operating properly? Yes → Go To 4 No → Replace the ATC in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

*ATC HEAD LED(S)/BACK LIGHTING INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Rotate the Panel Lamps Dimmer switch to the off position. Disconnect the ATC C2 harness connector. Turn the park lamps on. Measure the voltage of the Panel Lamps Driver circuit while rotating the Panel Lamps Dimmer switch from the off position to the full brightness position. Does the voltage change from approximately 2.5 volts to 11.5 volts? Yes → Replace the ATC in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the ATC C2 harness connector. Disconnect the Body Control Module C4 harness connector. Measure the resistance of the Panel Lamps Driver circuit between the ATC C2 harness connector and the Body Control Module C4 harness connector. Is the resistance below 5 ohms? Yes → Replace the Body Control Module in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Panel Lamps Driver circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***FRONT BLOWER MOTOR INOPERATIVE**

POSSIBLE CAUSES
FRONT CONTROL MODULE (FCM) DTC(S) PRESENT
IPM FUSE #10
FUSED FRONT BLOWER MOTOR RELAY OUTPUT CIRCUIT SHORTED TO GROUND
BLOWER MOTOR SHORTED TO GROUND
FRONT BLOWER POWER MODULE SHORTRD TO GROUND
GROUND CIRCUIT OPEN
BLOWER MOTOR CONTROL CIRCUIT SHORTED TO VOLTAGE
BLOWER MOTOR CONTROL CIRCUIT OPEN
FRONT BLOWER POWER MODULE OPEN
AUTOMATIC TEMPERATURE CONTROL MODULE OPEN
CHECK BLOWER MOTOR OPERATION
FRONT BLOWER POWER MODULE OPEN
IPM - OPEN CIRCUIT
IPM - OPEN CIRCUIT
FRONT BLOWER MOTOR RELAY
IPM - OPEN CIRCUIT
FUSED FRONT BLOWER MOTOR RELAY OUTPUT CIRCUIT OPEN

TEST	ACTION	APPLICABILITY
1	With the DRBIII® in FCM, read the active DTCs. Are any active FCM DTCs present? Yes → For FCM DTCs related to the blower relay circuits, refer to the Heating & A/C catagory. For all other FCM DTCs, refer to the symptom list in the related catagory. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Remove and inspect Intelligent Power Module (IPM) Fuse #10. Is the fuse open? Yes → Go To 3 No → Go To 6	All

*FRONT BLOWER MOTOR INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
3	Replace IPM Fuse #10. Turn the ignition on. Operate the blower motor in all speeds. Start the engine and operate the ATC system in all modes and speeds. Does the blower motor operate properly without blowing the fuse? Yes → Refer to the wiring diagrams located in the service information to help isolate a possible intermittent short to ground condition. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the Front Blower Power Module C1 harness connector. Measure the resistance between ground and the Fused Front Blower Motor Relay Output circuit. Is the resistance below 10K ohms? Yes → Repair the Fused Front Blower Motor Relay Output circuit for a short to ground. Replace IPM Fuse #10. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Replace IPM Fuse #10. Disconnect the Front Blower Power Module C1 harness connector. Disconnect the Front Blower Power Module C2 harness connector. Connect a jumper wire between the Fused Front Blower Motor Relay Output circuit in the Front Blower Power Module C1 harness connector and the DB wire in the Front Blower Power Module C2 harness connector. Connect a jumper wire between the Ground circuit in the Front Blower Power Module C1 harness connector and the DB/YL wire in the Front Blower Power Module C2 harness connector. Turn the ignition on. Does the Blower Motor operate at full speed without blowing the fuse? Yes → Replace the Front Blower Power Module in accordance with the Service Information. Replace IPM Fuse #10. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Blower Motor in accordance with the Service Information. Replace IPM Fuse #10. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
6	Ensure IPM Fuse #10 is installed. Disconnect the Front Blower Power Module C1 harness connector. Turn the ignition on. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, back probe the Fused Front Blower Motor Relay Output circuit in the Front Blower Power Module C1 harness connector. Does the test light illuminate brightly? Yes → Go To 7 No → Go To 13	All

*FRONT BLOWER MOTOR INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Disconnect the Front Blower Power Module C1 harness connector. Measure the resistance between ground and the Ground circuit. Is the resistance below 5.0 ohms? Yes → Go To 8 No → Repair the Ground circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
8	Turn the ignition off. Disconnect the Front Blower Power Module C1 harness connector. Disconnect the Automatic Temperature Control Module C2 harness connector. Turn the ignition on. Measure the voltage of the Blower Motor Control circuit. Is there any voltage present? Yes → Repair the Blower Motor Control circuit for a short to voltage. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off. Disconnect the Front Blower Power Module C1 harness connector. Disconnect the Automatic Temperature Control Module C2 harness connector. Measure the resistance of the Blower Motor Control circuit between the Front Blower Power Module C1 harness connector and the Automatic Temperature Control Module C2 harness connector. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the Blower Motor Control circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
10	Turn the ignition off. Make sure that the Front Blower Power Module C1 harness connector is connected to the Front Blower Power Module. Make sure that the Automatic Temperature Control Module C2 harness connector is connected to the Automatic Temperature Control Module. Start the engine. Press the ATC Power Switch on. Set the blower switch to the LO speed position. While back probing, measure the voltage of the Blower Motor Control circuit in the Automatic Temperature Control Module C2 harness connector. Is the voltage above 10.0 volts? Yes → Go To 11 No → Replace the Front Blower Power Module in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

*FRONT BLOWER MOTOR INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
11	Turn the ignition off. Reconnect all previously disconnected components. Connect the DRBIII® X10 Scope Probe CH7061 to Channel 1 on the DRBIII®. Select the following from the DRBIII® menu: PEP Module Tools; Lab Scope; Live Data; and Lab Scope. Press F2 and then press Enter. Using the left/right arrow keys, set the time to 10ms/Div. Press F2. Using the up/down arrow keys, set the voltage range to +20.0v. Press Enter to move the cursor to Probe. Using the up/down arrow keys, set the Probe to X10. Press F2. Start the engine. Press the ATC Power switch on. Using the X10 Scope Probe, back probe the Blower Motor Control circuit in the Front Blower Power Module C1 harness connector. **NOTE: The Blower Power Module provides a 10.0 volt signal to the ATC Module over the Blower Motor Control circuit. The ATC Module provides a variable duty cycle ground to the 10.0 volt signal based on input from the blower control switch.** **NOTE: When the blower control switch is set to LO speed, the ATC Module provides a short duty cycle (less time grounding the signal voltage).** **NOTE: As higher blower speeds are requested, the ATC Module increases the duty cycle (more time grounding the signal voltage).** **NOTE: When the blower control switch reaches HI speed, the duty cycle increases to where the signal pattern is almost a flat line (with brief voltage spikes).** Set the blower switch to LO speed then slowly move it to HI speed while observing the DRBIII® display. The voltage on the scope patten should cycle from approximately 2.0 volts (duty cycle on) to 10.0 volts (duty cycle off) for all blower speeds. The duty cycle pattern should change smoothly as the blower switch is turned from LO to HI. The duty cycle on time should change from approximately 8 ms at LO speed, to 15 ms at medium speed, and to 25 ms at HI speed. Does the DRBIII® display the voltage range and duty cycle as described above? Yes → Go To 12 No → Replace the Automatic Temperature Control Module in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

*FRONT BLOWER MOTOR INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
12	Turn the ignition off. Disconnect the Front Blower Power Module C1 harness connector. Disconnect the Front Blower Power Module C2 harness connector. Connect a jumper wire between the Fused Front Blower Motor Relay Output circuit in the Front Blower Power Module C1 harness connector and the DB wire in the Front Blower Power Module C2 harness connector. Connect a jumper wire between the Ground circuit in the Front Blower Power Module C1 harness connector and the DB/YL wire in the Front Blower Power Module C2 harness connector. Turn the ignition on. Does the Blower Motor operate at full speed? Yes → Replace the Front Blower Power Module in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Blower Motor in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
13	Turn the ignition off. Remove the Front Blower Motor Relay from the IPM. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, probe cavity 30 of the Front Blower Motor Relay connector. Does the test light illuminate brightly? Yes → Go To 14 No → Replace the IPM in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
14	Turn the ignition off. Remove the Front Blower Motor Relay from the IPM. Remove IPM Fuse #10. Measure the resistance between cavity 87 of the Front Blower Motor Relay connector and IPM Fuse #10 (power input cavity). Is the resistance below 5 ohms? Yes → Go To 15 No → Replace the IPM in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

*FRONT BLOWER MOTOR INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
15	Turn the ignition off. Make sure that the Front Blower Motor Relay is installed. Remove IPM Fuse #10. Turn the ignition on. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, probe IPM Fuse #10 (power input cavity). Does the test light illuminate brightly? Yes → Go To 16 No → Replace the Front Blower Motor Relay in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
16	Turn the ignition off. Remove IPM Fuse #10. Disconnect the IPM C6 harness connector. Measure the resistance between IPM Fuse #10 (power output cavity) and cavity 7 of the IPM C6 connector (IPM side). Is the resistance below 5 ohms? Yes → Repair the Fused Front Blower Motor Relay Output circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the IPM in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***FRONT BLOWER RUNS AT ONLY ONE SPEED**

POSSIBLE CAUSES
BLOWER MOTOR CONTROL CIRCUIT SHORTED TO GROUND
AUTOMATIC TEMPERATURE CONTROL MODULE
FRONT BLOWER POWER MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Front Blower Power Module C1 harness connector. Disconnect the Automatic Temperature Control Module C2 harness connector. Measure the resistance between ground and the Blower Motor Control circuit. Is the resistance below 10K ohms? Yes → Repair the Blower Motor Control circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All

*FRONT BLOWER RUNS AT ONLY ONE SPEED — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. Reconnect all previously disconnected components. Connect the DRBIII® X10 Scope Probe CH7061 to Channel 1 on the DRBIII®. Select the following from the DRBIII® menu: PEP Module Tools; Lab Scope; Live Data; and Lab Scope. Press F2 and then press Enter. Using the left/right arrow keys, set the time to 10ms/Div. Press F2. Using the up/down arrow keys, set the voltage range to +20.0v. Press Enter to move the cursor to Probe. Using the up/down arrow keys, set the Probe to X10. Press F2. Start the engine. Press the ATC Power switch on. Using the X10 Scope Probe, back probe the Blower Motor Control circuit in the Front Blower Power Module C1 harness connector. **NOTE: The Blower Power Module provides a 10.0 volt signal to the ATC Module over the Blower Motor Control circuit. The ATC Module provides a variable duty cycle ground to the 10.0 volt signal based on input from the blower control switch.** **NOTE: When the blower control switch is set to LO speed, the ATC Module provides a short duty cycle (less time grounding the signal voltage).** **NOTE: As higher blower speeds are requested, the ATC Module increases the duty cycle (more time grounding the signal voltage).** **NOTE: When the blower control switch reaches HI speed, the duty cycle increases to where the signal pattern is almost a flat line (with brief voltage spikes).** Set the blower switch to LO speed then slowly move it to HI speed while observing the DRBIII® display. The voltage on the scope patten should cycle from approximately 2.0 volts (duty cycle on) to 10.0 volts (duty cycle off) for all blower speeds. The duty cycle pattern should change smoothly as the blower switch is turned from LO to HI. The duty cycle on time should change from approximately 8 ms at LO speed, to 15 ms at medium speed, and to 25 ms at HI speed. Does the DRBIII® display the voltage range and duty cycle as described above? Yes → Replace the Front Blower Power Module in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Automatic Temperature Control Module in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***HVAC SYSTEM TEST**

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE PCM/ECM, THE BCM, AND THE FCM
CHECK FOR HVAC RELATED DTCS IN THE PCM/ECM
CHECK FOR BCM DTCS
CHECK FOR FCM DTCS
CHECK FOR ACTIVE ATC DTCS
CHECK FOR AC COOLDOWN TEST FAULT MESSAGES
CHECK FOR HVAC RELATED DTCS IN THE PCM/ECM
MANUAL A/C SYSTEM TEST

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, attempt to communicate with the Powertrain/Engine Control Module. With the DRBIII®, attempt to communicate with the Body Control Module. With the DRBIII®, attempt to communicate with the Front Control Module. Was the DRBIII® able to communicate with the PCM/ECM, the BCM, and the FCM? Yes → Go To 2 No → Refer to the communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII®, read Powertrain/Engine Computer DTC's. Are any HVAC related DTCs present? Yes → Refer to the Powertrain Diagnostic Procedures Manual for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, read Body Computer DTC's. Are any DTCs present? Yes → Refer to the appropriate catagory for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	With the DRBIII®, read Front Control Module DTC's. Are any DTCs present? Yes → For FCM DTCs related to the blower relay circuits, refer to the Heating & A/C catagory. For all other FCM DTCs, refer to the symptom list in the related catagory. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All

*HVAC SYSTEM TEST — Continued

TEST	ACTION	APPLICABILITY
5	**NOTE: Active codes must be resolved before diagnosing stored codes.** **NOTE: Anytime a code becomes active proceed to the conclusion question.** **NOTE: If multiple codes appear, diagnose those that relate to a short circuit first.** Start the engine. Press the ATC Power switch on. Turn the front blower control to the low speed position. If equipped, turn the rear blower control to the Rear Control position. Set the Driver, Pass, and, if equipped, Rear temperature controls to 60°F (16°C). Monitor the DRBIII® for active ATC DTCs while performing the following test steps. Press the recirculation mode switch on, wait 30 seconds, and then press it off. Press the A/C mode switch on, wait 30 seconds, and then press it off. Press the rear defogger switch on, wait 30 seconds, and then press it off. Set the Driver temperature control to the max heat setting, wait 30 seconds, and then set it to the max cool setting. Repeat this step for the Pass and, if equipped, Rear temperature controls. Turn the mode control to each position for 30 seconds and then turn it back to the panel position. Press the Auto HI switch, wait 30 seconds, and then press the Auto LO switch. When function is complete, turn the front blower control to the low speed position. If equipped, on the Rear ATC Control, set the rear temperature control to the max heat setting, wait 30 seconds, and then set it to the max cool setting. If equipped, on the Rear ATC Control, turn the mode control to each position for 30 seconds. With the DRBIII® in ATC, Miscellaneous, reset the ATC. Does the DRBIII® display any active ATC DTCs? Yes → Return to the symptom list and choose the symptom(s) Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All

*HVAC SYSTEM TEST — Continued

TEST	ACTION	APPLICABILITY
6	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **NOTE: For RG vehicles equipped with a Diesel Cabin Heater Assist (DCHA), refer to Venting the DCHA's Exhaust under Cabin Heater in the General Information portion of this manual for proper exhaust venting instructions.** **NOTE: The AC Cooldown Test is actuated with the DRBIII®. The test checks A/C system performance based on evaporator temperature sensor input. It also forces the ATC to initiate a Cabin Heater Activation request when the vehicle is equipped with a DCHA.** **NOTE: The A/C related portion of this test will not run if ambient temp is below 12°C (53°F). However, the forced Cabin Heater activation will occur even if the A/C portion of this test fails to initiate because test criteria was not met.** **NOTE: The A/C related portion of this test will pass if evap temp drops 6.7°C (20°F) within 2 minutes of starting this test.** **NOTE: Only A/C related messages display on the DRBIII® after running this test. These messages will clear after paging back out of this test. Therefore, it is important to note all of the test messages before doing so.** **NOTE: Running this test will cause the DELAY & Snowflake on the ATC to flash for 162 seconds (RG with DCHA only). If the A/C related portion of this test fails, the DELAY & Snowflake LED will continue to flash until the vehicle is driven more than 3 miles.** Start the engine. Press the ATC's Power switch on. Turn the Mode control to the panel position. Verify that the front blower motor and, if equipped, rear blower motor operate correctly in all speeds from each control. Diagnose and repair all blower related faults before proceeding with this test. Turn the Front Blower control to the high speed position. Set the Driver, Pass, and, if equipped, Rear temperature controls to 72°F (22°C). **CAUTION: Do not activate the A/C Cooldown Test with the engine off. Failure to follow these instructions may result in internal damage to the DCHA Heater Module.** **NOTE: Do not disconnect the vehicle's battery or the DCHA's main power supply while the DCHA is in operation or in run-down mode. Failure to follow these instructions may result in excess emissions from the DCHA during heater operation.** **NOTE: Before actuating the AC Cooldown Test, verify that the A/C compressor is not running, If the compressor is running, turn the A/C off and allow the evaporator to warm up before proceeding with the test.** **NOTE: The DCHA, if equipped, will operate for approximately 7 minutes. 3 minutes to run and 4 minutes to purge.** With the DRBIII® in ATC, Systems Tests, perform the AC Cooldown Test. Does the DRBIII® display any Cooldown Test fault messages? Yes → Return to the symptom list and choose the symptom(s) Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All

*HVAC SYSTEM TEST — Continued

TEST	ACTION	APPLICABILITY
7	With the DRBIII®, read PCM/ECM DTC's. Are any HVAC related DTCs present? Yes → Refer to the Powertrain Diagnostic Procedures Manual for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Recheck the climate control system performance. Refer to Service Information for additional information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
*REAR ATC SWITCH LED(S)/BACK LIGHTING INOPERATIVE

POSSIBLE CAUSES
CHECK FOR ATC DTCS
CHECK FOR BCM DTCS
REAR ATC SWITCH - LED(S) INOPERATIVE
REAR ATC SWITCH - BACK LIGHTING INOPERATIVE
PANEL LAMPS DRIVER CIRCUIT OPEN
BODY CONTROL MODULE - PANEL LAMPS DRIVER OPEN

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read ATC DTCs. Does the DRBIII® display any ATC DTCs? Yes → Return to the symptom list and choose the symptom(s). With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition on. With the DRBIII®, read the BCM DTCs. Does DRBIII® display Headlamp Switch: Mismatch; STG; Open; or Panel Dim Output Short? Yes → Refer to symptoms Headlamp Switch Mismatch, Headlamp Switch Shorted To Ground, and Headlamp Switch Open in the Exterior Lighting catagory. Refer to symptom Panel Dimming Output Short in the Instrument Cluster catagory. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition on. Turn the ATC Power switch on. Turn the Rear System switch on the ATC Head to the Rear Control position. Turn the Fan switch on the Rear ATC Switch to the Auto position. Set the Rear Temp to the HI setting. **NOTE: Compare with a known good Rear ATC Switch.** While looking at the display on the Rear ATC Switch, press and hold the Temp Up/Down control in the Down position. Are all segments of the LEDs operating properly as the temperature changes from HI to LO? Yes → Go To 4 No → Replace the Rear ATC Switch in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

*REAR ATC SWITCH LED(S)/BACK LIGHTING INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Rotate the Panel Lamps Dimmer switch to the off position. Disconnect the Rear ATC Switch harness connector. Turn the park lamps on. Measure the voltage of the Panel Lamps Driver circuit while rotating the Panel Lamps Dimmer switch from the off position to the full brightness position. Does the voltage change from approximately 2.5 volts to 11.5 volts? Yes → Replace the Rear ATC Switch in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Rear ATC Switch harness connector. Disconnect the Body Control Module C3 harness connector. Measure the resistance of the Panel Lamps Driver circuit between the Rear ATC Switch harness connector and the Body Control Module C3 harness connector. Is the resistance below 5 ohms? Yes → Replace the Body Control Module in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Panel Lamps Driver circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***REAR BLOWER MOTOR INOPERATIVE**

POSSIBLE CAUSES
FRONT CONTROL MODULE (FCM) DTC(S) PRESENT
IPM FUSE #12
FUSED REAR BLOWER RELAY OUTPUT CIRCUIT SHORTED TO GROUND
BLOWER MOTOR SHORTED TO GROUND
REAR BLOWER MOTOR POWER MODULE SHORTRD TO GROUND
GROUND CIRCUIT OPEN
REAR BLOWER MOTOR CONTROL CIRCUIT SHORTED TO VOLTAGE
REAR BLOWER MOTOR CONTROL CIRCUIT OPEN
REAR BLOWER MOTOR POWER MODULE OPEN
AUTOMATIC TEMPERATURE CONTROL MODULE OPEN
CHECK BLOWER MOTOR OPERATION
REAR BLOWER MOTOR POWER MODULE OPEN
IPM - OPEN CIRCUIT
IPM - OPEN CIRCUIT
REAR BLOWER MOTOR RELAY
IPM - OPEN CIRCUIT
FUSED REAR BLOWER MOTOR RELAY OUTPUT CIRCUIT OPEN

TEST	ACTION	APPLICABILITY
1	With the DRBIII® in FCM, read the active DTCs. Are any active FCM DTCs present? Yes → For FCM DTCs related to the blower relay circuits, refer to the Heating & A/C catagory. For all other FCM DTCs, refer to the symptom list in the related catagory. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Remove and inspect Intelligent Power Module (IPM) Fuse #12. Is the fuse open? Yes → Go To 3 No → Go To 6	All

*REAR BLOWER MOTOR INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
3	Replace IPM Fuse #12. Turn the ignition on. Operate the blower motor in all speeds. Start the engine and operate the ATC system in all modes and speeds. Does the blower motor operate properly without blowing the fuse? Yes → Refer to the wiring diagrams located in the service information to help isolate a possible intermittent short to ground condition. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the Rear Blower Motor Power Module C1 harness connector. Measure the resistance between ground and the Fused Rear Blower Relay Output circuit. Is the resistance below 10K ohms? Yes → Repair the Fused Rear Blower Relay Output circuit for a short to ground. Replace IPM Fuse #12. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Replace IPM Fuse #12. Disconnect the Rear Blower Motor Power Module C1 harness connector. Disconnect the Rear Blower Motor Power Module C2 harness connector. Connect a jumper wire between the Fused Rear Blower Relay Output circuit in the Rear Blower Motor Power Module C1 harness connector and the Power Feed circuit in the Rear Blower Motor Power Module C2 harness connector. Connect a jumper wire between the Ground circuit in the Rear Blower Motor Power Module C1 harness connector and the Ground circuit in the Rear Blower Motor Power Module C2 harness connector. Turn the ignition on. Does the Blower Motor operate at full speed without blowing the fuse? Yes → Replace the Rear Blower Motor Power Module in accordance with the Service Information. Replace IPM Fuse #12. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Blower Motor in accordance with the Service Information. Replace IPM Fuse #12. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
6	Ensure IPM Fuse #12 is installed. Disconnect the Rear Blower Motor Power Module C1 harness connector. Turn the ignition on. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, back probe the Fused Rear Blower Relay Output circuit in the Rear Blower Motor Power Module C1 harness connector. Does the test light illuminate brightly? Yes → Go To 7 No → Go To 13	All

*REAR BLOWER MOTOR INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Disconnect the Rear Blower Motor Power Module C1 harness connector. Measure the resistance between ground and the Ground circuit. Is the resistance below 5.0 ohms? Yes → Go To 8 No → Repair the Ground circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
8	Turn the ignition off. Disconnect the Rear Blower Motor Power Module C1 harness connector. Disconnect the Automatic Temperature Control Module C2 harness connector. Turn the ignition on. Measure the voltage of the Rear Blower Motor Control circuit. Is there any voltage present? Yes → Repair the Rear Blower Motor Control circuit for a short to voltage. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off. Disconnect the Rear Blower Motor Power Module C1 harness connector. Disconnect the Automatic Temperature Control Module C2 harness connector. Measure the resistance of the Rear Blower Motor Control circuit between the Rear Blower Motor Power Module C1 harness connector and the Automatic Temperature Control Module C2 harness connector. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the Rear Blower Motor Control circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
10	Turn the ignition off. Make sure that the Rear Blower Motor Power Module C1 harness connector is connected to the Rear Blower Motor Power Module. Make sure that the Automatic Temperature Control Module C2 harness connector is connected to the Automatic Temperature Control Module. Start the engine. Press the ATC Power switch on. Set the Rear System switch on the ATC module to the Rear Control position. Set the blower switch on the Rear ATC Control panel to LO speed. While back probing, measure the voltage of the Rear Blower Motor Control circuit in the Automatic Temperature Control Module C2 harness connector. Is the voltage above 10.0 volts? Yes → Go To 11 No → Replace the Rear Blower Motor Power Module in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

*REAR BLOWER MOTOR INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
11	Turn the ignition off. Reconnect all previously disconnected components. Connect the DRBIII® X10 Scope Probe CH7061 to Channel 1 on the DRBIII®. Select the following from the DRBIII® menu: PEP Module Tools; Lab Scope; Live Data; and Lab Scope. Press F2 and then press Enter. Using the left/right arrow keys, set the time to 10ms/Div. Press F2. Using the up/down arrow keys, set the voltage range to +20.0v. Press Enter to move the cursor to Probe. Using the up/down arrow keys, set the Probe to X10. Press F2. Start the engine. Press the ATC Power switch on. Set the Rear System switch on the ATC module to the Rear Control position. Using the X10 Scope Probe, back probe the Rear Blower Motor Control circuit in the Automatic Temperature Control Module C2 harness connector. **NOTE: The Rear Blower Motor Power Module provides a 10.0 volt signal to the ATC Module over the Rear Blower Motor Control circuit. The ATC Module provides a variable duty cycle ground to the 10.0 volt signal based on input from the Rear Blower switch.** **NOTE: When the Rear Blower switch is set to LO speed, the ATC Module provides a short duty cycle (less time grounding the signal voltage).** **NOTE: As higher blower speeds are requested, the ATC Module increases the duty cycle (more time grounding the signal voltage).** **NOTE: When the Rear Blower switch reaches HI speed, the duty cycle increases to where the signal pattern is almost a flat line (with brief voltage spikes).** Set the blower switch on the Rear ATC Control panel to LO speed then slowly move it to HI speed while observing the DRBIII® display. The voltage on the scope patten should cycle from approximately 2.0 volts (duty cycle on) to 10.0 volts (duty cycle off) for all blower speeds. The duty cycle pattern should change smoothly as the Rear Blower switch is turned from LO to HI. The duty cycle on time should change from approximately 8 ms at LO speed, to 15 ms at medium speed, and to 25 ms at HI speed. Does the DRBIII® display the voltage range and duty cycle as described above? Yes → Go To 12 No → Replace the Automatic Temperature Control Module in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

*REAR BLOWER MOTOR INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
12	Turn the ignition off. Disconnect the Rear Blower Motor Power Module C1 harness connector. Disconnect the Rear Blower Motor Power Module C2 harness connector. Connect a jumper wire between the Fused Rear Blower Relay Output circuit in the Rear Blower Motor Power Module C1 harness connector and the Power Feed circuit in the Rear Blower Motor Power Module C2 harness connector. Connect a jumper wire between the Ground circuit in the Rear Blower Motor Power Module C1 harness connector and the Ground circuit in the Rear Blower Motor Power Module C2 harness connector. Turn the ignition on. Does the Blower Motor operate at full speed? Yes → Replace the Rear Blower Motor Power Module in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Blower Motor in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
13	Turn the ignition off. Remove the Rear Blower Motor Relay from the IPM. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, probe cavity 30 of the Rear Blower Motor Relay connector. Does the test light illuminate brightly? Yes → Go To 14 No → Replace the IPM in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
14	Turn the ignition off. Remove the Rear Blower Motor Relay from the IPM. Remove IPM Fuse #12. Measure the resistance between cavity 87 of the Rear Blower Motor Relay connector and IPM Fuse #12 (power input cavity). Is the resistance below 5 ohms? Yes → Go To 15 No → Replace the IPM in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

*REAR BLOWER MOTOR INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
15	Turn the ignition off. Make sure that the Rear Blower Motor Relay is installed. Remove IPM Fuse #12. Turn the ignition on. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, probe IPM Fuse #12 (power input cavity). Does the test light illuminate brightly? Yes → Go To 16 No → Replace the Rear Blower Motor Relay in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All
16	Turn the ignition off. Remove IPM Fuse #12. Disconnect the IPM C8 harness connector. Measure the resistance between IPM Fuse #12 (power output cavity) and cavity 7 of the IPM C8 connector (IPM side). Is the resistance below 5 ohms? Yes → Repair the Fused Rear Blower Motor Relay Output circuit for an open. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the IPM in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***REAR BLOWER RUNS AT ONLY ONE SPEED**

POSSIBLE CAUSES
REAR BLOWER MOTOR CONTROL CIRCUIT SHORTED TO GROUND
AUTOMATIC TEMPERATURE CONTROL MODULE
REAR BLOWER MOTOR POWER MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Rear Blower Motor Power Module C1 harness connector. Disconnect the Automatic Temperature Control Module C2 harness connector. Measure the resistance between ground and the Rear Blower Motor Control circuit. Is the resistance below 10K ohms? Yes → Repair the Rear Blower Motor Control circuit for a short to ground. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All

*REAR BLOWER RUNS AT ONLY ONE SPEED — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. Reconnect all previously disconnected components. Connect the DRBIII® X10 Scope Probe CH7061 to Channel 1 on the DRBIII®. Select the following from the DRBIII® menu: PEP Module Tools; Lab Scope; Live Data; and Lab Scope. Press F2 and then press Enter. Using the left/right arrow keys, set the time to 10ms/Div. Press F2. Using the up/down arrow keys, set the voltage range to +20.0v. Press Enter to move the cursor to Probe. Using the up/down arrow keys, set the Probe to X10. Press F2. Start the engine. Press the ATC Power switch on. Set the Rear System switch on the ATC module to the Rear Control position. Using the X10 Scope Probe, back probe the Rear Blower Motor Control circuit in the Automatic Temperature Control Module C2 harness connector. **NOTE: The Rear Blower Motor Power Module provides a 10.0 volt signal to the ATC Module over the Rear Blower Motor Control circuit. The ATC Module provides a variable duty cycle ground to the 10.0 volt signal based on input from the Rear Blower switch.** **NOTE: When the Rear Blower switch is set to LO speed, the ATC Module provides a short duty cycle (less time grounding the signal voltage).** **NOTE: As higher blower speeds are requested, the ATC Module increases the duty cycle (more time grounding the signal voltage).** **NOTE: When the Rear Blower switch reaches HI speed, the duty cycle increases to where the signal pattern is almost a flat line (with brief voltage spikes).** Set the blower switch on the Rear ATC Control panel to LO speed then slowly move it to HI speed while observing the DRBIII® display. The voltage on the scope patten should cycle from approximately 2.0 volts (duty cycle on) to 10.0 volts (duty cycle off) for all blower speeds. The duty cycle pattern should change smoothly as the Rear Blower switch is turned from LO to HI. The duty cycle on time should change from approximately 8 ms at LO speed, to 15 ms at medium speed, and to 25 ms at HI speed. Does the DRBIII® display the voltage range and duty cycle as described above? Yes → Replace the Rear Blower Motor Power Module in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Automatic Temperature Control Module in accordance with the Service Information. With the DRBIII®, reset the ATC after repair is complete. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

A. CABIN HEATER PRE-TEST
CABIN HEATER CONTROL CIRCUIT OPEN (STORED)
CABIN HEATER CONTROL CIRCUIT SHORT TO BATTERY (STORED)

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be A. CABIN HEATER PRE-TEST.

When Monitored and Set Condition:

CABIN HEATER CONTROL CIRCUIT OPEN (STORED)

When Monitored: When the DCHA system is off.

Set Condition: The DCHA Low Side Driver inside the FCM expects to see a system voltage of 13.8 volts through the DCHA relay coil when the DCHA system is off. This DTC will set if the FCM sees a voltage below 3.5 volts on the Cabin Heater Assist Control circuit during this time.

CABIN HEATER CONTROL CIRCUIT SHORT TO BATTERY (STORED)

When Monitored: During DCHA activation and operation.

Set Condition: This DTC will set if the FCM sees between 5.0 and 15.0 volts on the Cabin Heater Assist Control circuit.

POSSIBLE CAUSES
NO RESPONSE FROM CABIN HEATER MODULE
DTC(S) PRESENT
CABIN HEATER INOPERABLE FROM A/C - HEATER MODULE (MTC)
CABIN HEATER INOPERABLE FROM AUTO TEMP CONTROL (ATC)
STORED DCHA DTC(S) TEST COMPLETE

A. CABIN HEATER PRE-TEST — Continued

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **CAUTION: When using a powered exhaust ventilation system, do not attach the exhaust ventilation hose directly to the DCHA exhaust pipe. Too much suction can prevent DCHA operation.** When using a powered exhaust ventilation system, affix the ventilation hose to the DCHA exhaust pipe or to the vehicle in such a manor that the end of the ventilation hose remains approximately three inches away from the end of the DCHA exhaust pipe. When using a non-powered exhaust ventilation system, affix the ventilation hose directly to the DCHA exhaust pipe. Turn the ignition on. With the DRBIII®, attempt to communicate with the Cabin Heater Module. Does the DRBIII® display: No Response From Cabin Heater Module? Yes → Refer to Communication for the related symptom. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Go To 2	All
2	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Turn the ignition on. With the DRBIII®, read Cabin Heater DTCs. Is DTC B1813 Heater In Lockout Mode present? Yes → Go To 3 No → Go To 4	All
3	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Start the engine. Allow the engine to idle. Turn the ATC's or MTC's Power switch on. Turn the Blower control to the high speed position. On MTC, set the Blend control to the max heat position. On ATC, set the Driver temperature control to HI (max heat). Remove Cabin Heater Fuse #15 from the IPM for a minimum of five seconds, then reinstall the fuse. The DCHA may attempt to start. Turn the Blower control off and turn the ATC's or MTC's Power switch off. Turn the engine off. View repair Repair Go To 4	All

A. CABIN HEATER PRE-TEST — Continued

TEST	ACTION	APPLICABILITY
4	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** **NOTE: The DCHA Control will store up to three DTCs in its memory.** **NOTE: If the DCHA Control detects a new fault in the DCHA system, one that is not already stored in its memory, the DCHA Control will clear the oldest of the three stored DTCs, and it will store the new fault's DTC.** **NOTE: If the DCHA control detects a reoccurrence of a stored fault, the DCHA control will overwrite that fault's DTC with the most recent occurrence.** Turn the ignition on. On MTC, set the Blend control to the max cool position. On ATC, set the Driver temperature control to LO (max cool). Turn the ATC's or MTC's Power switch off. With the DRBIII®, record and erase Cabin Heater and FCM DTCs. Start the engine. Allow the engine to idle. Turn the ATC's or MTC's Power switch on. Turn the Blower control to the high speed position. **CAUTION: Do not activate the DCHA Field Mode Test with the engine off. Failure to follow these instructions may result in internal damage to the DCHA Heater Module.** **NOTE: Do not disconnect the vehicle's battery or the DCHA's main power supply while the DCHA is in operation or in run-down mode. Failure to follow these instructions may result in excess emissions from the DCHA during heater operation.** With the DRBIII® in Cabin Heater, Systems Tests, select Field Mode and press Enter. The test will run for approx 8.5 minutes. On MTC, set the Blend control to the max heat position. Upon completion of the Field Mode Test, proceed as follows: On ATC, set the Driver temperature control to HI (max heat). Upon completion of the Field Mode Test, proceed as follows: With the DRBIII®, read Cabin Heater and Active FCM DTCs. Turn the Blower control off and turn the ATC's or MTC's Power switch off. Turn the engine off. Are any DTCs present? Yes → Return to the symptom list and choose the DTC(s). Diagnose and repair all FCM faults prior to diagnosing DCHA faults. If DTC B1813 Heater In Lockout Mode reset with other DTC(s), reset the heater before diagnosing the other DTC(s). Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Go To 5	All

A. CABIN HEATER PRE-TEST — Continued

TEST	ACTION	APPLICABILITY
5	Is the symptom Cabin Heater inoperable from the ATC or from the MTC? Yes - MTC Refer to symptom *Cabin Heater Inoperable From A/C - Heater Module (MTC) in the Cabin Heater category. Perform CABIN HEATER VERIFICATION TEST - VER 1. Yes - ATC Refer to symptom *Cabin Heater Inoperable From Auto Temp Control (ATC) in the Cabin Heater category. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Let DCHA cool. Inspect fuel line, intake & exhaust, & coolant hoses for restrictions, obstructions, loose clamps, leakage, etc. Check connectors. Clean & repair as necessary. Refer to Service Manual for additional symptom based diagnosis, if necessary. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom:
B1000 CONTROL UNIT ERRONEOUS

When Monitored and Set Condition:

B1000 CONTROL UNIT ERRONEOUS

When Monitored: During DCHA activation.

Set Condition: This DTC will set if a fault occurs with the DCHA Control Unit's memory.

POSSIBLE CAUSES
DCHA CONTROL UNIT FAULT

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** **CAUTION: DO NOT PERFORM THIS TEST UNLESS DIRECTED HERE BY THE CABIN HEATER PRE-TEST. ALWAYS PERFORM THE CABIN HEATER PRE-TEST PRIOR TO PERFORMING ANY OTHER CABIN HEATER TEST FOR THE RESULT TO BE VALID.** Turn the ignition off. View repair Repair Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom List:

B1800 NO START
B1801 FLAME OUT: DURING HEATING CYCLE
B1801 FLAME OUT: UNSTABLE OPERATION

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be B1800 NO START.

When Monitored and Set Condition:

B1800 NO START

When Monitored: After DCHA activation.

Set Condition: This DTC will set if the Flame Sensor resistance is not within the expected parameters 160 sections after activation.

B1801 FLAME OUT: DURING HEATING CYCLE

When Monitored: After DCHA activation, and during subsequent start attempts.

Set Condition: This DTC will set if the Flame Sensor resistance is not within the expected parameters.

B1801 FLAME OUT: UNSTABLE OPERATION

When Monitored: After DCHA activation.

Set Condition: This DTC will set if the Flame Sensor resistance is not within the expected parameters.

POSSIBLE CAUSES
LOW FUEL LEVEL IN VEHICLE'S FUEL TANK
DOSING PUMP INOPERABLE, NO DOSING PUMP DTCS SET
DCHA FUEL LINE RESTRICTED/LEAKING/DAMAGED
DOSING PUMP
DCHA AIR INTAKE/EXHAUST RESTRICTED
DCHA HEATER MODULE FAULT

B1800 NO START — Continued

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **CAUTION: DO NOT PERFORM THIS TEST UNLESS DIRECTED HERE BY THE CABIN HEATER PRE-TEST. ALWAYS PERFORM THE CABIN HEATER PRE-TEST PRIOR TO PERFORMING ANY OTHER CABIN HEATER TEST FOR THE RESULT TO BE VALID.** Verify that there is more than an 1/8 of a tank of fuel in the vehicle's fuel tank. Is there more than an 1/8 of a tank of fuel in the vehicle's fuel tank? Yes → Go To 2 No → Add fuel to the vehicle's fuel tank to bring the fuel level above 1/8 of a tank. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All
2	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition on. **CAUTION: Do not actuate the Dosing Pump more than two times. Doing so will put excess fuel in the DCHA Heater Module and cause smoke to emit from the DCHA exhaust pipe when heater activation occurs.** With the DRBIII® in Actuators, select Dosing Pump. Listen for the pump to run. A clicking noise should be heard coming from the pump. Press Page Back and select No to stop the Dosing Pump actuation. Does the Dosing Pump run when actuated? Yes → Go To 3 No → Replace the Dosing Pump in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

B1800 NO START — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. Inspect the DCHA fuel line exterior for restrictions, leakage, and damage. Verify that the DCHA fuel line is installed correctly. **NOTE: Waxed fuel can obstruct the fuel line and reduce flow. Check for the appropriate winter grade fuel and replace as necessary.** Check for obstructions in the fuel line. Refer to Fuel Line, Cleaning in the Service Information. Is the DCHA fuel line Ok? Yes → Go To 4 No → Repair the DCHA fuel line as necessary in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All
4	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. Disconnect the Dosing Pump rubber insulators from the splash shield. Disconnect the fuel line from the fuel outlet side of the Dosing Pump. Using a suitable length of fuel line, connect one end to the fuel outlet side of the Dosing Pump and place the other end in a suitable container. Turn the ignition on. **CAUTION: For the result of this test to be valid, actuate the Dosing Pump Prime twice if the DCHA fuel supply line was drained and then not primed prior to performing this test.** **NOTE: Allow the Dosing Pump Prime to run the full 45 seconds.** With the DRBIII® in System Tests, select Dosing Pump Prime. When the Dosing Pump Prime is complete, measure the amount of fuel in the container. Does the Dosing Pump output approx 14 ml (0.5 oz) of fuel in a single Dosing Pump Prime activation? Yes → Go To 5 No → Replace the Dosing Pump in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

B1800 NO START — Continued

TEST	ACTION	APPLICABILITY
5	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. Inspect the DCHA air intake pipe and exhaust pipe for restrictions and obstructions. Is the DCHA air intake pipe and exhaust pipe Ok? Yes → Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Repair the DCHA air intake/exhaust as necessary in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom:

B1802 POWER SUPPLY OUT OF RANGE: LOW VOLTAGE THRESHOLD

When Monitored and Set Condition:

B1802 POWER SUPPLY OUT OF RANGE: LOW VOLTAGE THRESHOLD

When Monitored: With the engine running.

Set Condition: This DTC will set if the DCHA's power supply voltage drops below 10.0 volts for longer than 20 seconds.

POSSIBLE CAUSES
FIELD MODE TEST RUN WITH THE ENGINE OFF
VEHICLE'S BATTERY SYSTEM
VEHICLE'S CHARGING SYSTEM NOT OPERATING PROPERLY
DCHA CONTROL UNIT FAULT
FUSED B+ CIRCUIT HIGH RESISTANCE
DCHA CONTROL UNIT FAULT

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **CAUTION: DO NOT PERFORM THIS TEST UNLESS DIRECTED HERE BY THE CABIN HEATER PRE-TEST. ALWAYS PERFORM THE CABIN HEATER PRE-TEST PRIOR TO PERFORMING ANY OTHER CABIN HEATER TEST FOR THE RESULT TO BE VALID.** Was the Field Mode Test run with the engine off? Yes → Rerun the Field Mode Test exactly as it is described in Test 4 of the Cabin Heater Pre-Test. If DTC B1802 resets, Go To Test #2 of this symptom. Otherwise, perform other diagnosis and testing as necessary. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Go To 2	All

B1802 POWER SUPPLY OUT OF RANGE: LOW VOLTAGE THRESHOLD — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Turn the ignition off. Inspect the vehicle's battery terminals, cable terminals, and cables for corrosion and damage in accordance with the Service Information. Test the vehicle's battery in accordance with the Service Information. Is the vehicle's battery system Ok? Yes → Go To 3 No → Clean/repair the vehicle's battery system in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All
3	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Check the vehicle's charging system for proper operation in accordance with the Service Information. Is the vehicle's charging system operating properly? Yes → Go To 4 No → Repair the vehicle's charging system in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All
4	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition on. With the DRBIII® in Sensors, record the DCHA Operating Voltage. Disconnect the Cabin Heater Assist C1 harness connector. Measure the voltage between the Fused B+ circuit and ground. Is there more than 1.0 volt difference between the Operating Voltage and the Fused B+ voltage? Yes → Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Go To 5	All

B1802 POWER SUPPLY OUT OF RANGE: LOW VOLTAGE THRESHOLD — Continued

TEST	ACTION	APPLICABILITY
5	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Make sure that the Cabin Heater Assist C1 harness connector is connected to the DCHA. Connect a suitable voltmeter to the vehicle's battery. Position the voltmeter where it can be monitored while operating the DRBIII®. Turn the ignition on. On MTC, set the Blend control to the max cool position. On ATC, set the Driver temperature control to LO (max cool). Turn the ATC's or MTC's Power switch off. Start the engine. Allow the engine to idle. Turn the ATC's or MTC's Power switch on. Turn the Blower control to the high speed position. **CAUTION: Do not activate the DCHA Field Mode Test with the engine off. Failure to follow these instructions may result in internal damage to the DCHA Heater Module.** **NOTE: Do not disconnect the vehicle's battery or the DCHA's main power supply while the DCHA is in operation or in run-down mode. Failure to follow these instructions may result in excess emissions from the DCHA during heater operation.** With the DRBIII® in Cabin Heater, Systems Tests, select Field Mode and press Enter. The test will run for approx 8.5 minutes. On MTC, set the Blend control to the max heat position. On ATC, set the Driver temperature control to HI (max heat). With the DRBIII® in Sensors, monitor the DCHA Operating Voltage and the voltmeter while the Field Mode Test is running. Upon completion of the Field Mode Test proceed as follows: Turn the Blower control off and turn the ATC's or MTC's Power switch off. Turn the engine off. Was there more than 1.5 volts difference between Operating & battery voltage during the test? Yes → Repair the high resistance in the Fused B+ circuit. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom:

B1802 POWER SUPPLY OUT OF RANGE: VOLTAGE ABOVE 15.5 VOLTS

When Monitored and Set Condition:

B1802 POWER SUPPLY OUT OF RANGE: VOLTAGE ABOVE 15.5 VOLTS

When Monitored: With the engine running.

Set Condition: This DTC will set if the DCHA's power supply voltage exceeds 15.5 volts for longer than six seconds.

POSSIBLE CAUSES
VEHICLE'S CHARGING SYSTEM OVERCHARGING
DCHA CONTROL UNIT FAULT

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** **CAUTION: DO NOT PERFORM THIS TEST UNLESS DIRECTED HERE BY THE CABIN HEATER PRE-TEST. ALWAYS PERFORM THE CABIN HEATER PRE-TEST PRIOR TO PERFORMING ANY OTHER CABIN HEATER TEST FOR THE RESULT TO BE VALID.** Check the vehicle's charging system for proper operation in accordance with the Service Information. Is the vehicle's charging system operating properly? Yes → Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Repair the vehicle's charging system in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom:
B1803 FLAME DETECTED PRIOR TO COMBUSTION

When Monitored and Set Condition:

B1803 FLAME DETECTED PRIOR TO COMBUSTION

When Monitored: During DCHA start up.

Set Condition: This DTC will set if the Flame Sensor resistance is not within the expected parameters.

POSSIBLE CAUSES
FLAME SENSOR FAULT

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** **CAUTION: DO NOT PERFORM THIS TEST UNLESS DIRECTED HERE BY THE CABIN HEATER PRE-TEST. ALWAYS PERFORM THE CABIN HEATER PRE-TEST PRIOR TO PERFORMING ANY OTHER CABIN HEATER TEST FOR THE RESULT TO BE VALID.** Turn the ignition off. View repair Repair Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom:

B1811 HEATER OVERHEATED

When Monitored and Set Condition:

B1811 HEATER OVERHEATED

When Monitored: After DCHA activation, when the system is in a steady state of operation.

Set Condition: This DTC will set if the Coolant Temperature Sensor resistance is not within the expected parameters (coolant temperature in the Heater Module exceeds 125°C [257°F]).

POSSIBLE CAUSES
DCHA HEATER MODULE FAULT
DCHA COOLANT HOSES RESTRICTED/LEAKING/DAMAGED
ENGINE'S COOLING SYSTEM FAULT
DCHA CONTROL UNIT FAULT
B1811 CLEARED, ADDITIONAL DTC(S) PRESENT

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** **CAUTION: DO NOT PERFORM THIS TEST UNLESS DIRECTED HERE BY THE CABIN HEATER PRE-TEST. ALWAYS PERFORM THE CABIN HEATER PRE-TEST PRIOR TO PERFORMING ANY OTHER CABIN HEATER TEST FOR THE RESULT TO BE VALID.** Turn the ignition off. **NOTE: If there is an internal leak in the Heater Module, a continuous loud chunking or grinding noise may have been heard coming from the DCHA assembly during the Field Mode test.** Check for engine coolant continuously flowing out of the DCHA exhaust pipe. Is engine coolant coming out of the DCHA exhaust pipe? Yes → Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Go To 2	All

B1811 HEATER OVERHEATED — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. Inspect the DCHA coolant hoses for restrictions, leakage, and damage. Are the DCHA coolant hoses Ok? Yes → Go To 3 No → Repair the DCHA coolant hoses as necessary in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All
3	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Check that the engine's cooling system is operating properly in accordance with the Service Information. Is the engine's cooling system operating properly? Yes → Go To 4 No → Repair the engine's cooling system in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All
4	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Start the engine. Allow the engine to reach normal operating temperature. Turn the engine off. Allow the engine's coolant to cool down to a temperature of 50°C (122°F). Start the engine. Allow the engine to reach normal operating temperature. Turn the engine off. View repair Repair Go To 5	All

B1811 HEATER OVERHEATED — Continued

TEST	ACTION	APPLICABILITY
5	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Start the engine. Allow the engine to idle. Turn the ATC's or MTC's Power switch on. Turn the Blower control to the high speed position. On MTC, set the Blend control to the max heat position. On ATC, set the Driver temperature control to HI (max heat). Remove the Cabin Heater fuse #15 from the IPM for a minimum of five seconds, then reinstall the fuse. The DCHA may attempt to start. Turn the Blower control off and turn the ATC's or MTC's Power switch off. Turn the engine off. View repair Repair Go To 6	All

B1811 HEATER OVERHEATED — Continued

TEST	ACTION	APPLICABILITY
6	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **NOTE: The DCHA Control will store up to three DTCs in its memory.** **NOTE: If the DCHA Control detects a new fault in the DCHA system, one that is not already stored in its memory, the DCHA Control will clear the oldest of the three stored DTCs, and it will store the new fault's DTC.** **NOTE: If the DCHA control detects a reoccurrence of a stored fault, the DCHA control will overwrite that fault's DTC with the most recent occurrence.** Turn the ignition on. On MTC, set the Blend control to the max cool position. On ATC, set the Driver temperature control to LO (max cool). Turn the ATC's or MTC's Power switch off. With the DRBIII®, erase Cabin Heater DTCs. Start the engine. Allow the engine to idle. Turn the ATC's or MTC's Power switch on. Turn the Blower control to the high speed position. **CAUTION: Do not activate the DCHA Field Mode Test with the engine off. Failure to follow these instructions may result in internal damage to the DCHA Heater Module.** **NOTE: Do not disconnect the vehicle's battery or the DCHA's main power supply while the DCHA is in operation or in run-down mode. Failure to follow these instructions may result in excess emissions from the DCHA during heater operation.** With the DRBIII® in Cabin Heater, Systems Tests, select Field Mode and press Enter. The test will run for approx 8.5 minutes. On MTC, set the Blend control to the max heat position. Upon completion of the Field Mode Test, proceed as follows: On ATC, set the Driver temperature control to HI (max heat). Upon completion of the Field Mode Test, proceed as follows: With the DRBIII®, read Cabin Heater and Active FCM DTCs. Turn the Blower control off and turn the ATC's or MTC's Power switch off. Turn the engine off. Are any DTCs present? Yes, B1811 & B1813 reset Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1. Yes, B1811 Cleared, Other DTC(s) Present Return to the symptom list and choose the DTC(s). Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

B1813 HEATER IN LOCKOUT MODE

When Monitored and Set Condition:

B1813 HEATER IN LOCKOUT MODE

When Monitored: During DCHA activation.

Set Condition: This DTC will set if six continuous attempts to start heater operation fail due to one or more faults in the DCHA system.

POSSIBLE CAUSES
B1813 AND ADDITIONAL DTC(S) PRESENT
B1813 RESET, NO ADDITIONAL DTC(S) PRESENT
B1813 CLEARED, ADDITIONAL DTC(S) PRESENT
STORED DCHA DTC(S) TEST COMPLETE

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Start the engine. Allow the engine to idle. Turn the ATC's or MTC's Power switch on. Turn the Blower control to the high speed position. On MTC, set the Blend control to the max heat position. On ATC, set the Driver temperature control to HI (max heat). Remove Cabin Heater Fuse #15 from the IPM for a minimum of five seconds, then reinstall the fuse. The DCHA may attempt to start. Turn the Blower control off and turn the ATC's or MTC's Power switch off. Turn the engine off. View repair Repair Go To 2	All

B1813 HEATER IN LOCKOUT MODE — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **NOTE: The DCHA Control will store up to three DTCs in its memory.** **NOTE: If the DCHA Control detects a new fault in the DCHA system, one that is not already stored in its memory, the DCHA Control will clear the oldest of the three stored DTCs, and it will store the new fault's DTC.** **NOTE: If the DCHA control detects a reoccurrence of a stored fault, the DCHA control will overwrite that fault's DTC with the most recent occurrence.** Turn the ignition on. On MTC, set the Blend control to the max cool position. On ATC, set the Driver temperature control to LO (max cool). Turn the ATC's or MTC's Power switch off. With the DRBIII®, record and erase Cabin Heater DTCs. Start the engine. Allow the engine to idle. Turn the ATC's or MTC's Power switch on. Turn the Blower control to the high speed position. **CAUTION: Do not activate the DCHA Field Mode Test with the engine off. Failure to follow these instructions may result in internal damage to the DCHA Heater Module.** **NOTE: Do not disconnect the vehicle's battery or the DCHA's main power supply while the DCHA is in operation or in run-down mode. Failure to follow these instructions may result in excess emissions from the DCHA during heater operation.** With the DRBIII® in Cabin Heater, Systems Tests, select Field Mode and press Enter. The test will run for approx 8.5 minutes. On MTC, set the Blend control to the max heat position. Upon completion of the Field Mode Test, proceed as follows: On ATC, set the Driver temperature control to HI (max heat). Upon completion of the Field Mode Test, proceed as follows: With the DRBIII®, read Cabin Heater and Active FCM DTCs. Turn the Blower control off and turn the ATC's or MTC's Power switch off. Turn the engine off. Are any DTCs present? Yes, B1813 & Other DTC(s) Present Return to the symptom list and choose the additional DTC(s) first, then diagnose B1813. Perform CABIN HEATER VERIFICATION TEST - VER 1. Yes, B1813 Reset with No Other DTC(s) Allow DCHA to cool. Inspect DCHA intake & exhaust pipes for restrictions & obstructions. Repair as necessary. After repair, repeat Test 2 of this procedure. If intake & exhaust pipes are Ok, replace DCHA Heater Module in accordance with Service Info. Perform CABIN HEATER VERIFICATION TEST - VER 1. Yes, B1813 Cleared, Other DTC(s) Present Return to the symptom list and choose the DTC(s). Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Allow DCHA to cool. Inspect fuel line & coolant hoses for restrictions, obstructions, loose clamps, leakage, etc. Repair as necessary. Check connectors. Clean & repair as necessary. Refer to Service Manual for additional symptom diagnosis, if necessary. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom:
B1820 DOSING PUMP CIRCUIT: OPEN OR SHORT TO BATTERY

When Monitored and Set Condition:

B1820 DOSING PUMP CIRCUIT: OPEN OR SHORT TO BATTERY

When Monitored: With the ignition on.

Set Condition: This DTC will set if the DCHA Control detects no-load voltage on the Dosing Pump circuit output pin.

POSSIBLE CAUSES
DOSING PUMP CONTROL CIRCUIT SHORTED HIGH
DOSING PUMP CONTROL CIRCUIT OPEN
GROUND CIRCUIT OPEN
DOSING PUMP
DCHA CONTROL UNIT FAULT

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** **CAUTION: DO NOT PERFORM THIS TEST UNLESS DIRECTED HERE BY THE CABIN HEATER PRE-TEST. ALWAYS PERFORM THE CABIN HEATER PRE-TEST PRIOR TO PERFORMING ANY OTHER CABIN HEATER TEST FOR THE RESULT TO BE VALID.** **NOTE: If present, diagnose and repair DTC B1811 Heater Overheated and any other conditions relating to overheating before diagnosing this DTC.** Turn the ignition off. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Cabin Heater Assist C1 harness connector. Turn the ignition on. Measure the voltage between the Dosing Pump Control circuit and ground. Is there any voltage present? Yes → Repair the Dosing Pump Control circuit for a short to voltage. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Go To 2	All

B1820 DOSING PUMP CIRCUIT: OPEN OR SHORT TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Cabin Heater Assist C1 harness connector. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Dosing Pump harness connector. Measure the resistance of the Dosing Pump Control circuit between the Dosing Pump harness connector and the Cabin Heater Assist C1 harness connector. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Repair the Dosing Pump Control circuit for an open. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All
3	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Cabin Heater Assist C2 harness connector. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Dosing Pump harness connector. Measure the resistance of the Ground circuit between the Dosing Pump harness connector and the Cabin Heater Assist C2 harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

B1820 DOSING PUMP CIRCUIT: OPEN OR SHORT TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
4	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Dosing Pump harness connector. Disconnect the Dosing Pump rubber insulators from the splash shield. Measure the resistance of the Dosing Pump. Is the resistance between 3.0 and 10.0 ohms? Yes → Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Replace the Dosing Pump in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom:

B1820 DOSING PUMP CIRCUIT: SHORT TO GROUND

When Monitored and Set Condition:

B1820 DOSING PUMP CIRCUIT: SHORT TO GROUND

When Monitored: During Dosing Pump activation.

Set Condition: This DTC will set if the DCHA Control detects a high current draw on the Dosing Pump circuit output pin.

POSSIBLE CAUSES
DOSING PUMP SHORTED TO GROUND
DOSING PUMP CONTROL CIRCUIT SHORTED TO THE GROUND CIRCUIT
DOSING PUMP CONTROL CIRCUIT SHORTED TO GROUND
DCHA CONTROL UNIT FAULT

B1820 DOSING PUMP CIRCUIT: SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** **CAUTION: DO NOT PERFORM THIS TEST UNLESS DIRECTED HERE BY THE CABIN HEATER PRE-TEST. ALWAYS PERFORM THE CABIN HEATER PRE-TEST PRIOR TO PERFORMING ANY OTHER CABIN HEATER TEST FOR THE RESULT TO BE VALID.** **NOTE: If present, diagnose and repair DTC B1811 Heater Overheated and any other conditions relating to overheating before diagnosing this DTC.** Turn the ignition off. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Dosing Pump harness connector. Turn the ignition on. On MTC, set the Blend control to the max cool position. On ATC, set the Driver temperature control to LO (max cool). Turn the ATC's or MTC's Power switch off. With the DRBIII®, erase Cabin Heater DTCs. Start the engine. Allow the engine to idle. Turn the ATC's or MTC's Power switch on. Turn the Blower control to the high speed position. **CAUTION: Do not activate the DCHA Field Mode Test with the engine off. Failure to follow these instructions may result in internal damage to the DCHA Heater Module.** **NOTE: Do not disconnect the vehicle's battery or the DCHA's main power supply while the DCHA is in operation or in run-down mode. Failure to follow these instructions may result in excess emissions from the DCHA during heater operation.** With the DRBIII® in Cabin Heater, Systems Tests, select Field Mode and press Enter. The test will run for approx 8.5 minutes. On MTC, set the Blend control to the max heat position. Upon completion of the Field Mode Test, proceed as follows: On ATC, set the Driver temperature control to HI (max heat). Upon completion of the Field Mode Test, proceed as follows: With the DRBIII®, read Cabin Heater DTCs. Turn the Blower control off and turn the ATC's or MTC's Power switch off. Turn the engine off. Is DTC B1820 Dosing Pump Circuit: Short to Ground present? Yes → Go To 2 No → Replace the Dosing Pump in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

B1820 DOSING PUMP CIRCUIT: SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **CAUTION: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. Disconnect the battery in accordance with the Service information. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Dosing Pump harness connector. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Cabin Heater Assist C1 and C2 harness connectors. Measure the resistance between the Dosing Pump Control circuit and the Ground circuit. Is the resistance below 10K ohms? Yes → Repair the Dosing Pump Control circuit for a short to the Ground circuit. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Go To 3	All
3	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. Disconnect the battery in accordance with the Service information. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Dosing Pump harness connector. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Cabin Heater Assist C1 harness connector. Measure the resistance between ground and the Dosing Pump Control circuit. Is the resistance below 10K ohms? Yes → Repair the Dosing Pump Control circuit for a short to ground. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom List:

B1821 COMBUSTION AIR FAN CIRCUIT: OPEN
B1821 COMBUSTION AIR FAN CIRCUIT: SHORT TO GROUND

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be B1821 COMBUSTION AIR FAN CIRCUIT: OPEN.

When Monitored and Set Condition:

B1821 COMBUSTION AIR FAN CIRCUIT: OPEN

When Monitored: After DCHA activation, when the system is in a steady state of operation.

Set Condition: This DTC will set if the DCHA Control detects no-load voltage on the Combustion Air Fan circuit output pin.

B1821 COMBUSTION AIR FAN CIRCUIT: SHORT TO GROUND

When Monitored: After DCHA activation, when the system is in a steady state of operation.

Set Condition: This DTC will set if the DCHA Control detects a high current draw on the Combustion Air Fan circuit output pin.

POSSIBLE CAUSES
COMBUSTION AIR FAN/DCHA CONTROL UNIT FAULT

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** **CAUTION: DO NOT PERFORM THIS TEST UNLESS DIRECTED HERE BY THE CABIN HEATER PRE-TEST. ALWAYS PERFORM THE CABIN HEATER PRE-TEST PRIOR TO PERFORMING ANY OTHER CABIN HEATER TEST FOR THE RESULT TO BE VALID.** **NOTE: If present, diagnose and repair DTC B1801 Flame Out before diagnosing this DTC.** Turn the ignition off. View repair Repair Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom List:

B1822 GLOW PIN/FLAME SENSOR: OPEN
B1822 GLOW PIN/FLAME SENSOR: SHORT TO GROUND

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be B1822 GLOW PIN/FLAME SENSOR: OPEN.

When Monitored and Set Condition:

B1822 GLOW PIN/FLAME SENSOR: OPEN

When Monitored: After DCHA activation.

Set Condition: This DTC will set if the Glow Pin resistance is not within the expected parameters.

B1822 GLOW PIN/FLAME SENSOR: SHORT TO GROUND

When Monitored: After DCHA activation, when the system is in a steady state of operation.

Set Condition: This DTC will set if the Glow Pin resistance is not within the expected parameters.

POSSIBLE CAUSES
GLOW PIN/HEATER MODULE FAULT

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** **CAUTION: DO NOT PERFORM THIS TEST UNLESS DIRECTED HERE BY THE CABIN HEATER PRE-TEST. ALWAYS PERFORM THE CABIN HEATER PRE-TEST PRIOR TO PERFORMING ANY OTHER CABIN HEATER TEST FOR THE RESULT TO BE VALID.** Turn the ignition off. View repair Repair Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom List:

B1823 WATER PUMP CIRCUIT: OPEN
B1823 WATER PUMP CIRCUIT: SHORT TO GROUND

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be B1823 WATER PUMP CIRCUIT: OPEN.

When Monitored and Set Condition:

B1823 WATER PUMP CIRCUIT: OPEN

When Monitored: During DCHA activation and operation.

Set Condition: This fault is erroneous for this DCHA assembly.

B1823 WATER PUMP CIRCUIT: SHORT TO GROUND

When Monitored: During DCHA activation and operation.

Set Condition: This fault is erroneous for this DCHA assembly.

POSSIBLE CAUSES
DCHA CONTROL UNIT FAULT

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** **CAUTION: DO NOT PERFORM THIS TEST UNLESS DIRECTED HERE BY THE CABIN HEATER PRE-TEST. ALWAYS PERFORM THE CABIN HEATER PRE-TEST PRIOR TO PERFORMING ANY OTHER CABIN HEATER TEST FOR THE RESULT TO BE VALID.** Turn the ignition off. View repair Repair Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom:
B1824 FAN SWITCH LINE SHORT TO GROUND

When Monitored and Set Condition:

B1824 FAN SWITCH LINE SHORT TO GROUND

When Monitored: During DCHA activation and operation.

Set Condition: This fault is erroneous for this DCHA assembly.

POSSIBLE CAUSES
DCHA CONTROL UNIT FAULT

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** **CAUTION: DO NOT PERFORM THIS TEST UNLESS DIRECTED HERE BY THE CABIN HEATER PRE-TEST. ALWAYS PERFORM THE CABIN HEATER PRE-TEST PRIOR TO PERFORMING ANY OTHER CABIN HEATER TEST FOR THE RESULT TO BE VALID.** Turn the ignition off. View repair Repair Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom:
CABIN HEATER CONTROL CIRCUIT OPEN (ACTIVE)

When Monitored and Set Condition:

CABIN HEATER CONTROL CIRCUIT OPEN (ACTIVE)

When Monitored: When the DCHA system is off

Set Condition: The DCHA Low Side Driver inside the FCM expects to see a system voltage of 13.8 volts through the DCHA relay coil when the DCHA system is off. This DTC will set if the FCM sees a voltage below 3.5 volts on the Cabin Heater Assist Control circuit during this time.

POSSIBLE CAUSES
NO RESPONSE FROM CABIN HEATER MODULE
CABIN HEATER ASSIST CONTROL CIRCUIT OPEN TO IPM
IPM, OPEN CIRCUIT
FCM, OPEN CIRCUIT
FCM FAULT
CABIN HEATER ASSIST CONTROL CIRCUIT SHORTED TO THE GROUND CIRCUIT
CABIN HEATER ASSIST CONTROL CIRCUIT SHORTED TO GROUND
CABIN HEATER ASSIST CONTROL CIRCUIT OPEN
DCHA CONTROL UNIT FAULT

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Turn the ignition on. With the DRBIII®, attempt to communicate with the Cabin Heater Module. Does the DRBIII® display: No Response From Cabin Heater Module? Yes → Refer to Communication for the related symptom. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Go To 2	All

CABIN HEATER CONTROL CIRCUIT OPEN (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Turn the ignition off. **NOTE: Check connectors - Clean/repair as necessary.** While back probing, measure the voltage of the Cabin Heater Assist Control circuit in the In-Line C330 harness connector. Is battery voltage present? Yes → Go To 3 No → Go To 5	All
3	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Turn the ignition off. Disconnect the battery in accordance with the Service information. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the IPM C3 harness connector. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the In-Line C330 harness connector. Measure the resistance of the Cabin Heater Assist Control circuit between the In-Line C330 harness connector and the IPM C3 harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Cabin Heater Assist Control circuit for an open. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All
4	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Turn the ignition off. Disconnect the battery in accordance with the Service information. Remove the FCM in accordance with the Service Information. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the IPM C3 harness connector. Measure the resistance of the Cabin Heater Assist Control circuit in the IPM (between IPM Cavity 11 for the C3 harness connector and IPM Cavity 15 for the FCM connector). Is the resistance below 5.0 ohms? Yes → Replace the FCM in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Replace the IPM in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

CABIN HEATER CONTROL CIRCUIT OPEN (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
5	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Turn the ignition off. Disconnect the battery in accordance with the Service information. Remove the FCM in accordance with the Service Information. Ensure the IPM and Cabin Heater harness connectors are connected. Reconnect the battery in accordance with the Service information. While back probing, measure the voltage of the Cabin Heater Assist Control circuit in the In-Line C330 harness connector. Is battery voltage present? Yes → Replace the FCM in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Go To 6	All
6	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. Disconnect the battery in accordance with the Service information. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the IPM C3 harness connector. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Cabin Heater Assist C1, C2, and Dosing Pump harness connectors. Measure the resistance between the Cabin Heater Assist Control circuit and the Ground circuit. Is the resistance below 10K ohms? Yes → Repair the Cabin Heater Assist Control circuit for a short to the Ground circuit. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Go To 7	All

CABIN HEATER CONTROL CIRCUIT OPEN (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
7	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. Disconnect the battery in accordance with the Service information. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the IPM C3 harness connector. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Cabin Heater Assist C1 harness connector. Measure the resistance between ground and the Cabin Heater Assist Control circuit. Is the resistance below 10K ohms? Yes → Repair the Cabin Heater Assist Control circuit for a short to ground. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Go To 8	All
8	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. Disconnect the battery in accordance with the Service information. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the IPM C3 harness connector. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Cabin Heater Assist C1 harness connector. Measure the resistance of the Cabin Heater Assist Control circuit between the Cabin Heater Assist C1 harness connector and the IPM C3 harness connector. Is the resistance below 5.0 ohms? Yes → Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Repair the Cabin Heater Assist Control circuit for an open. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom:

CABIN HEATER CONTROL CIRCUIT SHORT TO BATTERY (ACTIVE)

When Monitored and Set Condition:

CABIN HEATER CONTROL CIRCUIT SHORT TO BATTERY (ACTIVE)

When Monitored: During DCHA activation and operation.

Set Condition: This DTC will set if the FCM sees a voltage between 5.0 and 15.0 volts on the Cabin Heater Assist Control circuit.

POSSIBLE CAUSES
DCHA CONTROL UNIT FAULT
CABIN HEATER ASSIST CONTROL CIRCUIT SHORTED TO THE FUSED B(+) CIRCUIT
FCM FAULT
CABIN HEATER ASSIST CONTROL CIRCUIT SHORTED HIGH

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Cabin Heater Assist C1 harness connector. Turn the ignition on. With the DRBIII® in FCM, read the active DTCs. Is the Cabin Heater Relay Short To Battery DTC still active? Yes → Go To 2 No → Replace the DCHA Heater Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

CABIN HEATER CONTROL CIRCUIT SHORT TO BATTERY (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
2	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Cabin Heater Assist C1 harness connector. Turn the ignition on. Measure the voltage between the Cabin Heater Assist Control circuit and ground. Is there any voltage present? Yes → Go To 3 No → Replace the FCM in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All
3	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. Disconnect the battery in accordance with the Service information. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the IPM C3 harness connector. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Cabin Heater Assist C1 and C2 harness connectors. Measure the resistance between the Cabin Heater Assist Control circuit and the Fused B(+) circuit. Is the resistance below 10K ohms? Yes → Repair the Cabin Heater Assist Control circuit for a short to the Fused B(+) circuit. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Go To 4	All

CABIN HEATER CONTROL CIRCUIT SHORT TO BATTERY (ACTIVE) — Continued

TEST	ACTION	APPLICABILITY
4	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** Turn the ignition off. Disconnect the battery in accordance with the Service Information. Remove the FCM in accordance with the Service Information. Reconnect the IPM C3 harness connector. Reconnect the battery in accordance with the Service Information. Turn the ignition on. **NOTE: Check connectors - Clean/repair as necessary.** Disconnect the Cabin Heater Assist C1 harness connector. Measure the voltage between the Cabin Heater Assist Control circuit and ground. Is there any voltage present? Yes → Repair the Cabin Heater Assist Control circuit for a short to voltage. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Replace the FCM in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom:

***CABIN HEATER INOPERABLE FROM A/C - HEATER MODULE (MTC)**

POSSIBLE CAUSES
DCHA ACTIVATION CRITERIA NOT MET
NO PCI BUS COMMUNICATION WITH FCM/HVAC MODULE
FCM OR HAVC DTCS PRESENT
FCM FAULT
A/C - HEATER CONTROL MODULE FAULT

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **CAUTION: DO NOT PERFORM THIS TEST UNLESS DIRECTED HERE BY THE CABIN HEATER PRE-TEST. ALWAYS PERFORM THE CABIN HEATER PRE-TEST PRIOR TO PERFORMING ANY OTHER CABIN HEATER TEST FOR THE RESULT TO BE VALID.** Verify that all of the following criteria was met during the attempt to activate the DCHA from the A/C - Heater Control Module. The engine was running. The engine's coolant temperature was below 66°C (151°F). The vehicle's fuel tank had more than 1/8 of a tank of fuel. The A/C - Heater Control Module's Power switch was on. The Blend Control was set above 90% reheat. Was all criteria met during the attempt to activate the DCHA from the A/C - Heater Control Module? Yes → Go To 2 No → Attempt to activate the DCHA when all of the operating criteria are met. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All
2	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Turn the ignition on. With the DRBIII®, attempt to communicate with the FCM and the HVAC Module. Was the DRBIII® able to communicate with the FCM and the HVAC Module? Yes → Go To 3 No → Refer to Communication for the related symptom(s) Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

*CABIN HEATER INOPERABLE FROM A/C - HEATER MODULE (MTC) — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Turn the ignition on. With the DRBIII®, check for FCM and HVAC DTCs. Does the DRBIII® display any FCM or HVAC DTCs? Yes → For FCM DTCs, return to the symptom list and choose the symptom(s). Also, refer to Ignition, Power, Accessory category for related symptom(s). For HVAC DTCs, refer to Heater & A/C for related symptom(s). Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Go To 4	All
4	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Start the engine. Allow the engine to idle. Turn the A/C - Heater Control Module's Power switch on. Turn the Blower control to the high speed position. **CAUTION: Do not activate the Diesel Cabin Heater Test with the engine off. Failure to follow these instructions may result in internal damage to the DCHA Heater Module.** **NOTE: Do not disconnect the vehicle's battery or the DCHA's main power supply while the DCHA is in operation or in run-down mode. Failure to follow these instructions may result in excess emissions from the DCHA during heater operation.** With the DRBIII® in HVAC, Systems Tests, select Diesel Cabin Heater Test and press #1. With the DRBIII® in HVAC, Systems Tests, Diesel Cabin Heater Test, read the Cabin Heater Status. Does the Status display: On? Yes → Replace the FCM in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom:

***CABIN HEATER INOPERABLE FROM AUTO TEMP CONTROL (ATC)**

POSSIBLE CAUSES
DCHA ACTIVATION CRITERIA NOT MET
NO PCI BUS COMMUNICATION WITH FCM/ATC
FCM OR ATC DTCS PRESENT
FCM FAULT
AUTO TEMP CONTROL FAULT

TEST	ACTION	APPLICABILITY
1	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **CAUTION: DO NOT PERFORM THIS TEST UNLESS DIRECTED HERE BY THE CABIN HEATER PRE-TEST. ALWAYS PERFORM THE CABIN HEATER PRE-TEST PRIOR TO PERFORMING ANY OTHER CABIN HEATER TEST FOR THE RESULT TO BE VALID.** Verify that all of the following criteria was met during the attempt to activate the DCHA from the Auto Temp Control. The VIN indicates that the vehicle has a diesel engine. The vehicle's odometer read more than 5 miles. The engine's speed was above 500 rpm. The engine's coolant temperature was below 66°C (151°F). The vehicle's fuel tank had more than 1/8 of a tank of fuel. The Auto Temp Control's Power switch was on. The Driver temperature control was set above 22°C (72°F). Was all criteria met during the attempt to activate the DCHA from the Auto Temp Control? Yes → Go To 2 No → Attempt to activate the DCHA when all of the operating criteria are met. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All
2	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Turn the ignition on. With the DRBIII®, attempt to communicate with the FCM and the ATC. Was the DRBIII® able to communicate with the FCM and the ATC? Yes → Go To 3 No → Refer to Communication for the related symptom(s) Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

*CABIN HEATER INOPERABLE FROM AUTO TEMP CONTROL (ATC) — Continued

TEST	ACTION	APPLICABILITY
3	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** Turn the ignition on. With the DRBIII®, check for FCM and ATC DTCs. Does the DRBIII® display any FCM or ATC DTCs? Yes → For FCM DTCs, return to the symptom list and choose the symptom(s). Also, refer to Ignition, Power, Accessory category for related symptom(s). For ATC DTCs, refer to Automatic Temperature Control for related symptom(s). Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Go To 4	All

*CABIN HEATER INOPERABLE FROM AUTO TEMP CONTROL (ATC) — Continued

TEST	ACTION	APPLICABILITY
4	**WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.** **NOTE: The AC Cooldown Test is actuated with the DRBIII®. The test checks A/C system performance based on evaporator temperature sensor input. It also forces the ATC to initiate a Cabin Heater Activation request when the vehicle is equipped with a DCHA.** **NOTE: The A/C related portion of this test will not run if ambient temp is below 12°C (53°F). However, the forced Cabin Heater activation will occur even if the A/C portion of this test fails to initiate because test criteria was not met.** **NOTE: The A/C related portion of this test will pass if evap temp drops 6.7°C (20°F) within 2 minutes of starting this test.** **NOTE: Only A/C related messages display on the DRBIII® after running this test. These messages will clear after paging back out of this test. Therefore, it is important to note all of the test messages before doing so.** **NOTE: Running this test will cause the DELAY & Snowflake VF segments on the ATC to flash for 162 seconds. If the A/C related portion of this test fails, the DELAY & Snowflake VF segments will continue to flash until the vehicle is driven more than 3 miles.** Start the engine. Press the ATC's Power switch on. Turn the Front Blower control to the high speed position. **CAUTION: Do not activate the A/C Cooldown Test with the engine off. Failure to follow these instructions may result in internal damage to the DCHA Heater Module.** **NOTE: Do not disconnect the vehicle's battery or the DCHA's main power supply while the DCHA is in operation or in run-down mode. Failure to follow these instructions may result in excess emissions from the DCHA during heater operation.** **NOTE: Before actuating the AC Cooldown Test, verify that the A/C compressor is not running, If the compressor is running, turn the A/C off and allow the evaporator to warm up before proceeding with the test.** **NOTE: The DCHA will operate for approximately 7 minutes. 3 minutes to run and 4 minutes to purge.** With the DRBIII® in ATC, Systems Tests, perform the AC Cooldown Test. Then, select Page Back, Page Back, Monitor Display, and PCI Bus Info ATC. View the ″RG DCHA Req″ monitor. Does the Rg DCHA Req monitor display ON? Yes → Replace the FCM in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1. No → Replace the Auto Temp Control in accordance with the Service Information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom:
*CHIME INOPERATIVE

POSSIBLE CAUSES
USE DRB TO ACTUATE CHIME
CHIME DRIVER CIRCUIT - OPEN
CHIME DRIVER CIRCUIT - SHORT TO GROUND
CHIME DRIVER CIRCUIT - SHORT TO VOLTAGE
INSTRUMENT CLUSTER
BCM

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, actuate the CHIME. (BCM actuator) Does chime sound a warning? Yes → The chime operates as it should. Check other reasons for the chime being inoperative and select from the symptom list. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Disconnect the Instrument Cluster harness connector(s). Disconnect the BCM harness connector(s). Using a 12-volt test light connected to 12-volts, check the chime driver circuit for a short to ground. Does the test light illuminate brightly? Yes → Repair the chime driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the Instrument Cluster harness connector(s). Disconnect the BCM harness connector(s). Using a DVOM connected to ground, check the chime driver circuit for a short to voltage. Is the voltage above 5.0 volts? Yes → Repair the chime driver circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Reconnect the BCM if disconnected in previous step. Disconnect the Instrument Cluster harness connectors. Using a 12-volt test light connected to 12-volts, check the chime driver circuit at the Instrument Cluster connector. With the DRBIII®, actuate the CHIME. (BCM actuator) Does the test light illuminate ON and OFF? Yes → Replace the Instrument Cluster. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All

*CHIME INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
5	Disconnect the Instrument Cluster harness connectors. Disconnect the BCM harness connector(s). Measure the resistance of the chime driver circuit between the Instrument Cluster connector and the BCM connector. Is the resistance below 5.0 ohms? No → Repair the chime driver circuit for an open, between the Instrument Cluster and the BCM. Perform BODY VERIFICATION TEST - VER 1. Yes → Replace the BCM. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***KEY IN IGNITION AND DRIVER'S DOOR OPEN CHIME NOT OPERATING PROPERLY**

POSSIBLE CAUSES
BODY CONTROL MODULE DTC
DRB CHIME ACTUATOR
DRIVER DOOR AJAR STATUS
IGNITION SWITCH
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read the current Body Control Module DTC's. Does the DRBIII® display: any Lighting or Ignition switch related DTC's? Yes → Go To 2 No → Refer to symptom list for related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII®, actuate the CHIME. (BCM actuator) Does chime sound a warning? Yes → Go To 3 No → Refer to symptom Chime Inoperative in the Chime category. Perform BODY VERIFICATION TEST - VER 1.	All
3	Open the driver door. With the DRB, in Input/Outputs, read the ″DR DOOR AJAR SW″ state. Does the DRB display ″DR DOOR AJAR SW: CLOSED″? Yes → Go To 4 No → Refer to symptom list for problems related to Door Ajar. Perform BODY VERIFICATION TEST - VER 1.	All
4	With the DRBIII® in BCM Inputs/Outputs, read the Key in Ign Sw state while inserting the key in and out of the ignition switch. Does the DRBIII® display change from open to closed? Yes → Replace and program the Body Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Check the Ignition Lock Cylinder for damage. If OK replace the Ignition Switch. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***PROBLEM WITH THE VEHICLE SPEED WARNING CHIME**

POSSIBLE CAUSES
INCORRECT COUNTRY CODE PROGRAMMED IN BCM
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Note: The high speed warning chime is for Gulf Coast Countries only. With the DRBIII® in Miscellaneous check the Body Control Module country code setting. Is the country code incorrect? Yes → Program the correct country code setting. Perform BODY VERIFICATION TEST - VER 1. No → Replace and program the Body Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
ATC MODULE MESSAGES NOT RECEIVED

When Monitored and Set Condition:

ATC MODULE MESSAGES NOT RECEIVED

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The BCM does not receive any messages from the Automatic Temperature Control (ATC) module for at least 0.125 seconds.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE AUTOMATIC TEMPERATURE CONTROL MODULE
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, enter Body then Automatic Temp Control. Was the DRB able to I/D or communicate with the ATC? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
AUDIO MESSAGES NOT RECEIVED

When Monitored and Set Condition:

AUDIO MESSAGES NOT RECEIVED

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The BCM does not receive any messages from the radio for at least 5 seconds.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE RADIO
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, attempt to communicate with the Radio. Was the DRB able to I/D or communicate with the Radio? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom List:

BCM, PCI BUS SHORTED TO BATTERY
BCM, PCI BUS SHORTED TO GROUND
FCM, PCI BUS SHORTED TO BATTERY
FCM, PCI BUS SHORTED TO GROUND

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be BCM, PCI BUS SHORTED TO BATTERY.

When Monitored and Set Condition:

BCM, PCI BUS SHORTED TO BATTERY

When Monitored: Continuously

Set Condition: Anytime the BCM detects a short to battery on the PCI Bus circuit.

BCM, PCI BUS SHORTED TO GROUND

When Monitored: Continuously

Set Condition: Anytime the BCM detects a short to ground on the PCI Bus circuit.

FCM, PCI BUS SHORTED TO BATTERY

When Monitored: Continuously

Set Condition: Anytime the FCM detects a short to battery on the PCI Bus circuit.

FCM, PCI BUS SHORTED TO GROUND

When Monitored: Continuously

Set Condition: Anytime the FCM detects a short to ground on the PCI Bus circuit.

POSSIBLE CAUSES
INTERMITTENT CONDITION

BCM, PCI BUS SHORTED TO BATTERY — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: For this code to be active, the DRB will not be able to communicate with any modules on the vehicle (except the PCM/ECM).** **NOTE: Clear the code. If this code continues to set and the DRB can still communicate with the module, it will be necessary to replace the module.** **WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, wiggle the wiring harnesses. This is to try and duplicate the complete bus failure condition. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

COUNTRY CODE NOT PROGRAMMED

POSSIBLE CAUSES
SELECT CORRECT COUNTRY CODE

TEST	ACTION	APPLICABILITY
1	With the DRB, enter Body Computer, Miscellaneous then Change Country Code. Select the correct country code for the vehicle. With the DRB, erase BCM DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRB, read BCM DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
FCM MESSAGES NOT RECEIVED

When Monitored and Set Condition:

FCM MESSAGES NOT RECEIVED

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The BCM does not receive any messages from the Front Control Module (FCM) for at least 5 seconds.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE FRONT CONTROL MODULE
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, attempt to communicate with the FCM. Was the DRB able to I/D or communicate with the FCM? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
FCM, BCM COMMUNICATION FAULT

When Monitored and Set Condition:

FCM, BCM COMMUNICATION FAULT

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The FCM does not receive any messages from the Body Control Module (BCM) for at least 5 seconds.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE BCM
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, attempt to communicate with the BCM. Was the DRB able to I/D or communicate with the BCM? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Front Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
FCM, HVAC COMMUNICATION FAULT

When Monitored and Set Condition:

FCM, HVAC COMMUNICATION FAULT

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The FCM does not receive any messages from the Automatic Temperature Control (ATC) module or the A/C Heater Control (MTC) for at least 20 seconds.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE HVAC
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, attempt to communicate with the A/C Heater Control (MTC) or the Automatic Temp Control (ATC). Was the DRB able to I/D or communicate with the HVAC or the ATC? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Front Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
FCM, PCI INTERNAL FAULT

When Monitored and Set Condition:

FCM, PCI INTERNAL FAULT

When Monitored: Continuously.

Set Condition: The DTC will set if the FCM detects an internal fault.

POSSIBLE CAUSES
FCM, PCI INTERNAL FAULT

TEST	ACTION	APPLICABILITY
1	Connect the DRB to the Data Link Connector. Turn the ignition on. With the DRB, erase FCM DTC's. Turn the ignition off then turn the ignition on. With the DRB, read FCM DTC's. Did this DTC reset? Yes → Replace the Front Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
FCM, PCM COMMUNICATION FAULT

When Monitored and Set Condition:

FCM, PCM COMMUNICATION FAULT

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The FCM does not receive any messages from the PCM for at least 5 seconds.

POSSIBLE CAUSES
PCM COMMUNICATION FAULT
ATTEMPT TO COMMUNICATE WITH THE PCM
PCI BUS CIRCUIT OPEN
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, enter Instrument Cluster, System Tests then PCM Monitor. Does the DRB display: PCM is active on BUS? Yes → Erase the DTC, if DTC resets, replace the Front Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition on. With the DRB, attempt to communicate with the PCM. Was the DRB able to communicate with the PCM? Yes → Go To 3 No → Refer to the communication category and perform the appropriate symptom. Perform BODY VERIFICATION TEST - VER 1.	All

FCM, PCM COMMUNICATION FAULT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the PCM harness connector. Note: If equipped with NGC follow the caution below. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the PCI Bus circuit between the DLC and the PCM connector. Is the resistance below 5.0 ohms? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
FCM, RADIO COMMUNICATION FAULT

When Monitored and Set Condition:

FCM, RADIO COMMUNICATION FAULT

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The FCM does not receive any messages from the radio for at least 5 seconds.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE RADIO
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, attempt to communicate with the Radio. Was the DRB able to I/D or communicate with the Radio? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Front Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
FCM, TCM COMMUNICATION FAULT

When Monitored and Set Condition:

FCM, TCM COMMUNICATION FAULT

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The FCM does not receive any messages from the Transmission Control Module (TCM) for at least 5 seconds.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE TCM
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, attempt to communicate with the TCM. Was the DRB able to I/D or communicate with the TCM? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Front Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
INTERNAL BCM FAILURE

When Monitored and Set Condition:

INTERNAL BCM FAILURE

When Monitored: The BCM detects an internal fault for 10 seconds.

Set Condition: The DTC will set if the BCM detects an internal fault.

POSSIBLE CAUSES
INTERNAL BCM FAILURE

TEST	ACTION	APPLICABILITY
1	Connect the DRB to the Data Link Connector. Turn the ignition on. With the DRB, erase BCM DTC's. Turn the ignition off then turn the ignition on. With the DRB, read BCM DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
LEFT PSD MESSAGES NOT RECEIVED

When Monitored and Set Condition:

LEFT PSD MESSAGES NOT RECEIVED

When Monitored: When the Body Control Module is awake.

Set Condition: The BCM does not sense a response from the Left Power Sliding Door Module.

POSSIBLE CAUSES
CHECK FOR DTCS
VERIFY DTC
ATTEMPT TO COMMUNICATE WITH THE LEFT SLIDING DOOR CONTROL MODULE
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read BCM DTC's. Are any IOD Wakeup power sliding door DTC's set? Yes → Refer to symptom list for problems related to the IOD wakeup circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition on. With the DRBIII®, erase DTC's. Operate the left power sliding door with either the key fob or the overhead console. With the DRBIII®, read BCM DTC's. Did this DTC reset? Yes → Go To 3 No → The condition that caused this DTC is currently not present. Use the wiring diagrams/schematic as a guide, and inspect the related wiring harness for a possible intermittent. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition on. With the DRB, attempt to communicate with the Left Sliding Door Control Module. Was the DRB able to I/D or communicate with the Left Sliding Door Control Module? Yes → Go To 4 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All

LEFT PSD MESSAGES NOT RECEIVED — Continued

TEST	ACTION	APPLICABILITY
4	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. Operate the left power sliding door with either the key fob or the overhead console. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
LIFTGATE MODULE MESSAGES NOT RECEIVED

When Monitored and Set Condition:

LIFTGATE MODULE MESSAGES NOT RECEIVED

When Monitored: When the Body Control Module is awake.

Set Condition: The BCM does not sense a response from the Power Liftgate Control Module.

POSSIBLE CAUSES
CHECK FOR DTCS
VERIFY DTC
ATTEMPT TO COMMUNICATE WITH THE POWER LIFTGATE MODULE
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read BCM DTC's. Are any IOD Wakeup power liftgate DTC's set? Yes → Refer to symptom list for problems related to the IOD wakeup circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition on. With the DRBIII®, erase DTC's. Operate the liftgate with either the key fob or the overhead console. With the DRBIII®, read BCM DTC's. Did this DTC reset? Yes → Go To 3 No → The condition that caused this DTC is currently not present. Use the wiring diagrams/schematic as a guide, and inspect the related wiring harness for a possible intermittent. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition on. With the DRB, attempt to communicate with the Power Liftgate Module. Was the DRB able to I/D or communicate with the Power Liftgate Module? Yes → Go To 4 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All

LIFTGATE MODULE MESSAGES NOT RECEIVED — Continued

TEST	ACTION	APPLICABILITY
4	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. Operate the liftgate with either the key fob or the overhead console. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
MIC MESSAGES NOT RECEIVED

When Monitored and Set Condition:

MIC MESSAGES NOT RECEIVED

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The BCM does not receive any messages from the Instrument Cluster (MIC) for at least 5 seconds.

POSSIBLE CAUSES
CHECK FOR DTCS
VERIFY DTC
ATTEMPT TO COMMUNICATE WITH THE MIC
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read BCM DTC's. Are any IOD Wakeup Cluster DTC's set? Yes → Refer to symptom list for problems related to the IOD wakeup circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition on. With the DRBIII®, erase DTC's. With the DRBIII®, read BCM DTC's. Did this DTC reset? Yes → Go To 3 No → The condition that caused this DTC is currently not present. Use the wiring diagrams/schematic as a guide, and inspect the related wiring harness for a possible intermittent. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition on. With the DRBIII®, attempt to communicate with the Instrument Cluster (MIC). Was the DRBIII® able to I/D or communicate with the Instrument Cluster (MIC)? Yes → Go To 4 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All

MIC MESSAGES NOT RECEIVED — Continued

TEST	ACTION	APPLICABILITY
4	With the DRBIII®, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRBIII®, read DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
MSM MESSAGES NOT RECEIVED

When Monitored and Set Condition:

MSM MESSAGES NOT RECEIVED

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The BCM does not receive any messages from the Memory Seat Module (MSM) for at least 0.125 seconds.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE MEMORY SEAT MODULE
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, enter Body then Memory Seat Module. Was the DRB able to I/D or communicate with the MSM? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
NO PCI MESSAGES FROM CD CHANGER

When Monitored and Set Condition:

NO PCI MESSAGES FROM CD CHANGER

When Monitored: With the ignition on and the radio on.

Set Condition: If the DRB interrogates the CD Changer and does not receive the proper response from the CD Changer.

POSSIBLE CAUSES
CD CHANGER (DIN) CABLE
CD CHANGER PCI BUS CIRCUIT OPEN
IGNITION SWITCH OUTPUT CIRCUIT OPEN
RADIO GROUND CKT OPEN
CD CHANGER

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Radio C2 connector (DIN cable) from the Radio and the CD Changer. Visually inspect the cable for damage. In the next step check for open wires in the DIN cable. Measure the resistance of the each DIN cable circuit between the Radio DIN cable connector and the CD Changer DIN cable connector. In the next step check for wires shorted to the DIN cable metal connectors. Measure the resistance between each Radio C2 connector (DIN cable) circuit and the Radio Din cable metal connector. Is the DIN cable circuits shorted together or open? Yes → Replace the CD Changer (DIN) cable. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All

NO PCI MESSAGES FROM CD CHANGER — Continued

TEST	ACTION	APPLICABILITY
2	Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Disconnect the CD Changer harness connector (DIN cable). Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the CD Changer DIN Cable connector. Reconnect the Radio C2 (DIN Cable) harness connector. Turn the ignition on. Turn the Radio and CD Changer on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 3 No → Replace the Radio. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the CD Changer harness connector (DIN cable). Turn the ignition on. Turn the Radio and the CD Changer on. Using a 12-volt test light connected to ground, probe the Ignition Switch Output circuit in the CD Changer DIN Cable connector. Is the test light illuminated? Yes → Go To 4 No → Replace the Radio. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the CD Changer harness connector (DIN cable). Using a 12-volt test light connected to 12-volts, probe each CD Changer ground circuit in the CD Changer connector (DIN cable). Is the test light illuminated for each circuit? Yes → Go To 5 No → Replace the Radio. Perform BODY VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the CD Changer. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
ORC MESSAGES NOT RECEIVED

When Monitored and Set Condition:

ORC MESSAGES NOT RECEIVED

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The BCM does not receive any messages from the Occupant Restraint Controller (ORC) for at least 5 seconds.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE OCCUPANT RESTRAINT CONTROLLER
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, attempt to communicate with the ORC. Was the DRB able to I/D or communicate with the ORC? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
OTIS MODULE MESSAGES NOT RECEIVED

When Monitored and Set Condition:

OTIS MODULE MESSAGES NOT RECEIVED

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The BCM does not receive any messages from the overhead console for at least 5 seconds.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE OTIS
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, attempt to communicate with the overhead console. Was the DRB able to I/D or communicate with the overhead console? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

PCI INTERNAL HARDWARE FAILURE

POSSIBLE CAUSES
PCI INTERNAL HARDWARE FAILURE

TEST	ACTION	APPLICABILITY
1	Connect the DRB to the Data Link Connector. Turn the ignition on. With the DRB, erase BCM DTC's. Turn the ignition off then turn the ignition on. With the DRB, read BCM DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
PCM MESSAGES NOT RECEIVED

When Monitored and Set Condition:

PCM MESSAGES NOT RECEIVED

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The BCM does not receive any messages from the PCM for at least 5 seconds.

POSSIBLE CAUSES
PCM MESSAGE NOT RECEIVED
ATTEMPT TO COMMUNICATE WITH THE PCM
PCI BUS CIRCUIT OPEN
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, enter Instrument Cluster, System Tests then PCM Monitor. Does the DRBIII® display: PCM is active on BUS? Yes → Erase the DTC, if DTC resets, replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition on. With the DRBIII®, attempt to communicate with the PCM. Was the DRBIII® able to communicate with the PCM? Yes → Go To 3 No → Refer to the communication category and perform the appropriate symptom. Perform BODY VERIFICATION TEST - VER 1.	All

PCM MESSAGES NOT RECEIVED — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the PCM harness connector. Note: If equipped with NGC follow the caution below. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the PCI Bus circuit between the DLC and the PCM connector. Is the resistance below 5.0 ohms? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RADIO MEM MSG NOT RECEIVED

When Monitored and Set Condition:

RADIO MEM MSG NOT RECEIVED

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The BCM does not receive any radio memory messages.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE RADIO
CHECK THE MEMORY SYSTEM
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, attempt to communicate with the Radio. Was the DRB able to I/D or communicate with the Radio? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition on. Operate the memory seat system. Did the memory seat system operate properly? Yes → Go To 3 No → Refer to the Memory Seat category and perform the appropriate symptom. Perform BODY VERIFICATION TEST - VER 1.	All
3	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
RIGHT PSD MESSAGES NOT RECEIVED

When Monitored and Set Condition:

RIGHT PSD MESSAGES NOT RECEIVED

When Monitored: When the Body Control Module is awake.

Set Condition: The BCM does not sense a response from the Right Power Sliding Door Module.

POSSIBLE CAUSES
CHECK FOR DTCS
VERIFY DTC
ATTEMPT TO COMMUNICATE WITH THE RIGHT SLIDING DOOR CONTROL MODULE
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read BCM DTC's. Are any IOD Wakeup power sliding door DTC's set? Yes → Refer to symptom list for problems related to the IOD wakeup circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition on. With the DRBIII®, erase DTC's. Operate the right power sliding door with either the key fob or the overhead console. With the DRBIII®, read BCM DTC's. Did this DTC reset? Yes → Go To 3 No → The condition that caused this DTC is currently not present. Use the wiring diagrams/schematic as a guide, and inspect the related wiring harness for a possible intermittent. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition on. With the DRB, attempt to communicate with the Right Sliding Door Control Module. Was the DRB able to I/D or communicate with the Right Sliding Door Control Module? Yes → Go To 4 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All

RIGHT PSD MESSAGES NOT RECEIVED — Continued

TEST	ACTION	APPLICABILITY
4	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. Operate the right power sliding door with either the key fob or the overhead console. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
SKIM MESSAGES NOT RECEIVED

When Monitored and Set Condition:

SKIM MESSAGES NOT RECEIVED

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The BCM does not receive any messages from the Sentry Key Immobilizer Module (SKIM) for at least 5 seconds.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE SENTRY KEY IMMOBILIZER MODULE
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, attempt to communicate with the SKIM. Was the DRB able to I/D or communicate with the SKIM? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRB, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
TCM MESSAGES NOT RECEIVED

When Monitored and Set Condition:

TCM MESSAGES NOT RECEIVED

When Monitored: With the ignition in run, and the IOD fuse installed.

Set Condition: The BCM does not receive any messages from the Transmission Control Module (TCM) for at least 5 seconds.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE TCM
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, attempt to communicate with the Transmission Control Module. Was the DRBIII® able to I/D or communicate with the TCM? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII®, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRBIII®, read DTC's. Did this DTC reset? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
*NO RESPONSE FROM AIRBAG CONTROL MODULE

POSSIBLE CAUSES
CHECKING FOR VOLTAGE
GROUND CIRCUIT OPEN
PCI BUS CIRCUIT OPEN
AIRBAG CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**NOTE: Check the FCM for DTC's. If DTC's are present, go to the appropriate category and perform the DTC.** Ensure that the battery is fully charged. **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Airbag Control Module harness connector. Connect the appropriate Load Tool ACM Adapter to the ACM connector Turn the ignition on and then reconnect the Battery. Using a 12-volt test light connected to ground, probe the ORC Run Only Driver Circuit and the ORC Run/Start Driver Circuit at the Airbag Control Module connector. NOTE: One open circuit will not cause a NO RESPONSE condition. Is the test light illuminated on both circuits? Yes → Go To 2 No → Repair the ORC Run Only Driver and the ORC Run/Start Driver circuits for an open. Perform AIRBAG VERIFICATION TEST - VER 1. **NOTE: When reconnecting airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
2	**Ensure that the battery is fully charged.** **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Airbag Control Module harness connector. Connect the appropriate Load Tool ACM Adapter to the ACM connector. Using a 12-volt test light connected to 12-volts, probe the ground circuit. **NOTE: Make sure test light is connected to the Battery positive terminal.** Is the test light illuminated? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform AIRBAG VERIFICATION TEST - VER 1. **When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

*NO RESPONSE FROM AIRBAG CONTROL MODULE — Continued

TEST	ACTION	APPLICABILITY
3	**Note: Ensure there is PCI bus communication with other modules. If not, refer to the PCI Bus Communication Failure symptom and repair as necessary.** **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Airbag Control Module harness connector. Connect the appropriate Load Tool ACM Adapter to the ACM connector. Turn the ignition on and then reconnect the Battery. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the Airbag Control Module connector. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 4 No → Repair the PCI Bus circuit for an open. Perform AIRBAG VERIFICATION TEST - VER 1.	All
4	If there are no possible causes remaining, view repair. Repair Replace the Airbag Control Module in accordance with the Service information. WARNING: Make sure the battery is disconnected and wait 2 minutes before proceeding. Perform AIRBAG VERIFICATION TEST - VER 1.	All

Symptom:

***NO RESPONSE FROM AUTOMATIC TEMPERATURE CONTROL MODULE**

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE BCM
GROUND CIRCUIT OPEN
FUSED (B+) CKT OPEN
FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
OPEN PCI BUS CIRCUIT
AUTOMATIC TEMPERATURE CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, enter Body then Body Computer. Was the DRB able to I/D or communicate with the BCM? Yes → Go To 2 No → Refer to the symptom list for problems related to no communication with the BCM. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the ATC C2 harness connector. Using a 12-volt test light connected to 12-volts, probe the Ground circuit. Is the test light illuminated? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the ATC C2 harness connector. Using a 12-volt test light connected to ground, probe the Fused B+ circuit. Is the test light illuminated? Yes → Go To 4 No → Repair the Fused B+ circuit for an open or short. Refer to the wiring diagrams in the service information. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the ATC C2 harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch Output circuit. Is the test light illuminated? Yes → Go To 5 No → Repair the Fused Ignition Switch circuit for an open or short. Refer to the wiring diagrams in the service information. Perform BODY VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM AUTOMATIC TEMPERATURE CONTROL MODULE — Continued

TEST	ACTION	APPLICABILITY
5	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the ATC C2 harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the ATC connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 6 No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	If there are no possible causes remaining, view repair. Repair Replace the Automatic Temperature Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

*NO RESPONSE FROM BODY CONTROL MODULE

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH ANOTHER MODULE
FUSED (B+) CKT OPEN
OPEN GROUND CIRCUIT(S)
OPEN PCI BUS CIRCUIT
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, attempt to communicate with the Airbag Control Module (ACM). With the DRB, attempt to communicate with the Instrument Cluster. Was the DRB able to I/D or communicate with the ACM and the CAB? Yes → Go To 2 No → Refer to symptom list for problems related to the PCI Bus Communication Failure. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the BCM C2 harness connector. Using a 12-volt test light connected to ground, probe the Fused B+ circuit. Is the test light illuminated? Yes → Go To 3 No → Check fuse #14 in the IPM for an open. If ok, repair the Fused B+ circuit for an open or short. Refer to the wiring diagrams in the service information. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the BCM C2 harness connector. Using a 12-volt test light connected to 12-volts, probe both Ground circuits. Is the test light illuminated for each circuit? Yes → Go To 4 No → Repair the Ground circuit(s) for an open. Perform BODY VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM BODY CONTROL MODULE — Continued

TEST	ACTION	APPLICABILITY
4	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the BCM C3 harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the BCM connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 5 No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***NO RESPONSE FROM CABIN HEATER ASSIST - DIESEL ONLY**

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE ECM
FUSED B+ CIRCUIT OPEN
GROUND CIRCUIT OPEN
SCI TRANSMIT CIRCUIT OPEN
CABIN HEATER ASSIST

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, attempt to communicate with the ECM. Was the DRB able to I/D or communicate with the ECM? Yes → Go To 2 No → Refer to the symptom list for problems related to no communication with the ECM. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Cabin Heater Assist C2 harness connector. Using a 12-volt test light connected to ground, probe the Fused B+ circuit. Is the test light illuminated? Yes → Go To 3 No → Check the IPM Fuse #15 for an open. If open, check for a short to ground on the Fused B+ circuit. If not open, repair the Fused B+ circuit for an open. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Cabin Heater Assist C2 harness connector. Using a 12-volt test light connected to 12-volts, probe the ground circuit. Is the test light illuminated? Yes → Go To 4 No → Repair the ground circuit for an open. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Cabin Heater Assist C1 harness connector. Disconnect the DRB from the DLC. Measure the resistance of the SCI Transmit circuit between the Cabin Heater Assist connector and the DLC. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the SCI Transmit circuit for an open. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM CABIN HEATER ASSIST - DIESEL ONLY — Continued

TEST	ACTION	APPLICABILITY
5	If there are no possible causes remaining, view repair. Repair Replace the Cabin Heater Assist in accordance with the service information. Perform CABIN HEATER VERIFICATION TEST - VER 1.	All

Symptom:

*NO RESPONSE FROM CONTROLLER ANTILOCK BRAKE

POSSIBLE CAUSES
NO RESPONSE FROM CAB
GROUND CIRCUIT OPEN
OPEN FUSED IGNITION SWITCH OUTPUT CIRCUIT
OPEN PCI BUS CIRCUIT
CONTROLLER ANTILOCK BRAKE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **Note: As soon as one or more module communicates with the DRB, answer the question.** With the DRB, attempt to communicate with the Airbag Control Module (ACM). With the DRB, attempt to communicate with the Body Control Module (BCM). Was the DRB able to I/D or establish communications with either of the modules? Yes → Go To 2 No → Refer to the Communications category and perform the symptom PCI Bus Communication Failure. Perform ABS VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the CAB harness connector. Using a 12-volt test light connected to 12-volts, probe both ground circuits. Is the test light illuminated for each circuit? Yes → Go To 3 No → Repair the ground circuit(s) for an open. Perform ABS VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the CAB harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch Output circuit. Is the test light illuminated? Yes → Go To 4 No → Repair the Fused Ignition Switch Output circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM CONTROLLER ANTILOCK BRAKE — Continued

TEST	ACTION	APPLICABILITY
4	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the CAB harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the CAB connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 5 No → Repair the PCI Bus circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All

Symptom:

*NO RESPONSE FROM ECM (PCI BUS) - DIESEL ONLY

POSSIBLE CAUSES
ECM PCI NO RESPONSE
PCI BUS CIRCUIT OPEN
ENGINE CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: As soon as one or more module communicates with the DRB, answer the question.** With the DRB, enter Body then Body Computer. With the DRB, enter Anti-Lock Brakes. With the DRB, enter Body then Electro/Mechanical Cluster (MIC). With the DRB, enter Passive Restraints then Airbag. Were you able to establish communications with any of the modules? Yes → Go To 2 No → Refer to symptom PCI Bus Communication Failure in the Communications category. Perform ROAD TEST VERIFICATION - VER-2.	All
2	With the DRB read ECM Diagnostic Trouble Codes. This is to ensure power and grounds to the ECM are operational. **NOTE: If the DRB will not read ECM DTCs, follow the NO RESPONSE TO ECM (SCI only) symptom path, if vehicle will start. For NO START Conditions follow the no start symptom in the powertrain diagnostic information.** Turn the ignition off. Disconnect the ECM harness connectors. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to ground. Connect the Red lead to the PCI Bus circuit in the ECM connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Replace and program the Engine Control Module in accordance with the Service Information. Perform ROAD TEST VERIFICATION - VER-2. No → Repair the PCI Bus circuit for an open. Perform ROAD TEST VERIFICATION - VER-2.	All

Symptom:

*NO RESPONSE FROM ECM (SCI ONLY) - DIESEL ONLY

POSSIBLE CAUSES
CHECK ECM POWERS AND GROUNDS
CABIN HEATER ASSIST
SCI TRANSMIT CIRCUIT SHORTED TO VOLTAGE
SCI TRANSMIT CIRCUIT SHORTED TO GROUND
SCI TRANSMIT CIRCUIT OPEN
ENGINE CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Perform the symptom Checking ECM Power and Ground Circuits in the Driveability category. Did the vehicle pass this test? Yes → Go To 2 No → Repair as necessary. Perform ROAD TEST VERIFICATION - VER-2.	All
2	Turn the ignition off. Disconnect the ECM harness connectors. Disconnect the DRB from the DLC. Measure the resistance between ground and the SCI Transmit circuit. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Go To 4	All
3	Turn the ignition off. Disconnect the Cabin Heater Assist C1 harness connector. Measure the resistance between ground and the SCI Transmit circuit. Is the resistance below 5.0 ohms? Yes → Repair the SCI Transmit circuit for a short to ground. Perform ROAD TEST VERIFICATION - VER-2. No → Replace the Cabin Heater Assist in accordance with the service information. Perform ROAD TEST VERIFICATION - VER-2.	All
4	Turn the ignition off. Disconnect the DRB from the DLC. Disconnect the ECM harness connectors. Disconnect the Cabin Heater Assist C1 harness connector. Turn the ignition on. Measure the voltage of the SCI Transmit circuit at the DLC connector (cav 7). Is the voltage above 1.0 volt? Yes → Repair the SCI Transmit circuit for a short to voltage. Perform ROAD TEST VERIFICATION - VER-2. No → Go To 5	All

*NO RESPONSE FROM ECM (SCI ONLY) - DIESEL ONLY — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect the ECM harness connectors. Disconnect the DRB from the DLC. Measure the resistance of the SCI Transmit circuit between the ECM connector and the DLC. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the SCI Transmit circuit for an open. Perform ROAD TEST VERIFICATION - VER-2.	All
6	If there are no possible causes remaining, view repair. Repair Replace and program the Engine Control Module in accordance with the Service Information. Perform ROAD TEST VERIFICATION - VER-2.	All

Symptom:

***NO RESPONSE FROM FRONT CONTROL MODULE**

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH ANOTHER MODULE
OPEN GROUND CIRCUIT(S)
OPEN PCI BUS CIRCUIT
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, attempt to communicate with the Airbag Control Module. With the DRB, attempt to communicate with the Controller Antilock Brake (CAB) module. With the DRB, attempt to communicate with the Body Control Module (BCM). Was the DRB able to I/D or communicate with any of the modules? Yes → Go To 2 No → Refer to symptom list for problems related to the PCI Bus Communication Failure. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Remove the Front Control Module from the IPM. Using a 12-volt test light connected to 12-volts, probe both Ground circuits. Is the test light illuminated for each circuit? Yes → Go To 3 No → Repair the Ground circuit(s) for an open. Perform BODY VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM FRONT CONTROL MODULE — Continued

TEST	ACTION	APPLICABILITY
3	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Remove the Front Control Module from the IPM. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set the probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the FCM connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 4 No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	If there are no possible causes remaining, view repair. Repair Replace the Front Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
*NO RESPONSE FROM HVAC

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE BCM
GROUND CIRCUIT OPEN
IGNITION SWITCH OUTPUT CIRCUIT OPEN
OPEN PCI BUS CIRCUIT
A/C HEATER CONTROL

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, enter Body then Body Computer. Was the DRB able to I/D or communicate with the BCM? Yes → Go To 2 No → Refer to the symptom list for problems related to no communication with the BCM. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the A/C Heater Control C1 harness connector. Using a 12-volt test light connected to 12-volts, probe the ground circuit. Is the test light illuminated? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the A/C Heater Control C1 harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Ignition Switch Output circuit. Is the test light illuminated? Yes → Go To 4 No → Repair the Ignition Switch Output circuit for an open or short. Perform BODY VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM HVAC — Continued

TEST	ACTION	APPLICABILITY
4	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the A/C Heater Control C1 harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set the probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the A/C Heater Control connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 5 No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the A/C Heater Control in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***NO RESPONSE FROM INSTRUMENT CLUSTER**

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE BCM
OPEN GROUND CIRCUIT
OPEN FUSED B+ CIRCUIT
OPEN PCI BUS CIRCUIT
INSTRUMENT CLUSTER WAKE UP SENSE CKT OPEN
INSTRUMENT CLUSTER WAKE UP SENSE CKT INTERNALLY OPEN
INSTRUMENT CLUSTER WAKE UP SENSE CKT SHORTED TO VOLTAGE
INSTRUMENT CLUSTER WAKE UP SENSE CKT INTERNALLY SHORTED TO VOLTAGE
INSTRUMENT CLUSTER
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, enter Body then Body Computer. Was the DRB able to I/D or communicate with the BCM? Yes → Go To 2 No → Refer to the symptom list for problems related to no communication with the BCM. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Using a 12-volt test light connected to 12-volts, probe both ground circuits. Is the test light illuminated for each circuit? Yes → Go To 3 No → Repair the ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Using a 12-volt test light connected to ground, probe the Fused B+ circuit. Is the test light illuminated? Yes → Go To 4 No → Repair the Fused B+ circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM INSTRUMENT CLUSTER — Continued

TEST	ACTION	APPLICABILITY
4	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the Instrument Cluster harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. Install DRBIII® SuperCard 2 CH8361 into DRBIII®. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the Instrument Cluster connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 5 No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Reconnect the Instrument Cluster harness connector. Disconnect the BCM C4 harness connector. Turn the ignition on. Measure the voltage of the Instrument Cluster Wake Up Sense circuit in the BCM C4 connector. Is the voltage above 10.0 volts? Yes → Go To 6 No → Go To 9	All
6	Turn the ignition off. Disconnect the BCM C4 harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Instrument Cluster Wake Up Sense circuit. Is the test light illuminated? Yes → Go To 7 No → Go To 8	All

*NO RESPONSE FROM INSTRUMENT CLUSTER — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Disconnect the BCM C4 harness connector. Disconnect the Instrument Cluster harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Instrument Cluster Wake Up Sense circuit. Is the test light illuminated? Yes → Repair the Instrument Cluster Wake Up Sense circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Instrument Cluster in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All
8	Turn the ignition off. Reconnect the BCM C4 harness connector. Disconnect the Instrument Cluster harness connector. Measure the resistance between ground and the Instrument Cluster Wake Up Sense circuit at the Instrument Cluster connector. Open and close a door. This is done to ensure the BCM is awake. Is the resistance below 50.0 ohms? Yes → Replace the Instrument Cluster in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All
9	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Disconnect the BCM C4 harness connector. Measure the resistance of the Instrument Cluster Wake Up Sense circuit between the BCM C4 connector and the MIC connector. Is the resistance below 5.0 ohms? Yes → Replace the Instrument Cluster in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Instrument Cluster Wake Up Sense circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
*NO RESPONSE FROM LEFT SIACM

POSSIBLE CAUSES
INTERROGATE FCM
GROUND CIRCUIT OPEN
SIACM RUN/START DRIVER CIRCUIT OPEN
PCI BUS CIRCUIT OPEN
LEFT SIDE IMPACT AIRBAG CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, check the FCM for any DTC's. Are any FCM DTC's present? Yes → Refer to the appropriate category and perform the symptom. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 2	All
2	**Ensure that the battery is fully charged.** **Warning: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Left Side Impact Airbag Control Module harness connector. Connect the appropriate Load Tool SIACM Adapter to the SIACM connector. Using a 12-volt test light connected to 12-volts, probe both Ground circuits. **NOTE: Make sure test light is connected to the Battery positive terminal.** Is the test light illuminated for each circuit? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform AIRBAG VERIFICATION TEST - VER 1. **Note: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
3	**Warning: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Left Side Impact Airbag Control Module harness connector. Connect the appropriate Load Tool SIACM Adapter to the SIACM connector. Turn the ignition on and then reconnect the Battery. Measure the voltage of the SIACM Run/Start Driver circuit. Is the voltage above 6.0 volts? Yes → Go To 4 No → Repair the SIACM Run/Start Driver circuit for an open. Perform AIRBAG VERIFICATION TEST - VER 1. **Note: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

*NO RESPONSE FROM LEFT SIACM — Continued

TEST	ACTION	APPLICABILITY
4	**NOTE: Ensure there is PCI bus communication with other modules. If not, refer to the PCI Bus Communication Failure symptom and repair as necessary.** **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Left Side Impact Airbag Control Module harness connector. Connect the appropriate Load Tool SIACM Adapter to the SIACM connector. Turn the ignition on and then reconnect the Battery. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the Left Side Impact Airbag Control Module connector. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 5 No → Repair the PCI Bus circuit for an open. Perform AIRBAG VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Yes → Replace the Left Side Impact Airbag Control Module (LSIACM) in accordance with the Service Information. WARNING: Make sure the battery is disconnected and wait 2 minutes before proceeding. Perform AIRBAG VERIFICATION TEST - VER 1.	All

Symptom:

***NO RESPONSE FROM LEFT SLIDING DOOR CONTROL MODULE**

POSSIBLE CAUSES
FUSED B(+) CIRCUIT OPEN
GROUND CIRCUIT OPEN
PCI BUS CIRCUIT OPEN
LEFT SLIDING DOOR WAKE UP SIGNAL WIRE OPEN
LEFT SLIDING DOOR WAKE UP SIGNAL WIRE SHORT TO VOLTAGE
LEFT SLIDING DOOR WAKE UP SIGNAL WIRE SHORT TO GROUND
BODY CONTROL MODULE - LEFT SLIDING DOOR WAKE UP GROUND OPEN
LEFT SLIDING DOOR CONTROL MODULE - OPEN

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Left Sliding Door Control Module C1 harness connector. Measure the voltage of the Fused B(+) circuit. Is the voltage above 10.0 volts? Yes → Go To 2 No → Repair the Fused B(+) circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Left Sliding Door Control Module C1 harness connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM LEFT SLIDING DOOR CONTROL MODULE — Continued

TEST	ACTION	APPLICABILITY
3	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the Left Sliding Door Control Module C2 harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the Left Sliding Door Control Module C2 connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 4 No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Left Sliding Door Control Module C2 harness connector. Turn the ignition on. Measure the resistance between ground and the Left Sliding Door Wake Up Signal circuit. Is the resistance below 50.0 ohms? Yes → Go To 5 No → Go To 8	All
5	Turn the ignition off. Disconnect the Body Control Module C3 harness connector. Disconnect the Left Sliding Door Module C2 harness connector. Turn the ignition on. Measure the voltage of the Left Sliding Door Wake Up Signal circuit. Is there any voltage present? Yes → Repair the Left Sliding Door Wake Up Signal wire for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All

*NO RESPONSE FROM LEFT SLIDING DOOR CONTROL MODULE — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the Body Control Module C3 harness connector. Disconnect the Left Sliding Door Control Module C2 harness connector. Measure the resistance between ground and the Left Sliding Door Wake Up Signal circuit. Is the resistance below 100.0 ohms? Yes → Repair the Left Sliding Door Wake Up Signal wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Left Sliding Door Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All
8	Turn the ignition off. Disconnect the Body Control Module C3 harness connector. Disconnect the Left Sliding Door Control Module C2 harness connector. Measure the resistance of the Left Sliding Door Wake Up Signal circuit between the BCM C3 connector and the Left Sliding Door Control Module C2 connector. Is the resistance below 5.0 ohms? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Left Sliding Door Wake Up Signal wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***NO RESPONSE FROM MEMORY SEAT/MIRROR MODULE**

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE BCM
FUSED B+ CIRCUIT OPEN
GROUND CIRCUIT OPEN
OPEN PCI BUS CIRCUIT
MEMORY SEAT/MIRROR MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, enter Body then Body Computer. Was the DRB able to I/D or communicate with the BCM? Yes → Go To 2 No → Refer to the symptom list for problems related to no communication with the BCM. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Memory Seat/Mirror Module C4 harness connector. Using a 12-volt test light connected to ground, probe the Fused B(+) circuit. Is the test light illuminated? Yes → Go To 3 No → Check the Power Seat Circuit Breaker for an open or short. If ok, repair the Fused B(+) circuit for an open or short. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Memory Seat/Mirror Module C4 harness connector. Using a 12-volt test light connected to 12-volts, probe the Ground circuit. Is the test light illuminated? Yes → Go To 4 No → Repair the ground circuit for an open. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM MEMORY SEAT/MIRROR MODULE — Continued

TEST	ACTION	APPLICABILITY
4	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Turn the ignition off. Disconnect the Memory Seat/Mirror Module C1 harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the Memory Seat/Mirror Module connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 5 No → Repair the PCI Bus circuit for an open. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat/Mirror Module in accordance with the service information. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:

***NO RESPONSE FROM OVERHEAD CONSOLE**

POSSIBLE CAUSES
GROUND CIRCUIT OPEN
FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
FUSED B+ CIRCUIT OPEN
OPEN PCI BUS CIRCUIT
OVERHEAD CONSOLE

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Overhead Console harness connector. Using a 12-volt test light connected to 12-volts, probe the ground circuit (cav 4). Is the test light illuminated? Yes → Go To 2 No → Repair the ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Overhead Console harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch Output circuit. Is the test light illuminated? Yes → Go To 3 No → Repair the Fused Ignition Switch Output circuit for an open. Refer to the wiring diagrams located in the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Overhead Console harness connector. Using a 12-volt test light connected to ground, probe the Fused B+ circuit. Is the test light illuminated? Yes → Go To 4 No → Repair the Fused B+ circuit for an open. Refer to the wiring diagrams located in the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM OVERHEAD CONSOLE — Continued

TEST	ACTION	APPLICABILITY
4	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the Overhead Console harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the Overhead Console connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 5 No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the Overhead Console in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

*NO RESPONSE FROM PCM (PCI BUS) - NGC

POSSIBLE CAUSES
PCM PCI NO RESPONSE
POWERTRAIN CONTROL MODULE
PCI BUS CIRCUIT OPEN

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: As soon as one or more module communicates with the DRB, answer the question.** With the DRB, enter Body then Body Computer With the DRB, enter Body then Electro/Mechanical Cluster (MIC). With the DRB, enter Passive Restraints then Airbag. Were you able to establish communications with any of the modules? Yes → Go To 2 No → Refer to symptom PCI Bus Communication Failure in the Communications category. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
2	With the DRB read the Powertrain DTC's. This is to ensure power and grounds to the PCM are operational. **NOTE: If the DRB will not read PCM DTC's, follow the NO RESPONSE TO PCM (PCM SCI only) symptom path.** Turn the ignition off. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the appropriate terminal of special tool #8815. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Repair the PCI Bus circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom:

*NO RESPONSE FROM PCM (PCI BUS) - SBEC

POSSIBLE CAUSES
PCM PCI NO RESPONSE
PCI BUS CIRCUIT OPEN
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: As soon as one or more module communicates with the DRB, answer the question.** With the DRB, enter Body then Body Computer. With the DRB, enter Anti-Lock Brakes. With the DRB, enter Body then Electro/Mechanical Cluster (MIC). With the DRB, enter Passive Restraints then Airbag. Were you able to establish communications with any of the modules? Yes → Go To 2 No → Refer to symptom PCI Bus Communication Failure in the Communications category. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

*NO RESPONSE FROM PCM (PCI BUS) - SBEC — Continued

TEST	ACTION	APPLICABILITY
2	With the DRB read PCM Diagnostic Trouble Codes. This is to ensure power and grounds to the PCM are operational. **NOTE: If the DRB will not read PCM DTC's, follow the NO RESPONSE TO PCM (SCI only) symptom path.** **NOTE: If the vehicle will not start and the DRBIII® displays a no response message, refer to the appropriate symptom in the powertrain diagnostic procedures.** Turn the ignition off. Disconnect the PCM C2 harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. Install DRBIII® SuperCard 2 CH8361 into DRBIII®. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the PCM ground. Connect the Red lead to the PCI Bus circuit in the PCM connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Repair the PCI Bus circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

Symptom:

*NO RESPONSE FROM PCM (PCM SCI ONLY) - NGC

POSSIBLE CAUSES
CHECK PCM POWERS AND GROUNDS
PCM SCI TRANSMIT CIRCUIT SHORTED TO VOLTAGE
PCM SCI RECEIVE CIRCUIT SHORTED TO VOLTAGE
PCM SCI CIRCUITS SHORTED TOGETHER
PCM SCI TRANSMIT CIRCUIT SHORTED TO GROUND
PCM SCI RECEIVE CIRCUIT SHORTED TO GROUND
PCM SCI RECEIVE CIRCUIT OPEN
PCM SCI TRANSMIT CIRCUIT OPEN
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Perform the symptom Checking PCM Power and Ground Circuits in the Driveability category. **NOTE: With the DRBIII® in the generic scan tool mode, attempt to communicate with the PCM.** **NOTE: If the DRBIII® can communicate with the PCM in the generic scan tool mode, it may not be necessary to perform this step.** Did the vehicle pass this test? Yes → Go To 2 No → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
2	Turn the ignition off. Disconnect the DRBIII® from the DLC. Disconnect the PCM harness connectors. Turn the ignition on. Measure the voltage of the PCM SCI Transmit circuit at the Data Link harness connector (cav 7). Is the voltage above 1.0 volt? Yes → Repair the PCM SCI Transmit circuit for a short to voltage. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Go To 3	All
3	Turn the ignition off. Disconnect the DRBIII® from the DLC. Disconnect the PCM harness connectors. Turn the ignition on. Measure the voltage of the PCM SCI Receive circuit at the Data Link harness connector (cav 12). Is the voltage above 1.0 volt? Yes → Repair the PCM SCI Receive circuit for a short to voltage. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Go To 4	All

*NO RESPONSE FROM PCM (PCM SCI ONLY) - NGC — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the DRBIII® from the DLC. Disconnect the PCM harness connectors. Measure the resistance between the PCM SCI Transmit circuit and the PCM SCI Receive circuit at the Data Link harness connector (cavs 7 and 12). Is the resistance below 5.0 ohms? Yes → Repair the short between the PCM SCI Transmit and the PCM SCI Receive circuits. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Go To 5	All
5	Turn the ignition off. Disconnect the PCM harness connectors. Disconnect the DRBIII® from the DLC. Measure the resistance between ground and the PCM SCI Transmit circuit at the Data Link harness connector (cav 7). Is the resistance below 5.0 ohms? Yes → Repair the PCM SCI Transmit circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Go To 6	All
6	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the DRBIII® from the DLC. Measure the resistance between ground and the PCM SCI Receive circuit in the Data Link harness connector (cav 12). Is the resistance below 5.0 ohms? Yes → Repair the PCM SCI Receive circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC. No → Go To 7	All
7	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the DRBIII® from the DLC. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the PCM SCI Receive circuit from the Data Link harness connector (cav 12) to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 8 No → Repair the PCM SCI Receive circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

*NO RESPONSE FROM PCM (PCM SCI ONLY) - NGC — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the PCM harness connector. Disconnect the DRBIII® from the DLC. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the PCM SCI Transmit circuit from the Data Link harness connector (cav 7) to the appropriate terminal of special tool #8815. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the PCM SCI Transmit circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All
9	If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1 - NGC.	All

Symptom:

*NO RESPONSE FROM PCM (SCI ONLY) - SBEC

POSSIBLE CAUSES
CHECK PCM POWERS AND GROUNDS
SCI TRANSMIT CIRCUIT SHORTED TO VOLTAGE
TRANSMISSION CONTROL MODULE
SCI RECEIVE CIRCUIT SHORTED TO VOLTAGE
SCI CIRCUITS SHORTED TOGETHER
SCI TRANSMIT CIRCUIT SHORTED TO GROUND
SCI RECEIVE CIRCUIT SHORTED TO GROUND
SCI RECEIVE CIRCUIT OPEN
SCI TRANSMIT CIRCUIT OPEN
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Perform the symptom Checking PCM Power and Ground Circuits in the Driveability category. **NOTE: With the DRBIII® in the generic scan tool mode, attempt to communicate with the PCM.** **NOTE: If the DRBIII® can communicate with the PCM in the generic scan tool mode, it may not be necessary to perform this step.** Did the vehicle pass this test? Yes → Go To 2 No → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
2	Turn the ignition off. Disconnect the PCM C2 harness connector. Disconnect the DRB from the DLC. Measure the resistance between ground and the SCI Transmit (PCM) circuit. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Go To 4	All
3	Turn the ignition off. Disconnect the TCM harness connector (if equipped). **NOTE: If vehicle is not equipped with a TCM, answer yes to the question.** Measure the resistance between ground and the SCI Transmit (PCM) circuit. Is the resistance below 5.0 ohms? Yes → Repair the SCI Transmit (PCM) circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Replace the Transmission Control Module in accordance with the service information. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

*NO RESPONSE FROM PCM (SCI ONLY) - SBEC — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the DRB from the DLC. Disconnect the PCM harness connectors. Disconnect the TCM harness connector (if equipped). Turn the ignition on. Measure the voltage of the SCI Transmit (PCM) circuit at the DLC connector. Is the voltage above 1.0 volt? Yes → Repair the SCI Transmit (PCM) circuit for a short to voltage. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the DRB from the DLC. Disconnect the PCM harness connectors. Turn the ignition on. Measure the voltage of the SCI Receive (PCM) circuit at the DLC connector. Is the voltage above 1.0 volt? Yes → Repair the SCI Receive (PCM) circuit for a short to voltage. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 6	All
6	Turn the ignition off. Disconnect the DRB from the DLC. Disconnect the PCM harness connectors. Measure the resistance between the SCI Transmit (PCM) circuit and the SCI Receive (PCM) circuit at the PCM connector. Is the resistance below 5.0 ohms? Yes → Repair the short between the SCI Transmit (PCM) and the SCI Receive (PCM) circuits. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 7	All
7	Turn the ignition off. Disconnect the PCM C2 harness connector. Disconnect the DRB from the DLC. Measure the resistance between ground and the SCI Receive (PCM) circuit. Is the resistance below 5.0 ohms? Yes → Repair the SCI Receive (PCM) circuit for a short to ground. Perform POWERTRAIN VERIFICATION TEST VER - 1. No → Go To 8	All
8	Turn the ignition off. Disconnect the PCM C2 harness connector. Disconnect the DRB from the DLC. Measure the resistance of the SCI Receive (PCM) circuit between the PCM C2 connector and the DLC. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the SCI Receive (PCM) circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

*NO RESPONSE FROM PCM (SCI ONLY) - SBEC — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off. Disconnect the PCM C2 harness connector. Disconnect the DRB from the DLC. Measure the resistance of the SCI Transmit (PCM) circuit between the PCM C2 connector and the DLC. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the SCI Transmit (PCM) circuit for an open. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All
10	If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 1.	All

Symptom:

*NO RESPONSE FROM POWER LIFTGATE MODULE

POSSIBLE CAUSES
FUSED B(+) CIRCUIT OPEN
GROUND CIRCUIT OPEN
BODY CONTROL MODULE - LIFTGATE WAKE UP GROUND OPEN
LIFTGATE MODULE WAKE UP SIGNAL WIRE OPEN
LIFTGATE MODULE WAKE UP SIGNAL WIRE SHORT TO VOLTAGE
LIFTGATE MODULE WAKE UP SIGNAL WIRE SHORT TO GROUND
PCI BUS CIRCUIT OPEN
POWER LIFTGATE MODULE - OPEN

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Power Liftgate Module C1 harness connector. Measure the voltage of the Fused B(+) circuit. Is the voltage above 10.0 volts? Yes → Go To 2 No → Repair the Fused B(+) circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Power Liftgate Module C1 harness connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM POWER LIFTGATE MODULE — Continued

TEST	ACTION	APPLICABILITY
3	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the Power Liftgate Module C2 harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the Power Liftgate Module C2 connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 4 No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Power Liftgate Module C2 harness connector. Turn the ignition on. Measure the resistance between ground and the Liftgate Module Wake Up Signal circuit. Is the resistance below 50.0 ohms? Yes → Go To 5 No → Go To 8	All
5	Turn the ignition off. Disconnect the Body Control Module C2 harness connector. Disconnect the Power Liftgate Module C2 harness connector. Turn the ignition on. Measure the voltage of the Liftgate Module Wake Up Signal circuit. Is there any voltage present? Yes → Repair the Liftgate Module Wake Up Signal wire for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All

*NO RESPONSE FROM POWER LIFTGATE MODULE — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the Body Control Module C2 harness connector. Disconnect the Power Liftgate Module C2 harness connector. Measure the resistance between ground and the Liftgate Module Wake Up Signal circuit. Is the resistance below 100.0 ohms? Yes → Repair the Liftgate Module Wake Up Signal wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Power Liftgate Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All
8	Turn the ignition off. Disconnect the Body Control Module C2 harness connector. Disconnect the Power Liftgate Module C2 harness connector. Measure the resistance of the Liftgate Module Wake Up Signal circuit between the BCM C2 connector and the Power Liftgate Module C2 connector. Is the resistance below 5.0 ohms? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Liftgate Module Wake Up Signal wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
*NO RESPONSE FROM RADIO

POSSIBLE CAUSES
NO RESPONSE FROM RADIO
OPEN FUSED ACCESSORY RELAY OUTPUT CIRCUIT
OPEN FUSED B+ CIRCUIT
GROUND CIRCUIT OPEN
OPEN PCI BUS CIRCUIT
RADIO

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **Note: As soon as one or more module communicates with the DRB, answer the question.** With the DRB, attempt to communicate with the Airbag Control Module (ACM). With the DRB, attempt to communicate with the Body Control Module (BCM). Was the DRB able to I/D or establish communications with either of the modules? Yes → Go To 2 No → Refer to the Communications category and perform the symptom PCI Bus Communication Failure. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Radio C1 harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused Accessory Relay Output circuit. Is the test light illuminated? Yes → Go To 3 No → Check fuse #5 in the IPM for an open. If ok, repair the Fused Accessory Relay Output circuit for an open or short. Refer to the wiring diagrams located in the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Radio C1 harness connector. Using a 12-volt test light connected to ground, probe both Fused B+ circuits. Is the test light illuminated for each circuit? Yes → Go To 4 No → Check fuse #14 in the IPM for an open. If ok, repair the Fused B+ circuit for an open or short. Refer to the wiring diagrams located in the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM RADIO — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Radio C1 harness connector. Using a 12-volt test light connected to 12-volts, probe both ground circuits. Is the test light illuminated for each circuit? Yes → Go To 5 No → Repair the ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the Radio C1 harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. Install DRBIII® SuperCard 2 CH8361 into DRBIII®. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the Radio connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 6 No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	If there are no possible causes remaining, view repair. Repair Replace the Radio. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
*NO RESPONSE FROM RIGHT SIACM

POSSIBLE CAUSES
INTERROGATE FCM
GROUND CIRCUIT OPEN
SIACM RUN/START DRIVER CIRCUIT OPEN
PCI BUS CIRCUIT OPEN
RIGHT SIDE IMPACT AIRBAG CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, check the FCM for any DTC's. Are any FCM DTC's present? Yes → Refer to the appropriate category and perform the symptom. Perform AIRBAG VERIFICATION TEST - VER 1. No → Go To 2	All
2	**Ensure that the battery is fully charged.** **Warning: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Right Side Impact Airbag Control Module harness connector. Connect the appropriate Load Tool SIACM Adapter to the SIACM connector. Using a 12-volt test light connected to 12-volts, probe the ground circuit. Is the test light illuminated? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform AIRBAG VERIFICATION TEST - VER 1. **Note: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All
3	**Warning: TURN IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Right Side Impact Airbag Control Module harness connector. Connect the appropriate Load Tool SIACM Adapter to the SIACM connector. Turn the ignition on and then reconnect the Battery. Measure the voltage of the SIACM Run/Start Driver circuit. Is the voltage above 6.0 volts? Yes → Go To 4 No → Repair the SIACM Run/Start Driver circuit for an open. Perform AIRBAG VERIFICATION TEST - VER 1. **Note: When reconnecting Airbag system components, the ignition must be turned off and the battery must be disconnected.**	All

*NO RESPONSE FROM RIGHT SIACM — Continued

TEST	ACTION	APPLICABILITY
4	**NOTE: Ensure there is PCI bus communication with other modules. If not, refer to the PCI Bus Communication Failure symptom and repair as necessary.** **WARNING: TURN THE IGNITION OFF, DISCONNECT THE BATTERY AND WAIT TWO MINUTES BEFORE PROCEEDING.** Disconnect the Right Side Impact Airbag Control Module harness connector. Connect the appropriate Load Tool SIACM Adapter to the SIACM connector. Turn the ignition on and then reconnect the Battery. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope, then enter to select channel. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the Right Side Impact Airbag Control Module connector. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 5 No → Repair the PCI Bus circuit for an open. Perform AIRBAG VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Yes → Replace the Right Side Impact Airbag Control Module (RSIACM) in accordance with the Service Information. WARNING: Make sure the battery is disconnected and wait 2 minutes before proceeding. Perform AIRBAG VERIFICATION TEST - VER 1.	All

Symptom:

***NO RESPONSE FROM RIGHT SLIDING DOOR CONTROL MODULE**

POSSIBLE CAUSES
FUSED B(+) CIRCUIT OPEN
GROUND CIRCUIT OPEN
PCI BUS CIRCUIT OPEN
RIGHT SLIDING DOOR WAKE UP SIGNAL WIRE OPEN
RIGHT SLIDING DOOR WAKE UP SIGNAL WIRE SHORT TO VOLTAGE
RIGHT SLIDING DOOR WAKE UP SIGNAL WIRE SHORT TO GROUND
BODY CONTROL MODULE - RIGHT SLIDING DOOR WAKE UP GROUND OPEN
RIGHT POWER SLIDING DOOR MODULE - OPEN

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Right Sliding Door Control Module C1 harness connector. Measure the voltage of the Fused B(+) circuit. Is the voltage above 10.0 volts? Yes → Go To 2 No → Repair the Fused B(+) circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Right Sliding Door Control Module C1 harness connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM RIGHT SLIDING DOOR CONTROL MODULE — Continued

TEST	ACTION	APPLICABILITY
3	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the Right Sliding Door Control Module C2 harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the Right Sliding Door Control Module C2 connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 4 No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Right Sliding Door Control Module C2 harness connector. Turn the ignition on. Measure the resistance between ground and the Right Sliding Door Wake Up Signal circuit. Is the resistance below 50.0 ohms? Yes → Go To 5 No → Go To 8	All
5	Turn the ignition off. Disconnect the Body Control Module C3 harness connector. Disconnect the Right Sliding Door Module C2 harness connector. Turn the ignition on. Measure the voltage of the Right Sliding Door Wake Up Signal circuit. Is there any voltage present? Yes → Repair the Right Sliding Door Wake Up Signal wire for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All

*NO RESPONSE FROM RIGHT SLIDING DOOR CONTROL MODULE — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the Body Control Module C3 harness connector. Disconnect the Right Sliding Door Control Module C2 harness connector. Measure the resistance between ground and the Right Sliding Door Wake Up Signal circuit. Is the resistance below 100.0 ohms? Yes → Repair the Right Sliding Door Wake Up Signal wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Right Sliding Door Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All
8	Turn the ignition off. Disconnect the Body Control Module C3 harness connector. Disconnect the Right Sliding Door Control Module C2 harness connector. Measure the resistance of the Right Sliding Door Wake Up Signal circuit between the BCM C3 connector and the Right Sliding Door Control Module C2 connector. Is the resistance below 5.0 ohms? Yes → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Right Sliding Door Wake Up Signal wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***NO RESPONSE FROM SENTRY KEY IMMOBILIZER MODULE**

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE BCM
GROUND CIRCUIT OPEN
FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
FUSED B(+) CIRCUIT OPEN
OPEN PCI BUS CIRCUIT
SENTRY KEY IMMOBILIZER MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, enter Body then Body Computer. Was the DRB able to I/D or communicate with the BCM? Yes → Go To 2 No → Refer to the symptom list for problems related to no communication with the BCM. Perform SKIS VERIFICATION.	All
2	Turn the ignition off. Disconnect the SKIM harness connector. Using a 12-volt test light connected to 12-volts, probe the Ground circuit. Is the test light illuminated? Yes → Go To 3 No → Repair the ground circuit for an open. Perform SKIS VERIFICATION.	All
3	Turn the ignition off. Disconnect the SKIM harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch Output circuit. Is the test light illuminated? Yes → Go To 4 No → Repair the Fused Ignition Switch Output circuit for an open. Perform SKIS VERIFICATION.	All
4	Turn the ignition off. Disconnect the SKIM harness connector. Using a 12-volt test light connected to ground, probe the Fused B(+) circuit. Is the test light illuminated? Yes → Go To 5 No → Repair the Fused B+ circuit for an open. Perform SKIS VERIFICATION.	All

*NO RESPONSE FROM SENTRY KEY IMMOBILIZER MODULE — Continued

TEST	ACTION	APPLICABILITY
5	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the SKIM harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRBIII®. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the SKIM connector. Turn the ignition on. Observe the voltage display on the DRBIII® Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 6 No → Repair the PCI Bus circuit for an open. Perform SKIS VERIFICATION.	All
6	If there are no possible causes remaining, view repair. Repair Replace and program the Sentry Key Immobilizer Module in accordance with the Service Information. Perform SKIS VERIFICATION.	All

Symptom:

*NO RESPONSE FROM THATCHAM ALARM MODULE

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE BCM
GROUND CIRCUIT OPEN
FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
OPEN PCI BUS CIRCUIT
THATCHAM ALARM MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, enter Body then Body Computer. Was the DRB able to I/D or communicate with the BCM? Yes → Go To 2 No → Refer to the symptom list for problems related to no communication with the BCM. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the RKE Module 6-way harness connector. Using a 12-volt test light connected to 12-volts, probe the ground circuit. Is the test light illuminated? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Thatcham Alarm Module C1 harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch Output circuit. Is the test light illuminated? Yes → Go To 4 No → Repair the Fused Ignition Switch Output circuit for an open or short. Perform BODY VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM THATCHAM ALARM MODULE — Continued

TEST	ACTION	APPLICABILITY
4	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the Thatcham Alarm Module C1 harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the Thatcham Alarm Module connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 5 No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the Thatcham Alarm Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***NO RESPONSE FROM TRANSMISSION CONTROL MODULE - EATX**

POSSIBLE CAUSES
NO RESPONSE FROM TRANSMISSION CONTROL MODULE
FCM OUTPUT (RUN/ST) CIRCUIT OPEN
FUSED IGNITION SWITCH OUTPUT (START) CIRCUIT OPEN
FUSED IGNITION SWITCH OUTPUT (START) CIRCUIT SHORT
FUSED B(+) CIRCUIT OPEN
GROUND CIRCUIT(S) OPEN
OPEN PCI BUS CIRCUIT
TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. **Note: As soon as one or more module communicates with the DRB, answer the question.** With the DRB, attempt to communicate with the Airbag Control Module (ACM). With the DRB, attempt to communicate with the Body Control Module (BCM). Was the DRB able to I/D or establish communications with either of the modules? Yes → Go To 2 No → Refer to the Body Communication category and perform the symptom PCI Bus Communication Failure. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
2	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, probe the FCM Output (Run/St) circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 3 No → Repair the FCM Output (Run/St) circuit for an open. Refer to the wiring diagrams location in the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM TRANSMISSION CONTROL MODULE - EATX — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Remove the starter relay from the IPM. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch Output (Start) circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Observe the test light while momentarily turning the ignition switch to the Start position. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused Ignition Switch Output (Start) circuit for an open. Refer to the wiring diagrams located in the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. **Note: Reinstall the original Starter Relay.**	All
4	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Remove the starter relay from the IPM. With a voltmeter in the millivolt scale, measure the voltage of the Fused Ignition Switch Output (Start) circuit. **NOTE: A no response condition can exist if voltage is present on this circuit with the ignition switch in any position except for the Start position.** **NOTE: Voltage up to .080 millivolts can cause this condition.** **NOTE: Check for after market components that could cause this condition.** Perform this step with the Ignition Switch in every position except for the Start position. Is any voltage present? Yes → Repair the Fused Ignition Switch Output (Start) circuit for a short to voltage. Refer to the wiring diagrams located in the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5 **Note: Reinstall the original Starter Relay.**	All
5	Turn the ignition off. Disconnect the TCM harness connector. Using a 12-volt test light connected to ground, check the Fused B(+) circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 6 No → Repair the Fused B(+) circuit for an open. Refer to the wiring diagrams located in the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM TRANSMISSION CONTROL MODULE - EATX — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Using a 12-volt test light connected to 12-volts, check each ground circuit in the TCM harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly at all the ground circuits? Yes → Go To 7 No → Repair the Ground circuit(s) for an open. Check the main ground connection to engine block and/or chassis. Refer to the wiring diagrams located in the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
7	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the TCM harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the TCM connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 8 No → Repair the PCI Bus circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
8	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module in accordance with the service information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

*NO RESPONSE FROM TRANSMISSION CONTROL MODULE - NGC

POSSIBLE CAUSES
NO RESPONSE FROM TRANSMISSION CONTROL MODULE
FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
FUSED B(+) CIRCUIT OPEN
GROUND CIRCUIT(S) OPEN
PCI BUS CIRCUIT OPEN
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **Note: As soon as one or more module communicates with the DRB, answer the question.** With the DRB, attempt to communicate with the Instrument Cluster. With the DRB, attempt to communicate with the Airbag Control Module. Was the DRB able to I/D or establish communications with both of the modules? Yes → Go To 2 No → Refer to the Communications category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Turn the ignition on. Using a 12-volt test light connected to ground, probe both Fused Ignition Switch Output circuits (cavs 11 and 12) in the appropriate terminal of special tool #8815. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Is the test light illuminated for both circuits? Yes → Go To 3 No → Repair the Fused Ignition Switch Output circuit for an open. Refer to the wiring diagrams located in the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM TRANSMISSION CONTROL MODULE - NGC — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Using a 12-volt test light connected to ground, probe the Fused B(+) circuit in the appropriate terminal of special tool #8815. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Is the test light illuminated? Yes → Go To 4 No → Repair the Fused B(+) circuit for an open. Refer to the wiring diagrams located in the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Using a 12-volt test light connected to 12-volts, probe each ground circuit in the appropriate terminal of special tool #8815. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Is the light illuminated at all ground circuits? Yes → Go To 5 No → Repair the Ground circuit(s) for an open. Check the main ground connection to engine block and/or chassis. Refer to the wiring diagrams located in the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM TRANSMISSION CONTROL MODULE - NGC — Continued

TEST	ACTION	APPLICABILITY
5	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the appropriate terminal of special tool #8815. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 6 No → Repair the PCI Bus circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the service information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
*PCI BUS COMMUNICATION FAILURE

POSSIBLE CAUSES
WIRING HARNESS INTERMITTENT
OPEN PCI BUS CIRCUIT AT THE DATA LINK CONNECTOR (DLC)
PCI BUS CIRCUIT SHORTED TO VOLTAGE
MODULE SHORT TO VOLTAGE
PCI BUS CIRCUIT SHORTED TO GROUND
MODULE SHORT TO GROUND

TEST	ACTION	APPLICABILITY
1	**Note: Determine which modules this vehicle is equipped with before beginning.** **Note: When attempting to communicate with any of the modules on this vehicle, the DRB will display 1 of 2 different communication errors: a NO RESPONSE message or a BUS +/- SIGNALS OPEN message.** Turn the ignition on. Using the DRB, attempt to communicate with the following control modules: Airbag Control Module Body Control Module MIC (INSTRUMENT CLUSTER) Was the DRBIII® able to communicate with one or more Module(s)? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition off. **Note: Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires.** **Note: Visually inspect the related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: If the DRB can not communicate with a single module, refer to the category list for the related symptom.** Were any problems found? Yes → Repair wiring harness/connectors as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

*PCI BUS COMMUNICATION FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the PCM/ECM harness connector. Note: If equipped with NGC follow the caution below. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Disconnect the DRB from the Data Link Connector (DLC). Disconnect the negative battery cable. Measure the resistance of the PCI Bus circuit between the Data Link Connector (DLC) and the PCM/ECM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	**NOTE: Reconnect the PCM/ECM harness connector and the negative battery cable.** Turn the ignition on. Measure the voltage of the PCI Bus circuit at the Data Link Connector (DLC). Is the voltage above 7.0 volts? Yes → Go To 5 No → Go To 6	All
5	Turn the ignition off. Using a voltmeter, connect one end to the PCI Bus circuit at the DLC, and the other end to ground. **Note: When performing the next step turn the ignition off (wait one minute) before disconnecting any module. When the module is disconnected turn the ignition on to check for a short to voltage.** Turn the ignition on. While monitoring the voltmeter, disconnect each module the vehicle is equipped with one at a time. Is the voltage steadily above 7.0 volts with all the modules disconnected? Yes → Repair the PCI Bus circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the module that when disconnected the short to voltage was eliminated. Perform BODY VERIFICATION TEST - VER 1.	All

*PCI BUS COMMUNICATION FAILURE — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the negative battery cable. Using a ohmmeter, connect one end to the PCI Bus circuit at the DLC, and the other end to ground. While monitoring the ohmmeter, disconnect each module the vehicle is equipped with one at a time. **NOTE: Total bus resistance to ground thru all of the modules is typically between 350 to 1000 ohms. The more modules on the bus, the lower the total bus resistance will be.** Is the resistance below 150.0 ohms with all the modules disconnected? Yes → Repair the PCI Bus circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the module that when disconnected the short to ground was eliminated. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

*HOOD AJAR CIRCUIT OPEN (EXPORT ONLY)

POSSIBLE CAUSES
HOOD AJAR SWITCH GROUND CIRCUIT OPEN
INTERMITTENT CONDITION
HOOD AJAR SWITCH
HOOD AJAR SWITCH SENSE CIRCUIT OPEN
BODY CONTROL MODULE INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	Open the Hood. With the DRBIII® in Inputs/Outputs, read the HOOD AJAR SW state. Does the DRBIII® display CLOSED? Yes → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Look for any chafed, pierced, pinched or partially broken wires. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Disconnect the Hood Ajar switch connector. Using a 12-volt Test Light connected to 12-volts, test the Ground circuit for continuity. Does the light illuminate? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Hood Ajar Switch connector. With the DRBIII® in Inputs/Outputs, read the HOOD AJAR SW state. Connect a jumper wire between Sense circuit and the Ground circuit. Does the DRBIII® display HOOD AJAR SW: CLOSED? Yes → Replace the Hood Ajar Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Disconnect the Body Control Module C3 harness connector. Disconnect the Hood Ajar Switch harness connector. Measure the resistance of the Hood Ajar Switch Sense circuit between the BCM C3 connector and the Hood Ajar Switch connector. Is the resistance below 5.0 ohms? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Hood Ajar Switch Sense circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

*HOOD AJAR CIRCUIT SHORTED TO GROUND (EXPORT ONLY)

POSSIBLE CAUSES
HOOD AJAR SWITCH SHORTED TO GROUND
HOOD AJAR SWITCH SENSE CIRCUIT SHORTED TO GROUND
BODY CONTROL MODULE INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	With the DRBIII® in Inputs/Outputs, read the HOOD AJAR SW state. Disconnect the Hood Ajar Switch harness connector. With the DRBIII® in Inputs/Outputs, read the HOOD AJAR SW state. Does the Switch State change from CLOSED to OPEN? Yes → Replace the Hood Ajar Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Disconnect the Body Control Module C3 harness connector. Disconnect the Hood Ajar Switch harness connector. Using a 12-volt Test Light connected to 12-volts, test the Sense circuit for a short to ground. Does the Test Light illuminate? Yes → Repair the Hood Ajar Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***LEFT FRONT DOOR AJAR SWITCH SENSE CIRCUIT OPEN**

POSSIBLE CAUSES
INTERMITTENT CONDITION
LEFT FRONT DOOR AJAR SWITCH GROUND CIRCUIT OPEN
LEFT FRONT DOOR (LOCK MOTOR) AJAR SWITCH
LEFT FRONT DOOR AJAR SWITCH SENSE CIRCUIT OPEN
BODY CONTROL MODULE INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	Open the driver door. With the DRBIII® in Inputs/Outputs, read the DR DOOR AJAR SW state. Does the DRBIII® display CLOSED? Yes → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Look for any chafed, pierced, pinched or partially broken wires. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Disconnect the Left Front Door (Lock Motor) Ajar Switch harness connector. Using a 12-volt Test Light connected to 12-volts, test the Ground circuit for continuity. Does the light illuminate? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Left Front Door (Lock Motor) Ajar Switch harness connector. With the DRBIII® in Inputs/Outputs, read the DR DOOR AJAR SW state. Connect a jumper wire between Sense circuit and the Ground circuit. Does the DRBIII® display DR DOOR AJAR SW: CLOSED? Yes → Replace the Left Front Door (Lock Motor) Ajar Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Disconnect the Body Control Module C3 harness connector. Disconnect the Left Front Door (Lock Motor) Ajar Switch harness connector. Measure the resistance of the Sense circuit between the BCM C3 connector and the Door Ajar connector. Is the resistance below 5.0 ohms? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Left Front Door Ajar Switch Sense circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***LEFT FRONT DOOR AJAR SWITCH SENSE CIRCUIT SHORTED TO GROUND**

POSSIBLE CAUSES
LEFT FRONT DOOR (LOCK MOTOR) AJAR SWITCH SHORTED TO GROUND
LEFT FRONT DOOR AJAR SWITCH SENSE CIRCUIT SHORTED TO GROUND
BODY CONTROL MODULE INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	With the DRBIII® in Inputs/Outputs, read the DR DOOR AJAR SW state. Disconnect the Left Front Door (Lock Motor) Ajar Switch harness connector. With the DRBIII® in Inputs/Outputs, read the DR DOOR AJAR SW state. Did the Switch State change from CLOSED to OPEN? Yes → Replace the Left Front Door (Lock Motor) Ajar Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Disconnect the Body Control Module C3 harness connector. Disconnect the Left Front Door (Lock Motor) Ajar Switch harness connector. Using a 12-volt Test Light connected to 12-volts, test the Sense circuit for a short to ground. Does the Test Light illuminate? Yes → Repair the Left Front Door Ajar Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***LEFT SLIDING DOOR AJAR SWITCH SENSE CIRCUIT OPEN**

POSSIBLE CAUSES
GROUND CIRCUIT OPEN
LEFT SLIDING DOOR AJAR SWITCH SENSE CIRCUIT OPEN
LEFT SLIDING DOOR AJAR SWITCH SENSE CIRCUIT OPEN
BODY CONTROL MODULE INTERNAL MALFUNCTION
LEFT SLIDING DOOR LOCK MOTOR/AJAR SWITCH (LATCH ASSY).

TEST	ACTION	APPLICABILITY
1	Disconnect the Left Sliding Door harness connector at the bottom of the door. Connect a jumper wire between the Left Sliding Door Ajar Switch Sense circuit and ground. With the DRBIII® in Inputs/Outputs, read the LSLIDE DR AJAR SW state. Did the Switch State change from OPEN to CLOSED? Yes → Go To 2 No → Go To 4	All
2	Reconnect the Left Sliding Door Lock Motor/Ajar Switch connector at the bottom of the door. Remove the door panel from the sliding door. Disconnect the Left Sliding Door Lock Motor/Ajar or Latch Sensing Switch connector at the door mechanism. Connect a jumper wire between the Left Sliding Door Ajar Switch Sense circuit and ground. With the DRBIII® in Inputs/Outputs, read the LSLIDE DR AJAR SW state. Did the Switch State change from OPEN to CLOSED? Yes → Go To 3 No → Repair the Left Sliding Door Lock Motor/Ajar Switch harness for an open between the door mechanism and the intermediate harness connector at the bottom of the door. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Left Sliding Door Lock Motor/Ajar Switch connector at the door mechanism. Connect a jumper wire between the Left Sliding Door Ajar Switch Sense circuit and the Ground circuit. With the DRBIII® in Inputs/Outputs, read the LSLIDE DR AJAR SW state. Did the Switch State change from OPEN to CLOSED? Yes → Replace the Sliding Door Lock Motor/Ajar Switch (or Latch Sensing Switch).. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

*LEFT SLIDING DOOR AJAR SWITCH SENSE CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the Left Sliding Door Lock Motor/Ajar or Latch Sensing Switch harness connector at the bottom of the sliding door. Disconnect the BCM C3 connector. Back probe a jumper wire from the Left Sliding Door Ajar Switch Sense circuit at the BCM to ground. Measure the resistance of the Left Sliding Door Ajar Switch Sense circuit between the BCM C3 connector and the Sliding Door intermediate connector. Is the resistance below 5.0 ohms? No → Repair the Left Sliding Door Ajar Switch Sense circuit for an open between the intermediate connector and the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***LEFT SLIDING DOOR AJAR SWITCH SENSE CIRCUIT SHORTED TO GROUND**

POSSIBLE CAUSES
LEFT SLIDING DOOR LOCK MOTOR/AJAR SWITCH SHORTED TO GROUND
LEFT SLIDING DOOR AJAR SWITCH SENSE CIRCUIT SHORTED TO GROUND
BODY CONTROL MODULE INTERNAL MALFUNCTION
LEFT SLIDING DOOR LOCK MOTOR/AJAR SWITCH (LATCH ASSY).

TEST	ACTION	APPLICABILITY
1	With the DRBIII® in Inputs/Outputs, read the LSLIDE DR AJAR SW state. Disconnect the Left Sliding Door harness connector at the bottom of the door. With the DRBIII® in Inputs/Outputs, read the LSLIDE DR AJAR SW state. Did the Switch State change from CLOSED to OPEN? Yes → Go To 2 No → Go To 3	All
2	Reconnect the Left Sliding Door harness connector at the bottom of the door. Remove the door panel from the sliding door. Disconnect the Left Sliding Door Lock Motor/Ajar or Latch Sensing Switch connector at the door mechanism. With the DRBIII® in Inputs/Outputs, read the LSLIDE DR AJAR SW state. Did the Switch State change from CLOSED to OPEN? Yes → Replace the Sliding Door Lock Motor/Ajar Switch or Latch Assembly. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Left Sliding Door Lock Motor/Ajar Switch harness for a short to ground between the door mechanism and the intermediate harness connector at the bottom of the door. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Body Control Module C3 harness connector. Disconnect the Left Sliding Door harness connector at the bottom of the sliding door. Using a 12-volt Test Light connected to 12-volts, test the Sense circuit for a short to ground. Does the Test Light illuminate? Yes → Repair the Left Sliding Door Ajar Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
*LIFTGATE AJAR CIRCUIT OPEN

POSSIBLE CAUSES
INTERMITTENT CONDITION
LIFTGATE AJAR SWITCH GROUND CIRCUIT OPEN
LIFTGATE AJAR SWITCH (CINCH/RELEASE MOTOR)
LIFTGATE AJAR SWITCH SENSE CIRCUIT OPEN
BODY CONTROL MODULE INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	Open the Liftgate. With the DRBIII® in Inputs/Outputs, read the LIFTGATE AJAR SW state. Does the DRBIII® display CLOSED? Yes → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Look for any chafed, pierced, pinched or partially broken wires. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	**NOTE: If Power Liftgate equipped the ajar switch is in the Liftgate Cinch/ Release Motor.** Disconnect the Liftgate Ajar switch connector. Using a 12-volt Test Light connected to 12-volts, test the Ground circuit for continuity. Does the light illuminate? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Liftgate Ajar Switch connector. With the DRBIII® in Inputs/Outputs, read the LIFTGATE AJAR SW state. Connect a jumper wire between Sense circuit and the Ground circuit. Does the DRBIII® display LIFTGATE AJAR SW: CLOSED? Yes → Replace the Liftgate Ajar Switch or Cinch/Release Motor (Latch). Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Disconnect the Body Control Module C3 harness connector. Disconnect the Liftgate Ajar Switch harness connector. Measure the resistance of the Sense circuit between the BCM C3 connector and the Liftgate Ajar Switch connector.. Is the resistance below 5.0 ohms? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Liftgate Ajar Switch Sense circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***LIFTGATE AJAR CIRCUIT SHORTED TO GROUND**

POSSIBLE CAUSES
LIFTGATE AJAR SWITCH SHORTED TO GROUND
LIFTGATE AJAR SWITCH SENSE CIRCUIT SHORTED TO GROUND
BODY CONTROL MODULE INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	With the DRBIII® in Inputs/Outputs, read the LIFTGATE AJAR SW state. **NOTE: If Power Liftgate equipped the ajar switch is in the Liftgate Cinch/ Release Motor.** Disconnect the Liftgate Ajar Switch harness connector. With the DRBIII® in Inputs/Outputs, read the LIFTGATE AJAR SW state. Does the Switch State change from CLOSED to OPEN? Yes → Replace the Liftgate Ajar Switch or Latch Assembly. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Disconnect the Body Control Module C3 harness connector. Disconnect the Liftgate Ajar Switch harness connector. Using a 12-volt Test Light connected to 12-volts, test the Sense circuit for a short to ground. Does the Test Light illuminate? Yes → Repair the Liftgate Ajar Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***RIGHT FRONT DOOR AJAR SWITCH SENSE CIRCUIT OPEN**

POSSIBLE CAUSES
INTERMITTENT CONDITION
RIGHT FRONT DOOR AJAR SWITCH GROUND CIRCUIT OPEN
RIGHT FRONT DOOR (LOCK MOTOR) AJAR SWITCH
RIGHT FRONT DOOR AJAR SWITCH SENSE CIRCUIT OPEN
BODY CONTROL MODULE INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	Open the passenger door. With the DRBIII® in Inputs/Outputs, read the PASS DOOR AJAR SW state. Does the DRBIII® display CLOSED? Yes → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Look for any chafed, pierced, pinched or partially broken wires. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Disconnect the Right Front Door (Lock Motor) Ajar Switch harness connector. Using a 12-volt Test Light connected to 12-volts, test the Ground circuit for continuity. Does the light illuminate? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Right Front Door (Lock Motor) Ajar Switch harness connector. With the DRBIII® in Inputs/Outputs, read the PASS DOOR AJAR SW state. Connect a jumper wire between Sense circuit and the Ground circuit. Does the DRBIII® display PASS DOOR AJAR SW: CLOSED? Yes → Replace the Right Front Door (Lock Motor) Ajar Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Disconnect the Body Control Module C3 harness connector. Disconnect the Right Front Door (Lock Motor) Ajar Switch harness connector. Measure the resistance of the Sense circuit between the BCM C3 connector and the Door Ajar connector. Is the resistance below 5.0 ohms? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Right Front Door Ajar Switch Sense circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***RIGHT FRONT DOOR AJAR SWITCH SENSE CIRCUIT SHORTED TO GROUND**

POSSIBLE CAUSES
RIGHT FRONT DOOR (LOCK MOTOR) AJAR SWITCH SHORTED TO GROUND
RIGHT FRONT DOOR AJAR SWITCH SENSE CIRCUIT SHORTED TO GROUND
BODY CONTROL MODULE INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	With the DRBIII® in Inputs/Outputs, read the PASS DOOR AJAR SW state. Disconnect the Right Front Door (Lock Motor) Ajar Switch harness connector. With the DRBIII® in Inputs/Outputs, read the PASS DOOR AJAR SW state. Did the Switch State change from CLOSED to OPEN? Yes → Replace the Right Front Door (Lock Motor) Ajar Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Disconnect the Body Control Module C3 harness connector. Disconnect the Right Front Door (Lock Motor) Ajar Switch harness connector. Using a 12-volt Test Light connected to 12-volts, test the Sense circuit for a short to ground. Does the Test Light illuminate? Yes → Repair the Right Front Door Ajar Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***RIGHT SLIDING DOOR AJAR CIRCUIT OPEN**

POSSIBLE CAUSES
GROUND CIRCUIT OPEN
RIGHT SLIDING DOOR AJAR SWITCH SENSE CIRCUIT OPEN
RIGHT SLIDING DOOR AJAR SWITCH SENSE CIRCUIT OPEN
BODY CONTROL MODULE INTERNAL MALFUNCTION
RIGHT SLIDING DOOR LOCK MOTOR/AJAR SWITCH (LATCH ASSY)

TEST	ACTION	APPLICABILITY
1	Disconnect the Right Sliding Door harness connector at the bottom of the door. Connect a jumper wire between the Right Sliding Door Ajar Switch Sense circuit and ground. With the DRBIII® in Inputs/Outputs, read the RSLIDE DR AJAR SW state. Did the Switch State change from OPEN to CLOSED? Yes → Go To 2 No → Go To 4	All
2	Reconnect the Right Sliding Door harness connector at the bottom of the door. Remove the door panel from the sliding door. Disconnect the Right Sliding Door Lock Motor/Ajar Switch (Latch Assy) connector at the door mechanism. Connect a jumper wire between the Right Sliding Door Ajar Switch Sense circuit and ground. With the DRBIII® in Inputs/Outputs, read the RSLIDE DR AJAR SW state. Did the Switch State change from OPEN to CLOSED? Yes → Go To 3 No → Repair the Right Sliding Door Lock Motor/Ajar Switch harness for an open between the door mechanism and the intermediate harness connector at the bottom of the door. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Right Sliding Door Lock Motor/Ajar Switch connector at the door mechanism. Connect a jumper wire between the Right Sliding Door Ajar Switch Sense circuit and the Ground circuit. With the DRBIII® in Inputs/Outputs, read the RSLIDE DR AJAR SW state. Did the Switch State change from OPEN to CLOSED? Yes → Replace the Sliding Door Lock Motor/Ajar Switch or Latch Assembly. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

*RIGHT SLIDING DOOR AJAR CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the Right Sliding Door harness connector at the bottom of the sliding door. Disconnect the BCM C3 connector. Back probe a jumper wire from the Right Sliding Door Ajar Switch Sense circuit at the BCM to ground. Measure the resistance of the Right Sliding Door Ajar Switch Sense circuit between the BCM C3 connector and the Sliding Door harness intermediate connector. Is the resistance below 5.0 ohms? No → Repair the Right Sliding Door Ajar Switch Sense circuit for an open between the intermediate connector and the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***RIGHT SLIDING DOOR AJAR CIRCUIT SHORTED TO GROUND**

POSSIBLE CAUSES
RIGHT SLIDING DOOR LOCK MOTOR/AJAR SWITCH SHORTED TO GROUND
RIGHT SLIDING DOOR AJAR SWITCH SENSE CIRCUIT SHORTED TO GROUND
BODY CONTROL MODULE INTERNAL MALFUNCTION
RIGHT SLIDING DOOR LOCK MOTOR/AJAR SWITCH (LATCH ASSY)

TEST	ACTION	APPLICABILITY
1	With the DRBIII® in Inputs/Outputs, read the RSLIDE DR AJAR SW state. Disconnect the Right Sliding Door harness connector at the bottom of the door. With the DRBIII® in Inputs/Outputs, read the RSLIDE DR AJAR SW state. Did the Switch State change from CLOSED to OPEN? Yes → Go To 2 No → Go To 3	All
2	Reconnect the Right Sliding Door harness connector at the bottom of the door. Remove the door panel from the sliding door. Disconnect the Right Sliding Door Lock Motor/Ajar Switch (Latch Assy) connector at the door mechanism. With the DRBIII® in Inputs/Outputs, read the RSLIDE DR AJAR SW state. Did the Switch State change from CLOSED to OPEN? Yes → Replace the Sliding Door Lock Motor/Ajar Switch or Latch Assembly. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Right Sliding Door Lock Motor/Ajar Switch harness for a short to ground between the door mechanism and the intermediate harness connector at the bottom of the door. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Body Control Module C3 harness connector. Disconnect the Right Sliding Door harness connector at the bottom of the sliding door. Using a 12-volt Test Light connected to 12-volts, test the Sense circuit for a short to ground. Does the Test Light illuminate? Yes → Repair the Right Sliding Door Ajar Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
EBL RUN ONLY RELAY OPEN

When Monitored and Set Condition:

EBL RUN ONLY RELAY OPEN

When Monitored: Continuously with the ignition on.

Set Condition: The FCM has detected an open in the Rear Defogger Relay control circuit.

POSSIBLE CAUSES
OPEN B+ TO RELAY
VERIFY ACTIVE DTC
MISSING RELAY
FRONT CONTROL MODULE
REAR WINDOW DEFOGGER RELAY
INTELLIGENT POWER MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display EBL RUN ONLY RELAY OPEN trouble code? Yes → Go To 2 No → The condition that caused this symptom is currently not present at this time. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Check the IPM to make certain the Rear Window Defogger Relay is present. Is the Rear Window Defogger Relay present? Yes → Go To 3 No → Replace the missing Rear Defogger Relay. Perform BODY VERIFICATION TEST - VER 1.	All
3	Remove the Rear Window Defogger relay from the IPM. Measure the voltage of pin 86 in the Rear Defogger Relay socket. Is the voltage above 10.0 volts? Yes → Go To 4 No → Repair/replace open B+ to relay as necessary. Perform BODY VERIFICATION TEST - VER 1.	All

EBL RUN ONLY RELAY OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Install a known good relay in place of the Rear Window Defogger relay. Turn the ignition on. Attempt to operate the Rear Window Defogger. With the DRBIII®, read the current Front Control Module DTC's. Does the DTC reset? Yes → Go To 5 No → Replace the Rear Defogger Relay. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the Front Control Module from the Fuse and Relay Center. Remove the Rear Window Defogger Relay. Measure the resistance of the Rear Window Defogger Relay Control Circuit in the Fuse and Relay Center. Is the resistance below 5.0 ohms? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Fuse and Relay Center. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
EBL RUN ONLY RELAY SHORTED TO BATTERY

When Monitored and Set Condition:

EBL RUN ONLY RELAY SHORTED TO BATTERY

When Monitored: Continuously with the ignition on.

Set Condition: The FCM has detected a short to battery voltage in the Rear Defogger Relay control circuit.

POSSIBLE CAUSES
VERIFY ACTIVE DTC
FRONT CONTROL MODULE
INTELLIGENT POWER MODULE
REAR WINDOW DEFOGGER RELAY

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display EBL RUN ONLY RELAY SHORTED TO BATTERY trouble code? Yes → Go To 2 No → The condition that caused this symptom is currently not present at this time. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Install a known good relay in place of the Rear Window Defogger relay. Turn the ignition on. Attempt to operate the Rear Window Defogger. With the DRBIII®, read the current Front Control Module DTCs. Did the DTC reset? Yes → Go To 3 No → Replace the Rear Defogger Relay. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Remove the Rear Window Defogger Relay from the IPM. Remove the Front Control Module from the IPM. Measure the voltage of the Rear Window Relay Control circuit. Is the voltage above 1.0 volts? Yes → Replace the Fuse and Relay Center. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
BACKUP LAMP OUTPUT OPEN

When Monitored and Set Condition:

BACKUP LAMP OUTPUT OPEN

When Monitored: Trans in reverse.

Set Condition: Voltage output status is Low.

POSSIBLE CAUSES
INTERMITTENT CONDITION
GROUND CIRCUIT
BACKUP LAMP OPEN
BACKUP LAMP DRIVER CIRCUIT OPEN
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM, IPM DTC's. Actuate the Backup Lamps. With the DRBIII®, read the DTC information. Does the DRBIII® read: Backup Lamp Output Open? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for terminal push out or any chafed, pierced, pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off Disconnect the inoperative rear tail lamp harness connector. Using a 12-volt test light connected to 12-volts, check the ground circuit. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground Circuit. Perform BODY VERIFICATION TEST - VER 1.	All

BACKUP LAMP OUTPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the inoperative rear tail lamp harness connector. Turn the ignition on. Engage the transmission to reverse. Using a 12-volt test light connected to ground, check the Backup Lamps Output circuit. Does the test light illuminate brightly? Yes → Replace the applicable Backup Lamp. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the Body Control Module harness connector. Disconnect the inoperative rear tail lamp harness connector. Measure the resistance of the Backup Lamp Driver Circuit. Is the resistance above 5.0 ohms? Yes → Repair the Backup Lamp Driver Circuit for an open condition. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
BACKUP LAMP OUTPUT SHORT

When Monitored and Set Condition:

BACKUP LAMP OUTPUT SHORT

When Monitored: With the transmission in reverse.

Set Condition: When voltage output status is Low.

POSSIBLE CAUSES
INTERMITTENT CONDITION
BACKUP LAMP
BACKUP LAMP DRIVER CIRCUIT SHORT TO GROUND
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. Place the transmission in reverse. With the DRBIII®, read the DTC information. Does the DRBIII® read: Backup Lamp Output Short? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition on. Place the transmission in reverse. Using a 12-volt test light connected to ground, check the Backup Lamp Output circuit. Does the test light illuminate brightly? Yes → Replace the Backup Lamp. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the Body Control Module harness connector. Disconnect both rear tail lamp harness connector. Measure the resistance of the Backup Lamp Driver circuit and ground. Is the resistance below 5.0 ohms? Yes → Repair the Backup Lamp Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
FRONT FOG LAMP RELAY OPEN

When Monitored and Set Condition:

FRONT FOG LAMP RELAY OPEN

When Monitored: Ignition On.

Set Condition: The IPM detects high current from the fog lamp relay control circuit.

POSSIBLE CAUSES
MISSING RELAY
OPEN FUSE
FOG LAMP RELAY
INTERMITTENT CONDITION
FOG LAMP RELAY CONTROL CIRCUIT OPEN
FRONT CONTROL MODULE
INTELLIGENT POWER MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all IPM DTC's. Turn the Fog Lamps on. With the DRBIII®, read the DTC information. Does the DRBIII® read: Front Fog Lamp Relay Open? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition off. Check the IPM to make certain the Fog Lamp Relay is present. Is the Fog Lamp Relay present? Yes → Go To 3 No → Replace the missing Fog Lamp Relay. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Install a known good relay in place of the fog lamp relay. Turn the Fog Lamps On. Do the Fog Lamps operate normally? Yes → Replace the Fog Lamp Relay. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

FRONT FOG LAMP RELAY OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off Remove the Fog Lamp Relay. Measure the voltage of the Fused B+ circuit of the fog lamp relay. Is the voltage above 10 volts? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Intelligent Power Module. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Check the IPM Fog Lamp fuse #1. Is the fuse open? Yes → Replace the open fuse. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off. Disconnect the Front Control Module from the IPM. Remove the Fog Lamp Relay. Measure the resistance of the Fog Lamp Relay Control Circuit. Is the resistance below 5.0 ohms? Yes → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Fog Lamp Relay Control Circuit. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
FRONT FOG LAMP SHORTED TO BATTERY

When Monitored and Set Condition:

FRONT FOG LAMP SHORTED TO BATTERY

When Monitored: Ignition On.

Set Condition: When a battery fault condition is present.

POSSIBLE CAUSES
INTERMITTENT CONDITION
FOG LAMP RELAY
FRONT CONTROL MODULE
INTELLIGENT POWER MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all IPM DTC's. Turn the Fog Lamps on. With the DRBIII®, read the DTC information. Does the DRBIII® read: Front Fog Lamp Shorted To Battery? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Remove and install a known good relay in place of the Fog Lamp Relay. Do the Fog Lamps operate normally? Yes → Replace the Fog Lamp Relay. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Remove the Fog Lamp Relay from the IPM. Remove the Front Control Module from the IPM. Measure the voltage of the Fog Lamp Relay Control circuit and ground. Is the voltage above 1.0 volts? Yes → Replace the Intelligent Power Module. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
HEADLAMP SWITCH MISMATCH

When Monitored and Set Condition:

HEADLAMP SWITCH MISMATCH

When Monitored: Ignition ON

Set Condition: Headlamp switch is in Auto mode and the vehicle is not EC Mirror equipped.

POSSIBLE CAUSES
VERIFY AUTO HEADLAMP SWITCH
INTERMITTENT WIRING AND CONNECTORS
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, record and erase DTC's. Turn the headlamps to the Auto position. With the DRBIII®, read DTCs. Does the DRBIII® display HEADLAMP SWITCH MISMATCH? Yes → Go To 2 No → Go To 4	All
2	Inspect the vehicles side view mirrors. Is this vehicle equipped with Electro chromatic mirrors? Yes → Go To 3 No → Replace the Auto Headlamp Switch with a non Auto Headlamp Switch. Perform BODY VERIFICATION TEST - VER 1.	All
3	If there are no possible causes remaining, view repair. Repair Replace and program the Body Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
4	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
HEADLAMP SWITCH OPEN

When Monitored and Set Condition:

HEADLAMP SWITCH OPEN

When Monitored: Ignition ON

Set Condition: A Sensor voltage is over 4.8 volts for more than .0625 seconds.

POSSIBLE CAUSES
INTERMITTENT WIRING AND CONNECTORS
HEADLAMP SWITCH MUX CIRCUIT OPEN
HEADLAMP SWITCH MUX RETURN CIRCUIT OPEN
HEADLAMP SWITCH OPEN
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, record and erase DTC's. Turn the headlamps to the ON position. With the DRBIII®, read DTCs. Does the DRBIII® display HEADLAMP SWITCH OPEN? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition off. Disconnect the Headlamp Switch harness connector. Connect a jumper wire between the Headlamp Switch MUX circuit and the Headlamp Switch MUX Return circuit in the Headlamp Switch harness connector. Turn the ignition on. With the DRBIII®, select Body, Body Controller and read the Headlamp Switch volts. Does the DRBIII® Headlamp Switch Sensor voltage read less than 0.5 Volts? Yes → Replace the Headlamp Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

HEADLAMP SWITCH OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Disconnect the Body Control Module C5 harness connector. Disconnect the Headlamp Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Headlamp Switch MUX circuit from the Body Control Module connector to the Headlamp Switch harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Headlamp Switch MUX circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Disconnect the Body Control Module C5 harness connector. Disconnect the Headlamp Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Headlamp Switch MUX Return circuit from the Body Control Module connector to the Headlamp Switch harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Headlamp Switch MUX Return circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
5	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
HEADLAMP SWITCH SHORT TO GROUND

When Monitored and Set Condition:

HEADLAMP SWITCH SHORT TO GROUND

When Monitored: Ignition ON

Set Condition: A Sensor voltage is below 0.488 volts for more than 0.0625 seconds.

POSSIBLE CAUSES
HEADLAMP SWITCH SHORTED
INTERMITTENT WIRING AND CONNECTORS
HEADLAMP SWITCH MUX CIRCUIT SHORT TO GROUND
HEADLAMP SWITCH MUX CIRCUIT SHORT TO MUX RETURN CIRCUIT
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, record and erase DTC's. Turn the headlamps to the ON position. With the DRBIII®, read DTCs. Does the DRBIII® display HEADLAMP SWITCH SHORT TO GROUND? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition off. Disconnect the Headlamp Switch harness connector. Turn the ignition on. With the DRBIII®, select Body, Body Control Module and read the Headlamp Switch Sensor voltage.. Does the DRB display a Headlamp Switch Voltage of more than 4.8 volts? Yes → Replace the Headlamp Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off to the lock position. Disconnect the Body Control Module C5 harness connector. Disconnect the Headlamp Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Headlamp Switch MUX circuit. Is the resistance less than 5.0 ohms? Yes → Repair the Headlamp Switch MUX Circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

HEADLAMP SWITCH SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Headlamp Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between the Headlamp Switch MUX Return circuit and the Headlamp Switch MUX circuit. Is the resistance less than 5.0 ohms? Yes → Repair the Headlamp Switch MUX circuit for a short to the Headlamp Switch MUX Return circuit. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
5	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
HIGH BEAM SWITCH INPUT OPEN

When Monitored and Set Condition:

HIGH BEAM SWITCH INPUT OPEN

When Monitored: Ignition On.

Set Condition: When voltage is above 4.8 volts.

POSSIBLE CAUSES
INTERMITTENT CONDITION
MULTIFUNCTION SWITCH
HIGH BEAM SWITCH MUX CIRCUIT OPEN
MULTIFUNCTION SWITCH MUX RETURN CIRCUIT OPEN
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. Turn the Headlamps On. Actuate the High Beams. With the DRBIII®, read the DTC information. Does the DRBIII® read: High Beam Switch Input Open? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off Disconnect the Multifunction Switch harness connector. Connect a jumper wire between the High Beam Switch MUX circuit and the Multifunction Switch MUX Return circuit in the Multifunction Switch connector. Turn the ignition on. With the DRBIII®, read the Multifunction Switch voltage. Is the display voltage below 0.5 volts? Yes → Replace the Multifunction Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

HIGH BEAM SWITCH INPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Body Control Module C5 harness connector. Disconnect the Multifunction Switch harness connector. Measure the resistance of the High Beam Switch MUX circuit from the Body Control Module connector to the Multifunction Switch harness connector. Is the resistance above 5.0 ohms? Yes → Repair the High Beam Switch MUX circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the Body Control Module C5 harness connector. Disconnect the Multifunction Switch harness connector. Measure the resistance of the Multifunction Switch MUX Return circuit from the Body Control Module connector to the Multifunction Switch harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Multifunction Switch MUX Return circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
HIGH BEAM SWITCH INPUT SHORT

When Monitored and Set Condition:

HIGH BEAM SWITCH INPUT SHORT

When Monitored: Ignition On.

Set Condition: When voltage is below 0.488 volts.

POSSIBLE CAUSES
INTERMITTENT CONDITION
MULTIFUNCTION SWITCH
HIGH BEAM SWITCH MUX CIRCUIT SHORT TO GROUND
HIGH BEAM SWITCH MUX SHORT TO MUX RETURN CIRCUIT
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. Actuate the High Beams. With the DRBIII®, read the DTC information. Does the DRBIII® read: High Beam Switch Input Short? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Multifunction Switch harness connector. Turn the ignition on. With the DRBIII®, read the Multifunction Switch voltage. Is the voltage above 4.8 volts? Yes → Replace the Multifunction Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the Body Control Module C5 harness connector. Disconnect the Multifunction Switch Harness connector. Measure the resistance between the High Beam Switch MUX circuit and ground. Is the resistance below 5.0 ohms? Yes → Repair the High Beam Switch MUX circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

HIGH BEAM SWITCH INPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Body Control Module C4 harness connector. Disconnect the Multifunction Switch harness connector. Measure the resistance between the Multifunction Switch MUX Return circuit and the High Beam Switch MUX circuit. Is the resistance below 5.0 ohms? Yes → Repair the High Beam Switch MUX circuit for a short to the Multifunction Switch MUX Return circuit. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
LEFT FRONT TURN SIGNAL OUTPUT OPEN

When Monitored and Set Condition:

LEFT FRONT TURN SIGNAL OUTPUT OPEN

When Monitored: Ignition On and left turn signal On.

Set Condition: When output voltage status is LOW.

POSSIBLE CAUSES
INTERMITTENT CONDITION
GROUND CIRCUIT OPEN
TURN SIGNAL LAMP OPEN
LEFT TURN SIGNAL OUTPUT CIRCUIT OPEN
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. Actuate the Turn Signals. With the DRBIII®, read the DTC information. Does the DRBIII® read: Left Front Turn Signal Output Open? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off Disconnect the Left Front Turn Signal harness connector. Using a 12-volt test light connected to 12-volts, check the ground circuit. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground Circuit. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Left Front Turn Signal Lamp connector. Turn the ignition on. Turn the Left Turn Signal on. Using a 12-volt test light connected to ground, check the Left Front Turn Signal Output circuit. Does the test light illuminate brightly? Yes → Replace the Turn Signal Lamp. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

LEFT FRONT TURN SIGNAL OUTPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the BCM C2 harness connector. Disconnect the left front turn signal lamp harness connector. Measure the resistance of the Left Front Turn Signal Output Circuit and ground. Is the resistance above 5.0 ohms? Yes → Repair the Left Front Turn Signal Output Circuit for an open condition. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
LEFT FRONT TURN SIGNAL OUTPUT SHORT

When Monitored and Set Condition:

LEFT FRONT TURN SIGNAL OUTPUT SHORT

When Monitored: Ignition and left turn signal On.

Set Condition: When output voltage status is Low.

POSSIBLE CAUSES
INTERMITTENT CONDITION
LEFT FRONT TURN SIGNAL OUTPUT SHORT TO GROUND
TURN SIGNAL LAMP
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. Actuate the Turn Signals. With the DRBIII®, read the DTC information. Does the DRBIII® read: Left Front Turn Signal Output Short? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Left Front Turn Signal Lamp connector. Disconnect the BCM C2 harness connector. Measure the resistance between the Left Front Turn Signal Output circuit and ground. Is the resistance below 100.0 ohms? Yes → Repair the Left Front Turn Signal Output circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

LEFT FRONT TURN SIGNAL OUTPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Left Front Turn Signal Lamp connector. Turn the ignition on. Turn the Left Turn Signal on. Using a 12-volt test light connected to ground, check the Left Front Turn Signal Output circuit. Does the test light illuminate brightly? Yes → Replace the Turn Signal Lamp. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
LEFT HIGH BEAM HEADLAMP CIRCUIT OPEN

POSSIBLE CAUSES
FRONT CONTROL MODULE
GROUND CIRCUIT OPEN
LEFT HEADLAMP
LEFT HIGH BEAM DRIVER CIRCUIT OPEN
WIRING HARNESS INSPECTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Is this DTC present? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition off. Disconnect the Left Headlamp harness connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Left Headlamp. Disconnect the Front Control Module from the Intelligent Power Module. Measure the resistance of the Left High Beam Driver circuit. Is the resistance below 10.0 ohms? Yes → Go To 4 No → Repair the Left High Beam Driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

LEFT HIGH BEAM HEADLAMP CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Left Headlamp harness connector. Using a 12-volt test light connected to ground, check the Left High Beam Driver circuit in the Left Headlamp harness connector. Turn the high beam headlamps on. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Replace the Left Headlamp Bulb. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
LEFT HIGH BEAM HEADLAMP CIRCUIT SHORTED TO GROUND

POSSIBLE CAUSES
FRONT CONTROL MODULE
LEFT HEADLAMP
LEFT HIGH BEAM DRIVER CIRCUIT SHORTED TO GROUND
WIRING PROBLEM
WIRING HARNESS INSPECTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Is this DTC present? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition off. Disconnect the Left Headlamp. Disconnect the Front Control Module from the Intelligent Power Module. Measure the resistance between Ground and the Left High Beam Driver circuit. Is the resistance below 100.0 ohms? Yes → Repair the Left High Beam Driver circuit for a short to ground Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Turn the Headlamps off. Install a substitute Headlamp Bulb in place of the Left Headlamp Bulb. Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Does the DRB display this DTC? Yes → Go To 4 No → Replace the original Left Headlamp Bulb. Perform BODY VERIFICATION TEST - VER 1.	All

LEFT HIGH BEAM HEADLAMP CIRCUIT SHORTED TO GROUND — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Inspect the wiring and connectors associated with the Left High Beam Driver circuit. Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
LEFT HIGH BEAM HEADLAMP CIRCUIT SHORTED TO VOLTAGE

POSSIBLE CAUSES
FRONT CONTROL MODULE
GROUND CIRCUIT OPEN
HIGH BEAM AND LOW BEAM DRIVERS CIRCUITS SHORTED TOGETHER
LEFT HEADLAMP
LEFT HIGH BEAM DRIVER CIRCUIT SHORTED TO VOLTAGE
WIRING PROBLEM
WIRING HARNESS INSPECTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Is this DTC present? Yes → Go To 2 No → Go To 7	All
2	Turn the ignition off. Disconnect the Left Headlamp harness connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Left Headlamp harness connector. Disconnect the Front Control Module. Measure the resistance between the Left High Beam Driver circuit and the Left Low Beam Driver circuit at the Left Headlamp harness connector. Is the resistance below 100.0 ohms? Yes → Repair the Left High Beam Driver circuit for a short to the Left Low Beam Driver circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

LEFT HIGH BEAM HEADLAMP CIRCUIT SHORTED TO VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Left Headlamp harness connector. Disconnect the Front Control Module. Turn the ignition on. Measure the voltage of the Left High Beam Driver circuit. Is the voltage below 1.0 volt? Yes → Go To 5 No → Repair the Left High Beam Driver circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Turn the Headlamps off. Install a substitute Headlamp Bulb in place of the Left Headlamp Bulb. Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Does the DRB display this DTC? Yes → Go To 6 No → Replace the original Left Headlamp Bulb. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Inspect the wiring and connectors associated with the Left High Beam Driver circuit. Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
7	Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
LEFT LOW BEAM HEADLAMP CIRCUIT OPEN

POSSIBLE CAUSES
FRONT CONTROL MODULE
GROUND CIRCUIT OPEN
LEFT HEADLAMP
LEFT LOW BEAM DRIVER CIRCUIT OPEN
WIRING HARNESS INSPECTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Is this DTC present? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition off. Disconnect the Left Headlamp harness connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Left Headlamp. Disconnect the Front Control Module from the Intelligent Power Module. Measure the resistance of the Left Low Beam Driver circuit. Is the resistance below 10.0 ohms? Yes → Go To 4 No → Repair the Left Low Beam Driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

LEFT LOW BEAM HEADLAMP CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Left Headlamp harness connector. Using a 12-volt test light connected to ground, check the Left Low Beam Driver circuit in the Left Headlamp harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Turn the low beam headlamps on. Does the test light illuminate brightly? Yes → Replace the Left Headlamp Bulb. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
LEFT LOW BEAM HEADLAMP CIRCUIT SHORTED TO GROUND

POSSIBLE CAUSES
FRONT CONTROL MODULE
LEFT HEADLAMP
LEFT LOW BEAM DRIVER CIRCUIT SHORTED TO GROUND
WIRING PROBLEM
WIRING HARNESS INSPECTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Is this DTC present? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition off. Disconnect the Left Headlamp. Disconnect the Front Control Module from the Intelligent Power Module. Measure the resistance between Ground and the Left Low Beam Driver circuit. Is the resistance below 100.0 ohms? Yes → Repair the Left Low Beam Driver circuit for a short to ground Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Turn the Headlamps off. Install a substitute Headlamp Bulb in place of the Left Headlamp Bulb. Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Does the DRB display this DTC? Yes → Go To 4 No → Replace the original Left Headlamp Bulb. Perform BODY VERIFICATION TEST - VER 1.	All

LEFT LOW BEAM HEADLAMP CIRCUIT SHORTED TO GROUND — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Inspect the wiring and connectors associated with the Left Low Beam Driver circuit. Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All
5	Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

LEFT LOW BEAM HEADLAMP CIRCUIT SHORTED TO VOLTAGE

POSSIBLE CAUSES
FRONT CONTROL MODULE
GROUND CIRCUIT OPEN
HIGH BEAM AND LOW BEAM DRIVERS CIRCUITS SHORTED TOGETHER
LEFT HEADLAMP
LEFT LOW BEAM DRIVER CIRCUIT SHORTED TO VOLTAGE
WIRING PROBLEM
WIRING HARNESS INSPECTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Is this DTC present? Yes → Go To 2 No → Go To 7	All
2	Turn the ignition off. Disconnect the Left Headlamp harness connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Left Headlamp harness connector. Disconnect the Front Control Module. Measure the resistance between the Left High Beam Driver circuit and the Left Low Beam Driver circuit at the Left Headlamp harness connector. Is the resistance below 100.0 ohms? Yes → Repair the Left High Beam Driver circuit for a short to the Left Low Beam Driver circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

LEFT LOW BEAM HEADLAMP CIRCUIT SHORTED TO VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Left Headlamp harness connector. Disconnect the Front Control Module. Turn the ignition on. Measure the voltage of the Left Low Beam Driver circuit. Is the voltage below 1.0 volt? Yes → Go To 5 No → Repair the Left Low Beam Driver circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Turn the Headlamps off. Install a substitute Headlamp in place of the Left Headlamp. Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Does the DRB display this DTC? Yes → Go To 6 No → Replace the original Left Headlamp Bulb. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Inspect the wiring and connectors associated with the Left Low Beam Driver circuit. Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
7	Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
LEFT REAR TURN SIGNAL OUTPUT OPEN

When Monitored and Set Condition:

LEFT REAR TURN SIGNAL OUTPUT OPEN

When Monitored: Ignition and left turn signal On.

Set Condition: When Output voltage status is LOW.

POSSIBLE CAUSES
INTERMITTENT CONDITION
GROUND CIRCUIT OPEN
TURN SIGNAL LAMP OPEN
LEFT REAR TURN SIGNAL OUTPUT CIRCUIT OPEN
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. Actuate the Turn Signals. With the DRBIII®, read the DTC information. Does the DRBIII® read: Left Rear Turn Signal Output Open? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Left Rear Turn Signal harness connector. Using a 12-volt test light connected to 12-volts, check the ground circuit. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground Circuit. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Left Rear Turn Signal Lamp connector. Turn the ignition on. Turn the Left Turn Signal on. Using a 12-volt test light connected to ground, check the Left Rear Turn Signal Output circuit. Does the test light illuminate brightly? Yes → Replace the Turn Signal Lamp. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

LEFT REAR TURN SIGNAL OUTPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Body Control Module C2 connector. Disconnect the left rear tail lamp connector. Measure the resistance of the Left Rear Turn Signal Driver Circuit to ground. Is the resistance above 5.0 ohms? Yes → Repair the Left Rear Turn Signal Driver Circuit for an open condition. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
LEFT REAR TURN SIGNAL OUTPUT SHORT

When Monitored and Set Condition:

LEFT REAR TURN SIGNAL OUTPUT SHORT

When Monitored: Ignition and left turn signal On.

Set Condition: When output voltage status is Low.

POSSIBLE CAUSES
INTERMITTENT CONDITION
LEFT REAR TURN SIGNAL DRIVER CIRCUIT SHORT TO GROUND
TURN SIGNAL LAMP
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. Actuate the Turn Signals. With the DRBIII®, read the DTC information. Does the DRBIII® read: Left Rear Turn Signal Output Short? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Left Rear Turn Signal Lamp connector. Disconnect the BCM harness connector. Measure the resistance between the Left Rear Turn Signal Driver circuit and ground. Is the resistance below 100.0 ohms? Yes → Repair the Left Rear Turn Signal Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

LEFT REAR TURN SIGNAL OUTPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Left Rear Turn Signal Lamp connector. Turn the ignition on. Turn the Left Turn Signal on. Using a 12-volt test light connected to ground, check the Left Rear Turn Signal Driver circuit. Does the test light illuminate brightly? Yes → Replace the Turn Signal Lamp. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
LEFT SIDE PARK LAMP OPEN

When Monitored and Set Condition:

LEFT SIDE PARK LAMP OPEN

When Monitored: Anytime the FCM is active.

Set Condition: When B+ voltage is below 10.0 volts.

POSSIBLE CAUSES
INTERMITTENT CONDITION
GROUND CIRCUIT
PARK LAMP
PARK LAMP FUSE #2
PARK LAMP RELAY
PARK LAMP OUTPUT CIRCUIT OPEN
FRONT CONTROL MODULE
INTELLIGENT POWER MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all FCM DTC's. Turn the Park Lamps on. With the DRBIII®, read the DTC information. Does the DRBIII® read: Left Side Park Lamp Fuse Outage? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off Disconnect the left front Park Lamp harness connector. Using a 12-volt test light connected to 12-volts, check the ground circuit. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground Circuit. Perform BODY VERIFICATION TEST - VER 1.	All

LEFT SIDE PARK LAMP OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the left front park lamp connector. Turn the ignition on. Turn the Park Lamps on. Using a 12-volt test light connected to ground, check the Park Lamp Output circuit. Does the test light illuminate brightly? Yes → Replace the Park Lamp. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Check the IPM Park Lamp Fuse #2. Is the Fuse open? Yes → Replace the Park Lamp Fuse #2. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Install a known good relay in place of the Park Lamp Relay. Turn the Park Lamps on. Do the Park Lamps operate normally? Yes → Replace the Park Lamp Relay. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off. Disconnect the IPM harness connector. Measure the resistance of the Park Lamp Output Circuit to ground. Is the resistance below 5.0 ohms? Yes → Repair the Park Lamp Output Circuit for an open condition. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off. Remove the Park Lamp Relay. Measure the voltage of the Fused B+ circuit of the Park Lamp Relay. Is the voltage above 10.0 volts? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Intelligent Power Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

PARK LAMP OUTPUT 1 OPEN

When Monitored and Set Condition:

PARK LAMP OUTPUT 1 OPEN

When Monitored: Ignition on.

Set Condition: The IPM detects high current from the Park Lamp Relay Control circuit.

POSSIBLE CAUSES
MISSING RELAY
OPEN FUSE
PARK LAMP RELAY
INTERMITTENT CONDITION
RIGHT FRONT FUSED PARK LAMP RELAY OUTPUT CIRCUIT OPEN
FRONT CONTROL MODULE
INTELLIGENT POWER MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all IPM DTC's. Turn the Park Lamps on. With the DRBIII®, read the DTC information. Does the DRBIII® read: Park Lamp Output 1 Open? Yes → Go To 2 No → Go To 6	All
2	Turn the ignition off. Check the IPM to make certain the Park Lamp Relay is present. Is the Park Lamp Relay present? Yes → Go To 3 No → Replace the missing Park Lamp Relay. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Check the IPM Park Lamp fuse #3. Is the fuse open? Yes → Replace the open fuse. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

PARK LAMP OUTPUT 1 OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Install a known good relay in place of the park lamp relay. Turn the Park Lamps On. Do the Park Lamps operate normally? Yes → Replace the Park Lamp Relay. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off Remove the Park Lamp Relay. Measure the voltage of the Fused B+ circuit of the park lamp relay. Is the voltage above 10 volts? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Intelligent Power Module. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the Front Control Module from the IPM. Remove the Park Lamp Relay. Measure the resistance of the Park Lamp Relay Control Circuit. Is the resistance below 5.0 ohms? Yes → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Right Front Fused Park Lamp Relay Output circuit for an open condition. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
PARK LAMP OUTPUT 1 SHORT TO BATTERY

When Monitored and Set Condition:

PARK LAMP OUTPUT 1 SHORT TO BATTERY

When Monitored: Ignition on.

Set Condition: When a battery fault condition is present.

POSSIBLE CAUSES
INTERMITTENT CONDITION
PARK LAMP RELAY
FRONT CONTROL MODULE
INTELLIGENT POWER MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all FCM DTC's. Turn the Park Lamps on. With the DRBIII®, read the DTC information. Does the DRBIII® read: Park Lamp Output 1 Short to BATT? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Remove and install a known good relay in place of the Park Lamp Relay. Do the Park Lamps operate normally? Yes → Replace the Park Lamp Relay. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Remove the Park Lamp Relay from the IPM. Remove the Front Control Module from the IPM. Measure the voltage of the Park Lamp Relay Control circuit and ground. Is the voltage above 1.0 volts? Yes → Replace the Intelligent Power Module. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

PARK LAMP OUTPUT 2 OPEN

When Monitored and Set Condition:

PARK LAMP OUTPUT 2 OPEN

When Monitored: Ignition on.

Set Condition: The IPM detects high current from the Park Lamp Relay Control circuit.

POSSIBLE CAUSES
MISSING RELAY
OPEN FUSE
PARK LAMP RELAY
INTERMITTENT CONDITION
LEFT FRONT FUSED PARK LAMP RELAY OUTPUT CIRCUIT OPEN
FRONT CONTROL MODULE
INTELLIGENT POWER MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all IPM DTC's. Turn the Park Lamps on. With the DRBIII®, read the DTC information. Does the DRBIII® read: Park Lamp Output 2 Open Yes → Go To 2 No → Go To 6	All
2	Turn the ignition off. Check the IPM to make certain the Park Lamp Relay is present. Is the Park Lamp Relay present? Yes → Go To 3 No → Replace the missing Park Lamp Relay. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Check the IPM Park Lamp fuse #2. Is the fuse open? Yes → Replace the open fuse. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

PARK LAMP OUTPUT 2 OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Install a known good relay in place of the park lamp relay. Turn the Park Lamps On. Do the Park Lamps operate normally? Yes → Replace the Park Lamp Relay. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off Remove the Park Lamp Relay. Measure the voltage of the Fused B+ circuit of the park lamp relay. Is the voltage above 10 volts? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Intelligent Power Module. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the Front Control Module from the IPM. Remove the Park Lamp Relay. Measure the resistance of the Park Lamp Relay Control Circuit. Is the resistance below 5.0 ohms? Yes → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Left Front Fused Park Lamp Relay Output Circuit for an open condition. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
PARK LAMP OUTPUT 2 SHORT TO BATTERY

When Monitored and Set Condition:

PARK LAMP OUTPUT 2 SHORT TO BATTERY

When Monitored: Ignition on.

Set Condition: When a battery fault condition is present.

POSSIBLE CAUSES
INTERMITTENT CONDITION
PARK LAMP RELAY
FRONT CONTROL MODULE
INTELLIGENT POWER MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all FCM DTC's. Turn the Park Lamps on. With the DRBIII®, read the DTC information. Does the DRBIII® read: Park Lamp Output 2 Short to BATT Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Remove and install a known good relay in place of the Park Lamp Relay. Do the Park Lamps operate normally? Yes → Replace the Park Lamp Relay. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Remove the Park Lamp Relay from the IPM. Remove the Front Control Module from the IPM. Measure the voltage of the Park Lamp Relay Control circuit and ground. Is the voltage above 1.0 volts? Yes → Replace the Intelligent Power Module. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RIGHT FRONT TURN SIGNAL OUTPUT OPEN

When Monitored and Set Condition:

RIGHT FRONT TURN SIGNAL OUTPUT OPEN

When Monitored: Ignition and right turn signal On.

Set Condition: When the output voltage status is LOW.

POSSIBLE CAUSES
INTERMITTENT CONDITION
GROUND CIRCUIT OPEN
TURN SIGNAL LAMP OPEN
RIGHT FRONT TURN SIGNAL DRIVER CIRCUIT OPEN
BODY CONTROL MODULE
INTELLIGENT POWER MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. Actuate the Turn Signals. With the DRBIII®, read the DTC information. Does the DRBIII® read: Right Front Turn Signal Output Open? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Right Front Turn Signal harness connector. Using a 12-volt test light connected to 12-volts, check the ground circuit. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground Circuit. Perform BODY VERIFICATION TEST - VER 1.	All

RIGHT FRONT TURN SIGNAL OUTPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Right Front Turn Signal Lamp connector. Turn the ignition on. Turn the Right Turn Signal on. Using a 12-volt test light connected to ground, check the Right Front Turn Signal Output circuit. Does the test light illuminate brightly? Yes → Replace the Turn Signal Lamp. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the Body Control Module C2 connector. Measure the resistance of the Right Front Turn Signal Driver Circuit to ground. Is the resistance above 5.0 ohms? Yes → Repair the Right Front Turn Signal Driver Circuit for an open condition. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Body Control Module C2 harness connector. Disconnect the IPM C8 harness connector. Measure the resistance of the Right Front Turn Signal Driver Circuit and ground. Is the resistance below 5.0 ohms? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Intelligent Power Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RIGHT FRONT TURN SIGNAL OUTPUT SHORT

When Monitored and Set Condition:

RIGHT FRONT TURN SIGNAL OUTPUT SHORT

When Monitored: Anytime the IPM is active.

Set Condition: When output voltage status is Low.

POSSIBLE CAUSES
INTERMITTENT CONDITION
RIGHT FRONT TURN SIGNAL OUTPUT SHORT TO GROUND
TURN SIGNAL LAMP
INTELLIGENT POWER MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all IPM DTC's. Actuate the Turn Signals. With the DRBIII®, read the DTC information. Does the DRBIII® read: Right Front Turn Signal Output Short? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Right Front Turn Signal Lamp connector. Disconnect the IPM harness connector. Measure the resistance between the Right Front Turn Signal Output circuit and ground. Is the resistance below 100.0 ohms? Yes → Repair the Right Front Turn Signal Output circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

RIGHT FRONT TURN SIGNAL OUTPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Right Front Turn Signal Lamp connector. Turn the ignition on. Turn the Right Turn Signal on. Using a 12-volt test light connected to ground, check the Right Front Turn Signal Output circuit. Does the test light illuminate brightly? Yes → Replace the Turn Signal Lamp. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Intelligent Power Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RIGHT HIGH BEAM HEADLAMP CIRCUIT OPEN

POSSIBLE CAUSES
FRONT CONTROL MODULE
GROUND CIRCUIT OPEN
RIGHT HEADLAMP
RIGHT HIGH BEAM DRIVER CIRCUIT OPEN
WIRING HARNESS INSPECTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Is this DTC present? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition off. Disconnect the Right Headlamp harness connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Right Headlamp. Disconnect the Front Control Module from the Intelligent Power Module. Measure the resistance of the Right High Beam Driver circuit. Is the resistance below 10.0 ohms? Yes → Go To 4 No → Repair the Right High Beam Driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

RIGHT HIGH BEAM HEADLAMP CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Right Headlamp harness connector. Using a 12-volt test light connected to ground, check the Right High Beam Driver circuit in the Right Headlamp harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Turn the high beam headlamps on. Does the test light illuminate brightly? Yes → Replace the Right Headlamp Bulb. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
RIGHT HIGH BEAM HEADLAMP CIRCUIT SHORTED TO GROUND

POSSIBLE CAUSES
FRONT CONTROL MODULE
RIGHT HEADLAMP
RIGHT HIGH BEAM DRIVER CIRCUIT SHORTED TO GROUND
WIRING PROBLEM
WIRING HARNESS INSPECTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Is this DTC present? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition off. Disconnect the Right Headlamp. Disconnect the Front Control Module from the Intelligent Power Module. Measure the resistance between Ground and the Right High Beam Driver circuit. Is the resistance below 100.0 ohms? Yes → Repair the Right High Beam Driver circuit for a short to ground Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Turn the Headlamps off. Install a substitute Headlamp Bulb in place of the Right Headlamp Bulb. Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Does the DRB display this DTC? Yes → Go To 4 No → Replace the original Right Headlamp Bulb. Perform BODY VERIFICATION TEST - VER 1.	All

RIGHT HIGH BEAM HEADLAMP CIRCUIT SHORTED TO GROUND — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Inspect the wiring and connectors associated with the Right High Beam Driver circuit. Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

RIGHT HIGH BEAM HEADLAMP CIRCUIT SHORTED TO VOLTAGE

POSSIBLE CAUSES
FRONT CONTROL MODULE
GROUND CIRCUIT OPEN
HIGH BEAM AND LOW BEAM DRIVERS CIRCUITS SHORTED TOGETHER
RIGHT HEADLAMP
RIGHT HIGH BEAM DRIVER CIRCUIT SHORTED TO VOLTAGE
WIRING PROBLEM
WIRING HARNESS INSPECTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Is this DTC present? Yes → Go To 2 No → Go To 7	All
2	Turn the ignition off. Disconnect the Right Headlamp harness connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Right Headlamp harness connector. Disconnect the Front Control Module. Measure the resistance between the Right High Beam Driver circuit and the Right Low Beam Driver circuit at the Right Headlamp harness connector. Is the resistance below 100.0 ohms? Yes → Repair the Right High Beam Driver circuit for a short to the Right Low Beam Driver circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

RIGHT HIGH BEAM HEADLAMP CIRCUIT SHORTED TO VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Right Headlamp harness connector. Disconnect the Front Control Module. Turn the ignition on. Measure the voltage of the Right High Beam Driver circuit. Is the voltage below 1.0 volt? Yes → Go To 5 No → Repair the Right High Beam Driver circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Turn the Headlamps off. Install a substitute Headlamp Bulb in place of the Right Headlamp Bulb. Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Does the DRB display this DTC? Yes → Go To 6 No → Replace the original Right Headlamp Bulb. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Inspect the wiring and connectors associated with the Right High Beam Driver circuit. Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
7	Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
RIGHT LOW BEAM HEADLAMP CIRCUIT OPEN

POSSIBLE CAUSES
FRONT CONTROL MODULE
GROUND CIRCUIT OPEN
RIGHT HEADLAMP
RIGHT LOW BEAM DRIVER CIRCUIT OPEN
WIRING HARNESS INSPECTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Is this DTC present? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition off. Disconnect the Right Headlamp harness connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Right Headlamp. Disconnect the Front Control Module from the Intelligent Power Module. Measure the resistance of the Right Low Beam Driver circuit. Is the resistance below 10.0 ohms? Yes → Go To 4 No → Repair the Right Low Beam Driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

RIGHT LOW BEAM HEADLAMP CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Right Headlamp harness connector. Using a 12-volt test light connected to ground, check the Right Low Beam Driver circuit in the Right Headlamp harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Turn the low beam headlamps on. Does the test light illuminate brightly? Yes → Replace the Right Headlamp Bulb. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
RIGHT LOW BEAM HEADLAMP CIRCUIT SHORTED TO GROUND

POSSIBLE CAUSES
FRONT CONTROL MODULE
RIGHT HEADLAMP
RIGHT LOW BEAM DRIVER CIRCUIT SHORTED TO GROUND
WIRING PROBLEM
WIRING HARNESS INSPECTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Is this DTC present? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition off. Disconnect the Right Headlamp. Disconnect the Front Control Module from the Intelligent Power Module. Measure the resistance between Ground and the Right Low Beam Driver circuit. Is the resistance below 100.0 ohms? Yes → Repair the Right Low Beam Driver circuit for a short to ground Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Turn the Headlamps off. Install a substitute Headlamp Bulb in place of the Right Headlamp Bulb. Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Does the DRB display this DTC? Yes → Go To 4 No → Replace the original Right Headlamp Bulb. Perform BODY VERIFICATION TEST - VER 1.	All

RIGHT LOW BEAM HEADLAMP CIRCUIT SHORTED TO GROUND — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Inspect the wiring and connectors associated with the Right Low Beam Driver circuit. Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
RIGHT LOW BEAM HEADLAMP CIRCUIT SHORTED TO VOLTAGE

POSSIBLE CAUSES
FRONT CONTROL MODULE
GROUND CIRCUIT OPEN
HIGH BEAM AND LOW BEAM DRIVERS CIRCUITS SHORTED TOGETHER
RIGHT HEADLAMP
RIGHT LOW BEAM DRIVER CIRCUIT SHORTED TO VOLTAGE
WIRING PROBLEM
WIRING HARNESS INSPECTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Is this DTC present? Yes → Go To 2 No → Go To 7	All
2	Turn the ignition off. Disconnect the Right Headlamp harness connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Right Headlamp harness connector. Disconnect the Front Control Module. Measure the resistance between the Right High Beam Driver circuit and the Right Low Beam Driver circuit at the Right Headlamp harness connector. Is the resistance below 100.0 ohms? Yes → Repair the Right High Beam Driver circuit for a short to the Right Low Beam Driver circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

RIGHT LOW BEAM HEADLAMP CIRCUIT SHORTED TO VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Right Headlamp harness connector. Disconnect the Front Control Module. Turn the ignition on. Measure the voltage of the Right Low Beam Driver circuit. Is the voltage below 1.0 volt? Yes → Go To 5 No → Repair the Right Low Beam Driver circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Turn the Headlamps off. Install a substitute Headlamp Bulb in place of the Right Headlamp Bulb. Turn the ignition on. With the DRB, erase the Front Control Module DTC's. Turn the headlamps on. Switch the headlamps between high beam and low beam several times, pausing for 5 seconds in each position. With the DRB, read Front Control Module DTC's. Does the DRB display this DTC? Yes → Go To 6 No → Replace the original Right Headlamp Bulb. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Inspect the wiring and connectors associated with the Right Low Beam Driver circuit. Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
7	Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
RIGHT REAR TURN SIGNAL OUTPUT OPEN

When Monitored and Set Condition:

RIGHT REAR TURN SIGNAL OUTPUT OPEN

When Monitored: Ignition On.

Set Condition: When output voltage status is LOW.

POSSIBLE CAUSES
INTERMITTENT CONDITION
GROUND CIRCUIT
TURN SIGNAL LAMP
RIGHT REAR TURN SIGNAL DRIVER CIRCUIT OPEN
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. Actuate the Turn Signals. With the DRBIII®, read the DTC information. Does the DRBIII® read: Right Rear Turn Signal Output Open? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Right Rear Turn Signal harness connector. Using a 12-volt test light connected to 12-volts, check the ground circuit. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground Circuit. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Right Rear Turn Signal Lamp connector. Turn the ignition on. Turn the Right Turn Signal on. Using a 12-volt test light connected to ground, check the Right Rear Turn Signal Output circuit. Does the test light illuminate brightly? Yes → Replace the Turn Signal Lamp. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

RIGHT REAR TURN SIGNAL OUTPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Body Control Module C2 connector. Measure the resistance of the Right Rear Turn Signal Driver Circuit to ground. Is the resistance above 5.0 ohms? Yes → Repair the Right Rear Turn Signal Driver Circuit for an open condition. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RIGHT REAR TURN SIGNAL OUTPUT SHORT

When Monitored and Set Condition:

RIGHT REAR TURN SIGNAL OUTPUT SHORT

When Monitored: Anytime the BCM is active.

Set Condition: When output voltage status is Low.

POSSIBLE CAUSES
INTERMITTENT CONDITION
RIGHT REAR TURN SIGNAL DRIVER CIRCUIT SHORT TO GROUND
TURN SIGNAL LAMP
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. Actuate the Turn Signals. With the DRBIII®, read the DTC information. Does the DRBIII® read: Right Rear Turn Signal Output Short? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Right Rear Turn Signal Lamp connector. Disconnect the BCM harness connector. Measure the resistance between the Right Rear Turn Signal Driver circuit and ground. Is the resistance below 100.0 ohms? Yes → Repair the Right Rear Turn Signal Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

RIGHT REAR TURN SIGNAL OUTPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Right Rear Turn Signal Lamp connector. Turn the ignition on. Turn the Right Turn Signal on. Using a 12-volt test light connected to ground, check the Right Rear Turn Signal Driver circuit. Does the test light illuminate brightly? Yes → Replace the Turn Signal Lamp. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RIGHT SIDE PARK LAMP OPEN

When Monitored and Set Condition:

RIGHT SIDE PARK LAMP OPEN

When Monitored: Anytime the FCM is active.

Set Condition: When B+ voltage is below 10.0 volts.

POSSIBLE CAUSES
INTERMITTENT CONDITION
GROUND CIRCUIT
PARK LAMP
PARK LAMP FUSE #3
PARK LAMP OUTPUT CIRCUIT OPEN
PARK LAMP RELAY
FRONT CONTROL MODULE
INTELLIGENT POWER MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all IPM DTC's. Turn the Park Lamps on. With the DRBIII®, read the DTC information. Does the DRBIII® read: Right Side Park Lamp Fuse Outage? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off Disconnect the right front Park Lamp harness connector. Using a 12-volt test light connected to 12-volts, check the ground circuit. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Ground Circuit. Perform BODY VERIFICATION TEST - VER 1.	All

RIGHT SIDE PARK LAMP OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the right front park lamp connector. Turn the ignition on. Turn the Park Lamps on. Using a 12-volt test light connected to ground, check the Park Lamp Output circuit. Does the test light illuminate brightly? Yes → Replace the Park Lamp. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Check the IPM Park Lamp Fuse #3. Is the Fuse open? Yes → Replace the Park Lamp Fuse #3. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Install a known good relay in place of the Park Lamp Relay. Turn the Park Lamps on. Do the Park Lamps operate normally? Yes → Replace the Park Lamp Relay. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off. Disconnect the IPM harness connector. Measure the resistance of the Park Lamp Output circuit to ground. Is the resistance above 5.0 ohms? Yes → Repair the Park Lamp Output circuit for an open condition. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off. Remove the Park Lamp Relay. Measure the voltage of the Fused B+ circuit of the Park Lamp Relay. Is the voltage above 10.0 volts? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Intelligent Power Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
TURN SIGNAL SWITCH INPUT OPEN

When Monitored and Set Condition:

TURN SIGNAL SWITCH INPUT OPEN

When Monitored: Ignition on.

Set Condition: When voltage is below 4.8 volts.

POSSIBLE CAUSES
INTERMITTENT CONDITION
MULTIFUNCTION SWITCH
TURN SIGNAL SWITCH MUX CIRCUIT OPEN
MULTIFUNCTION SWITCH MUX RETURN CIRCUIT OPEN
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. Actuate the turn signals. With the DRBIII®, read the DTC information. Does the DRBIII® read: Turn Signal Switch Input Open? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Multifunction Switch harness connector. Connect a jumper wire between the Turn Signal Switch MUX circuit and the Multifunction Switch MUX Return circuit in the Multifunction Switch connector. Turn the ignition on. With the DRBIII®, read the Multifunction Switch voltage. Is the display voltage below 0.5 volts? Yes → Replace the Multifunction Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

TURN SIGNAL SWITCH INPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Body Control Module C5 harness connector. Disconnect the Multifunction Switch harness connector. Measure the resistance of the Turn Signal Switch MUX circuit from the Body Control Module connector to the Multifunction Switch harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Turn Signal Switch MUX circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the Body Control Module C4 harness connector. Disconnect the Multifunction Switch harness connector. Measure the resistance of the Multifunction Switch MUX Return circuit from the Body Control Module connector to the Multifunction Switch harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Multifunction Switch MUX Return circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
TURN SIGNAL SWITCH INPUT SHORT

When Monitored and Set Condition:

TURN SIGNAL SWITCH INPUT SHORT

When Monitored: Ignition on.

Set Condition: When Input voltage falls below 0.196 volts for 62.5 msec..

POSSIBLE CAUSES
INTERMITTENT CONDITION
MULTIFUNCTION SWITCH
TURN SIGNAL SWITCH MUX CIRCUIT SHORT TO GROUND
TURN SIGNAL SWITCH MUX SHORT TO MUX RETURN CIRCUIT.
MULTIFUNCTION SWITCH MUX RETURN CIRCUIT SHORT TO GROUND
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. Actuate the Turn Signals on. With the DRBIII®, read the DTC information. Does the DRBIII® read: Turn Signal Switch Input Short? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced,pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Multifunction Switch harness connector. Turn the ignition on. With the DRBIII®, read the Multifunction Switch voltage. Is the voltage above 4.8 volts? Yes → Replace the Multifunction Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the Body Control Module harness connector. Disconnect the Multifunction Switch harness connector. Measure the resistance between the Turn Signal Switch MUX circuit and ground. Is the resistance below 5.0 ohms? Yes → Repair the Turn Signal Switch MUX circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

TURN SIGNAL SWITCH INPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Body Control Module C5 harness connector. Disconnect the Multifunction Switch harness connector. Measure the resistance between the Multifunction Switch MUX Return circuit and the Turn Signal Switch MUX circuit. Is the resistance below 5.0 ohms? Yes → Repair the Turn Signal Switch MUX circuit for a short to the Multifunction Switch MUX Return circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Body Control Module C5 harness connector. Disconnect the Multifunction Switch harness connector. Measure the resistance between the Multifunction Switch MUX Return circuit and ground. Is the resistance below 5.0 ohms? Yes → Repair the Multifunction Switch MUX Return circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

A/C SWITCH FAULT (ACTIVE) - MTC
CHECKSUM FAILURE (ACTIVE) - MTC
DEFOG SWITCH FAULT (ACTIVE) - MTC
POWER SWITCH FAULT (ACTIVE) - MTC
RECIRC SWITCH FAULT (ACTIVE) - MTC

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be A/C SWITCH FAULT (ACTIVE) - MTC.

When Monitored and Set Condition:

A/C SWITCH FAULT (ACTIVE) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the A/C switch stays closed for 10 minutes.

CHECKSUM FAILURE (ACTIVE) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the calculated check sum does not match the stored value.

DEFOG SWITCH FAULT (ACTIVE) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the EBL switch stays closed for 10 minutes.

POWER SWITCH FAULT (ACTIVE) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the Power switch stays closed for 10 minutes.

RECIRC SWITCH FAULT (ACTIVE) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the Recirc switch stays closed for 10 minutes.

POSSIBLE CAUSES
A/C - HEATER CONTROL MODULE

A/C SWITCH FAULT (ACTIVE) - MTC — Continued

TEST	ACTION	APPLICABILITY
1	View repair Repair Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

A/C SWITCH FAULT (STORED) - MTC
BACKLIGHT DIMMING RX FAILURE (STORED) - MTC
BLEND OVERCURRENT (STORED) - MTC
CHECKSUM FAILURE (STORED) - MTC
DEFOG SWITCH FAULT (STORED) - MTC
EVAPORATOR TEMPERATURE SENSOR CIRCUIT OPEN (STORED) - MTC
EVAPORATOR TEMPERATURE SENSOR CIRCUIT SHORT (STORED) - MTC
LOOPBACK TEST FAILURE (STORED) - MTC
MODE OVERCURRENT (STORED) - MTC
NO FUEL LEVEL MESSAGE RECEIVED (STORED) - MTC
PCM COMMUNICATION FAILURE (STORED) - MTC
POWER SWITCH FAULT (STORED) - MTC
REAR BLEND OVERCURRENT (STORED) - MTC
REAR BLEND POT CIRCUIT OPEN (STORED) - MTC
REAR BLEND POT CIRCUIT SHORT (STORED) - MTC
REAR MODE OVERCURRENT (STORED) - MTC
RECIRC OVERCURRENT (STORED) - MTC
RECIRC SWITCH FAULT (STORED) - MTC
TX FAILURE (STORED) - MTC
VEHICLE ODOMETER FAILURE (STORED) - MTC
ZONE OVERCURRENT (STORED) - MTC

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be A/C SWITCH FAULT (STORED) - MTC.

When Monitored and Set Condition:

A/C SWITCH FAULT (STORED) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the A/C switch stays closed for 10 minutes.

BACKLIGHT DIMMING RX FAILURE (STORED) - MTC

When Monitored: With the ignition on.

Set Condition: If the A/C - Heater Control Module does not receive the dimming function message from the BCM for more than 5 seconds, then the A/C - Heater Control Module LEDs will default to full brightness and the DTC will set.

A/C SWITCH FAULT (STORED) - MTC — Continued

BLEND OVERCURRENT (STORED) - MTC

When Monitored: When actuator movement is requested.

Set Condition: This DTC will set if the A/C - Heater Control Module detects an excessive current draw on any of the door driver circuits while attempting to drive the passenger blend door actuator. Only one overcurrent DTC can set per ignition cycle.

CHECKSUM FAILURE (STORED) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the calculated check sum does not match the stored value.

DEFOG SWITCH FAULT (STORED) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the EBL switch stays closed for 10 minutes.

EVAPORATOR TEMPERATURE SENSOR CIRCUIT OPEN (STORED) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the A/C - Heater Control Module sees abnormally high voltage on the Evaporator Temperature Sensor Signal circuit.

EVAPORATOR TEMPERATURE SENSOR CIRCUIT SHORT (STORED) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the A/C - Heater Control Module sees abnormally low voltage on the Evaporator Temperature Sensor Signal circuit.

LOOPBACK TEST FAILURE (STORED) - MTC

When Monitored: When the A/C - Heater Control Module executes an internal loopback test.

Set Condition: If the A/C - Heater Control Module fails to send a message, or none of the expected messages arrive for 5 seconds, an internal loopback test is executed. If the internal loopback test fails, the DTC will set.

MODE OVERCURRENT (STORED) - MTC

When Monitored: When actuator movement is requested.

Set Condition: This DTC will set if the A/C - Heater Control Module detects an excessive current draw on any of the door driver circuits while attempting to drive this actuator. Only one overcurrent DTC can set per ignition cycle.

NO FUEL LEVEL MESSAGE RECEIVED (STORED) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the A/C - Heater Control Module does not receive the Fuel Level message from the PCM for more than 5 seconds.

A/C SWITCH FAULT (STORED) - MTC — Continued

PCM COMMUNICATION FAILURE (STORED) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the A/C - Heater Control Module does not receive the Fuel message from the PCM for more than 5 seconds.

POWER SWITCH FAULT (STORED) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the Power switch stays closed for 10 minutes.

REAR BLEND OVERCURRENT (STORED) - MTC

When Monitored: When actuator movement is requested.

Set Condition: This DTC will set if the A/C - Heater Control Module detects an excessive current draw on any of the door driver circuits while attempting to drive this actuator. Only one overcurrent DTC can set per ignition cycle.

REAR BLEND POT CIRCUIT OPEN (STORED) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the A/C - Heater Control Module sees voltage above 4.88 volts on the Rear Temperature Feedback Signal circuit.

REAR BLEND POT CIRCUIT SHORT (STORED) - MTC

When Monitored: When the ignition is on.

Set Condition: This DTC will set if the A/C - Heater Control Module sees voltage below 0.25 volts on the Rear Temperature Feedback Signal circuit.

REAR MODE OVERCURRENT (STORED) - MTC

When Monitored: When actuator movement is requested.

Set Condition: This DTC will set if the A/C - Heater Control Module detects an excessive current draw on any of the door driver circuits while attempting to drive this actuator. Only one overcurrent DTC can set per ignition cycle.

RECIRC OVERCURRENT (STORED) - MTC

When Monitored: When actuator movement is requested.

Set Condition: This DTC will set if the A/C - Heater Control Module detects an excessive current draw on any of the door driver circuits while attempting to drive this actuator. Only one overcurrent DTC can set per ignition cycle.

RECIRC SWITCH FAULT (STORED) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the Recirc switch stays closed for 10 minutes.

A/C SWITCH FAULT (STORED) - MTC — Continued

TX FAILURE (STORED) - MTC

When Monitored: When the ignition is on.

Set Condition: This DTC will set if the A/C - Heater Control Module is unable to send a message.

VEHICLE ODOMETER FAILURE (STORED) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the A/C - Heater Control Module does not receive the Vehicle Odometer message from the PCM for more than 5 seconds.

ZONE OVERCURRENT (STORED) - MTC

When Monitored: When actuator movement is requested.

Set Condition: This DTC will set if the A/C - Heater Control Module detects an excessive current draw on any of the door driver circuits while attempting to drive the driver (zone) blend door actuator. Only one overcurrent DTC can set per ignition cycle.

POSSIBLE CAUSES
CHECK FOR ACTIVE HVAC DTCS AND SYSTEM TESTS FAULT MESSAGES
STORED CODE(S) TEST COMPLETE

A/C SWITCH FAULT (STORED) - MTC — Continued

TEST	ACTION	APPLICABILITY
1	**CAUTION: The evaporator temperature must be above 12.7°C (55°F) and the work area ambient temperature must be above 21.1°C (70°F) to test the A/C system operation.** **NOTE: Active codes must be resolved before diagnosing stored codes.** **NOTE: Anytime a DTC becomes active, or a Cooldown Test fault message, Actuator Circuit Test fault message, or HVAC Door Recalibration fault message is displayed, proceed to the conclusion question.** **NOTE: If multiple codes appear, diagnose those that relate to a short circuit first.** Start the engine. Press the A/C - Heater Control power switch on. Turn the mode select control to the panel position. Verify that the front blower motor and, if equipped, rear blower motor operates correctly in all speeds from each control. Diagnose and repair all blower related faults before proceeding with this test. Turn the front blower motor control to the high speed position. **NOTE: Before actuating the AC Cooldown Test, verify that the A/C compressor is not running. If the compressor is running, turn the A/C off and allow the evaporator to warm up before proceeding with the test.** With the DRBIII® in HVAC, System Tests, actuate the AC Cooldown Test. Turn the front blower motor control to the low speed position. If equipped, turn the rear blower motor control to the rear position. Set the passenger blend control to the full cold position. If equipped, set the zone/driver blend control to the full cold position. If equipped, on the Rear Blower Rear Control, set the rear blend/mode control to the full cold position. Monitor the DRBIII® for active HVAC DTCs while performing the following test steps. Turn the mode select control to the defrost position, wait 30 seconds, and then turn it back to the panel position. Press the recirculation mode switch on, wait 30 seconds, and then press it off. Press the A/C mode switch on, wait 30 seconds, and then press it off. Press the rear window defogger switch on, wait 30 seconds, and then press it off. Move the passenger blend control from full cold to full hot, wait 30 seconds, and then move it back to full cold. If equipped, move the zone/driver blend control from full cold to full hot, wait 30 seconds, and then move it back to full cold. If equipped, on the Rear Blower Rear Control, move the rear blend/mode control from full cold to full hot, wait 30 seconds, and then move it back to full cold. With the DRBIII® in HVAC, System Tests, actuate the Actuator Circuit Test. With the DRBIII® in HVAC, System Tests, actuate the HVAC Door Recalibration Test. Does the DRBIII® display any active HVAC DTC(s) or System Tests fault message(s)? Yes → Return to the symptom list and choose the symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → No problem found at this time. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

ACT CKT TEST PASSED, OVERCURRENT DTCS ACTIVE - MTC
BLEND CIRCUIT SHORTED TO GROUND - MTC
BLEND CIRCUIT SHORTED TO IGN OR BATT - MTC
COMMON DRIVER SHORTED TO GROUND - MTC
COMMON DRIVER SHORTED TO IGN OR BATT - MTC
MODE CIRCUIT SHORTED TO GROUND - MTC
MODE CIRCUIT SHORTED TO IGN OR BATT - MTC
REAR BLEND CIRCUIT SHORTED TO GROUND - MTC
REAR BLEND CIRCUIT SHORTED TO IGN OR BATT - MTC
REAR MODE CIRCUIT SHORTED TO GROUND - MTC
REAR MODE CIRCUIT SHORTED TO IGN OR BATT - MTC
RECIRC CIRCUIT SHORTED TO GROUND - MTC
RECIRC CIRCUIT SHORTED TO IGN OR BATT - MTC
SHORT TOO COMPLEX - MTC
ZONE CIRCUIT SHORTED TO GROUND - MTC
ZONE CIRCUIT SHORTED TO IGN OR BATT - MTC

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be ACT CKT TEST PASSED, OVERCURRENT DTCS ACTIVE - MTC.

When Monitored and Set Condition:

ACT CKT TEST PASSED, OVERCURRENT DTCS ACTIVE - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: If two or more drivelines shorted together.

BLEND CIRCUIT SHORTED TO GROUND - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects a short low on the Passenger Blend Door Driver circuit.

BLEND CIRCUIT SHORTED TO IGN OR BATT - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects a short high on the Passenger Blend Door Driver circuit.

COMMON DRIVER SHORTED TO GROUND - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects a short low on the Common Door Driver circuit.

ACT CKT TEST PASSED, OVERCURRENT DTCS ACTIVE - MTC — Continued

COMMON DRIVER SHORTED TO IGN OR BATT - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects a short high on the Common Door Driver circuit.

MODE CIRCUIT SHORTED TO GROUND - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects a short low on the Mode Door Driver circuit.

MODE CIRCUIT SHORTED TO IGN OR BATT - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects a short high on the Mode Door Driver circuit.

REAR BLEND CIRCUIT SHORTED TO GROUND - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects a short low on the Rear Blend Door Driver circuit.

REAR BLEND CIRCUIT SHORTED TO IGN OR BATT - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects a short high on the Rear Blend Door Driver circuit.

REAR MODE CIRCUIT SHORTED TO GROUND - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects a short low on the Rear Mode Door Driver circuit.

REAR MODE CIRCUIT SHORTED TO IGN OR BATT - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects a short high on the Rear Mode Door Driver circuit.

RECIRC CIRCUIT SHORTED TO GROUND - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects a short low on the Recirculation Door Driver circuit.

ACT CKT TEST PASSED, OVERCURRENT DTCS ACTIVE - MTC — Continued

RECIRC CIRCUIT SHORTED TO IGN OR BATT - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects a short high on the Recirculation Door Driver circuit.

SHORT TOO COMPLEX - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects more than three drivers being shorted in the same direction (for example, four drivers, all shorted to ground) or if two or more drivers are shorted with at least one driver shorted to ignition/battery and one driver shorted to ground.

ZONE CIRCUIT SHORTED TO GROUND - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects a short low on the Driver (Zone) Blend Door Driver circuit.

ZONE CIRCUIT SHORTED TO IGN OR BATT - MTC

When Monitored: When the Actuator Circuit Test is executed.

Set Condition: This message will set if the A/C - Heater Control detects a short high on the Driver (Zone) Blend Door Driver circuit.

POSSIBLE CAUSES
DOOR DRIVER CIRCUIT SHORTED LOW
DOOR ACTUATOR SHORTED
DOOR DRIVER CIRCUIT SHORTED HIGH
A/C - HEATER CONTROL MODULE
INTERMITTENT WIRING PROBLEM
DOOR DRIVER CIRCUITS SHORTED HIGH
DOOR DRIVER CIRCUITS SHORTED LOW
DOOR DRIVER CIRCUITS SHORTED TOGETHER
DOOR DRIVER CIRCUITS SHORTED TO COMMON DOOR DRIVER CIRCUIT
DOOR ACTUATORS SHORTED
A/C - HEATER CONTROL MODULE
INTERMITTENT WIRING PROBLEM

ACT CKT TEST PASSED, OVERCURRENT DTCS ACTIVE - MTC — Continued

TEST	ACTION	APPLICABILITY
1	**CAUTION: Shorted rear door driver circuits can cause additional Actuator Circuit Test messages to set for circuits where no condition exists to cause a fault.** **CAUTION: To ensure a proper diagnosis, repair all Short Too Complex messages first, all rear door driver ckt related msgs second, all common door driver ckt related msgs third, and all front door driver ckt related msgs last.** **CAUTION: The DRBIII® can display up to three Actuator Circuit Test messages at a time. After repairing each Actuator Circuit Test message, cycle the ignition switch, then rerun the Actuator Circuit Test to ensure no new messages exist.** **CAUTION: If Overcurrent DTCs are active and the DRBIII ® displays Actuator Circuit Test Passed, proceed to Act Ckt Test Pass, Overcurrent DTCs Activ when asked Which Actuator Circuit Test Message Is Present.** Which Actuator Circuit Test message is present? XXX Driver/Ckt Short to Gnd Go To 2 XXX Driver/Ckt Short to Ign or Batt Go To 4 Short Too Complex Go To 6 XXX Drv/Ckt Short to Gnd & to Ign or Bat Go To 8 Act Ckt Test Pass, Overcurrent DTCs Acti Go To 8	All
2	Turn the ignition off. Disconnect the A/C - Heater Control C1 harness connector. Measure the resistance between ground and the applicable door driver circuit. Is the resistance below 10K ohms? Yes → Repair the door driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the A/C - Heater Control C1 harness connector. For a door actuator in the front A/C - heater housing assembly, measure the resistance between the Common Door Driver circuit and the applicable door driver circuit. For a door actuator in the rear A/C - heater housing assembly, measure the resistance between the Rear Common Door Driver circuit and the applicable door driver circuit. Is the resistance below 30.0 ohms? Yes → Replace the door actuator in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All

ACT CKT TEST PASSED, OVERCURRENT DTCS ACTIVE - MTC — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the A/C - Heater Control C1 harness connector. Turn the ignition on. Measure the voltage between the applicable door driver circuit and ground. Is there any voltage present? Yes → Repair the door driver circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Ensure that the A/C - Heater Control C1 harness connector is connected to the A/C - Heater Control Module. Turn the ignition on. With the DRBIII® in HVAC, System Tests, actuate the Actuator Circuit Test. What message does the DRBIII® display? Same msg as from start of test Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. Different msg than from start of test Using the wiring diagram as a guide, inspect the wiring & connectors for conditions causing an intermittent short that set the original test msg. Repair as necessary. If DRB displays a msg for a different door driver ckt, return to Test 1 of this Symptom. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the A/C - Heater Control C1 harness connector. Turn the ignition on. Measure the voltage between each of the door driver circuits and ground. Is there any voltage present on any of the circuits? Yes → Repair all door driver circuits with voltage present for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off. Disconnect the A/C - Heater Control C1 harness connector. Measure the resistance between ground and each of the door driver circuits. Is the resistance below 10K ohms on any of the circuits? Yes → Repair all door driver circuits with a resistance below 10K ohms for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 8	All

ACT CKT TEST PASSED, OVERCURRENT DTCS ACTIVE - MTC — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the A/C - Heater Control C1 harness connector. **NOTE: If the Actuator Circuit Test messages, displayed on the DRBIII®, identified which circuits are shorted together, then only measure the resistance between those circuits. Otherwise, proceed as follows:** Measure the resistance between the Recirculation Door Driver ckt and, if applicable, the Driver Blend Door Driver ckt, Passenger Blend Door Driver ckt, Rear Blend Door Driver ckt, Mode Door Driver ckt, and the Rear Mode Door Driver ckt. Measure the resistance between the Driver Blend Door Driver ckt and, if applicable, the Passenger Blend Door Driver ckt, Rear Blend Door Driver ckt, Mode Door Driver ckt, and the Rear Mode Door Driver ckt. Measure the resistance between the Mode Door Driver ckt and, if applicable, the Passenger Blend Door Driver ckt, Rear Blend Door Driver ckt, and the Rear Mode Door Driver ckt. If applicable, measure the resistance between the Passenger Blend Door Driver ckt and the Rear Blend Door Driver ckt and the Rear Mode Door Driver ckt. If applicable, measure the resistance between the Rear Blend Door Driver circuit and the Rear Mode Door Driver circuit. If applicable, measure the resistance between the Common Door Driver ckt and the Rear Blend Door Driver ckt and the Rear Mode Door Driver ckt. If applicable, measure the resistance between the Rear Common Door Driver ckt and the Recirculation Door Driver ckt, Driver Blend Door Driver ckt, Passenger Blend Door Driver ckt, and the Mode Door Driver ckt. Is the resistance below 10K ohms on any of the circuits? Yes → Repair the door driver circuits with a resistance below 10K ohms for a short together. Perform BODY VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off. Disconnect the A/C - Heater Control C1 harness connector. Measure the resistance between the Common Door Driver ckt and, if applicable, the Recirculation Door Driver ckt, Driver Blend Door Driver ckt, Passenger Blend Door Driver ckt, and the Mode Door Driver ckt. If applicable, measure the resistance between the Rear Common Door Driver ckt and the Rear Mode Door Driver ckt and the Rear Blend Door Driver ckt. Is the resistance below 30.0 ohms on any of the circuits? Yes → Go To 10 No → Go To 11	All

ACT CKT TEST PASSED, OVERCURRENT DTCS ACTIVE - MTC — Continued

TEST	ACTION	APPLICABILITY
10	Turn the ignition off. Disconnect the A/C - Heater Control C1 harness connector. Disconnect all door actuator harness connectors whose circuit resistance was below 30.0 ohms. For a door actuator in the front A/C - heater housing assembly, measure the resistance between the Common Door Driver circuit and each applicable door driver circuit. For a door actuator in the rear A/C - heater housing assembly, measure the resistance between the Rear Common Door Driver circuit and each applicable door driver circuit. Is the resistance below 10K ohms on any of the circuits? Yes → Repair the door driver circuits with a resistance below 10K ohms for a short to the Common Door Driver circuit or Rear Common Door Driver circuit. Perform BODY VERIFICATION TEST - VER 1. No → Replace all door actuators with a resistance below 30.0 ohms in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
11	Turn the ignition off. Ensure that the A/C - Heater Control C1 harness connector is connected to the A/C - Heater Control Module. Turn the ignition on. With the DRBIII® in HVAC, System Tests, actuate the Actuator Circuit Test. What message does the DRBIII® display? Same msg as from start of test Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. Different msg than from start of test Using the wiring diagram as a guide, inspect the wiring & connectors for conditions causing an intermittent short that set the original test msg. Repair as necessary. If DRB displays a msg for a different door driver ckt, return to Test 1 of this Symptom. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
BACKLIGHT DIMMING RX FAILURE (ACTIVE) - MTC

When Monitored and Set Condition:

BACKLIGHT DIMMING RX FAILURE (ACTIVE) - MTC

When Monitored: With the ignition on.

Set Condition: If the A/C - Heater Control Module does not receive the dimming function message from the BCM for more than 5 seconds, then the A/C - Heater Control Module LEDs will default to full brightness and the DTC will set.

POSSIBLE CAUSES
ADDITIONAL CODE(S) PRESENT
A/C - HEATER CONTROL MODULE
BODY CONTROL MODULE - NO DIM MESSAGE TO A/C - HEATER CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read the BCM codes. Does DRBIII® display Headlamp Switch: Mismatch; STG; Open; or Panel Dim Output Short? Yes → Refer to symptoms Headlamp Switch Mismatch, Headlamp Switch Shorted To Ground, and Headlamp Switch Open in the Exterior Lighting category. Refer to symptom Panel Dimming Output Short in the Instrument Cluster category. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition on. With the DRBIII® in Monitor Display, PCI Bus Messages, look for the VF DIM Msg Present. Does the DRB display: VF DIM Msg present: Yes? Yes → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

BLEND CALIBRATION FAULT - MTC
MODE CALIBRATION FAULT - MTC
REAR BLEND CALIBRATION FAULT - MTC
REAR MODE CALIBRATION FAULT - MTC
RECIRCULATION CALIBRATION FAULT - MTC
ZONE CALIBRATION FAULT - MTC

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be BLEND CALIBRATION FAULT - MTC.

When Monitored and Set Condition:

BLEND CALIBRATION FAULT - MTC

When Monitored: When the HVAC Door Recalibration is executed.

Set Condition: If the passenger blend door's span is found outside the tolerance due to: open door actuator electrical circuits; a bad door actuator; broken door linkage; a bound up door; door actuator electrical circuits shorted to voltage; door actuator electrical circuits shorted to ground. A short to voltage or ground on the door actuator electrical circuits will also set door actuator overcurrent faults.

MODE CALIBRATION FAULT - MTC

When Monitored: When the HVAC Door Recalibration is executed.

Set Condition: If the mode door's span is found outside the tolerance due to: open door actuator electrical circuits; a bad door actuator; broken door linkage; a bound up door; door actuator electrical circuits shorted to voltage; door actuator electrical circuits shorted to ground. A short to voltage or ground on the door actuator electrical circuits will also set door actuator overcurrent faults.

REAR BLEND CALIBRATION FAULT - MTC

When Monitored: When the HVAC Door Recalibration is executed.

Set Condition: If the rear blend door's span is found outside the tolerance due to: open door actuator electrical circuits; a bad door actuator; broken door linkage; a bound up door; door actuator electrical circuits shorted to voltage; door actuator electrical circuits shorted to ground. A short to voltage or ground on the door actuator electrical circuits will also set door actuator overcurrent faults.

REAR MODE CALIBRATION FAULT - MTC

When Monitored: When the HVAC Door Recalibration is executed.

Set Condition: If the rear mode door's span is found outside the tolerance due to: open door actuator electrical circuits; a bad door actuator; broken door linkage; a bound up door; door actuator electrical circuits shorted to voltage; door actuator electrical circuits shorted to ground. A short to voltage or ground on the door actuator electrical circuits will also set door actuator overcurrent faults.

BLEND CALIBRATION FAULT - MTC — Continued

RECIRCULATION CALIBRATION FAULT - MTC

When Monitored: When the HVAC Door Recalibration is executed.

Set Condition: If the recirculation door's span is found outside the tolerance due to: open door actuator electrical circuits; a bad door actuator; broken door linkage; a bound up door; door actuator electrical circuits shorted to voltage; door actuator electrical circuits shorted to ground. A short to voltage or ground on the door actuator electrical circuits will also set door actuator overcurrent faults.

ZONE CALIBRATION FAULT - MTC

When Monitored: When the HVAC Door Recalibration is executed.

Set Condition: If the driver (zone) blend door's span is found outside the tolerance due to: open door actuator electrical circuits; a bad door actuator; broken door linkage; a bound up door; door actuator electrical circuits shorted to voltage; door actuator electrical circuits shorted to ground. A short to voltage or ground on the door actuator electrical circuits will also set door actuator overcurrent faults.

POSSIBLE CAUSES
CHECK FOR ACTUATOR CIRCUIT TEST FAULT MESSAGES
CHECK FOR ACTIVE HVAC DTCS
MODE LINKAGE/DOOR BINDING
PASSENGER BLEND LINKAGE/DOOR BINDING
DRIVER BLEND LINKAGE/DOOR BINDING
RECIRCULATION LINKAGE/DOOR BINDING
REAR MODE LINKAGE/DOOR BINDING
REAR BLEND LINKAGE/DOOR BINDING
A/C - HEATER CONTROL MODULE
DOOR ACTUATOR DRIVER CIRCUIT OPEN
COMMON DOOR DRIVER CIRCUIT OPEN
DOOR ACTUATOR
A/C - HEATER CONTROL MODULE
REAR DOOR ACTUATOR DRIVER CIRCUIT OPEN
REAR COMMON DOOR DRIVER CIRCUIT OPEN
DOOR ACTUATOR
BROKEN ACTUATOR/LINKAGE/DOOR

BLEND CALIBRATION FAULT - MTC — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: All Actuator Circuit Test fault messages and Overcurrent DTCs must be repaired before diagnosing Calibration fault messages.** Turn the ignition on. With the DRBIII® in HVAC, System Tests, actuate the Actuator Circuit Test. Does the DRBIII® display any Actuator Circuit Test fault messages? Yes → Return to the symptom list and choose the symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	**NOTE: All Actuator Circuit Test fault messages and Overcurrent DTCs must be repaired before diagnosing Calibration fault messages.** Turn the ignition on. With the DRBIII®, read active HVAC DTCs. Does the DRBIII® display any active HVAC DTCs? Yes → Return to the symptom list and choose the symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Which HVAC Door Recalibration fault message is present? Mode Calibration Fault Go To 4 Blend Calibration Fault Go To 5 Zone Calibration Fault Go To 6 Recirculation Calibration Fault Go To 7 Rear Mode Door Calibration Fault Go To 11 Rear Blend Door Calibration Fault Go To 12	All

BLEND CALIBRATION FAULT - MTC — Continued

TEST	ACTION	APPLICABILITY
4	**NOTE: After completing HVAC Door Recalibration, the DRBIII® will store the total span and the status of each door actuator. Selecting HVAC Door Cal Monitor in System Tests will display this information.** With the DRBIII® in HVAC, select System Tests, and then select HVAC Door Cal Monitor. Which message does the DRBIII® display for Mode Status? No Pulses Go To 8 Too Few Pulses Inspect the A/C - Heater Housing Assembly for a condition causing the mode linkage/door to bind. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. Too Many Pulses Remove door actuator from housing. By hand, attempt to rotate actuator in both directions. Also, inspect for disconnected, missing, or broken door linkage, and a warped or broken door. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. Broken Linkage Remove door actuator from housing. By hand, attempt to rotate actuator in both directions. Also, inspect for disconnected, missing, or broken door linkage, and a warped or broken door. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
5	**NOTE: After completing HVAC Door Recalibration, the DRBIII® will store the total span and the status of each door actuator. Selecting HVAC Door Cal Monitor in System Tests will display this information.** With the DRBIII® in HVAC, select System Tests, and then select HVAC Door Cal Monitor. Which message does the DRBIII® display for Blend Status? No Pulses Go To 8 Too Few Pulses Inspect the A/C - Heater Housing Assembly for a condition causing the passenger blend linkage/door to bind. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. Too Many Pulses Remove door actuator from housing. By hand, attempt to rotate actuator in both directions. Also, inspect for disconnected, missing, or broken door linkage, and a warped or broken door. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. Broken Linkage Remove door actuator from housing. By hand, attempt to rotate actuator in both directions. Also, inspect for disconnected, missing, or broken door linkage, and a warped or broken door. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

BLEND CALIBRATION FAULT - MTC — Continued

TEST	ACTION	APPLICABILITY
6	**NOTE: After completing HVAC Door Recalibration, the DRBIII® will store the total span and the status of each door actuator. Selecting HVAC Door Cal Monitor in System Tests will display this information.** With the DRBIII® in HVAC, select System Tests, and then select HVAC Door Cal Monitor. Which message does the DRBIII® display for Zone Status? No Pulses Go To 8 Too Few Pulses Inspect the A/C - Heater Housing Assembly for a condition causing the driver blend linkage/door to bind. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. Too Many Pulses Remove door actuator from housing. By hand, attempt to rotate actuator in both directions. Also, inspect for disconnected, missing, or broken door linkage, and a warped or broken door. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. Broken Linkage Remove door actuator from housing. By hand, attempt to rotate actuator in both directions. Also, inspect for disconnected, missing, or broken door linkage, and a warped or broken door. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
7	**NOTE: After completing HVAC Door Recalibration, the DRBIII® will store the total span and the status of each door actuator. Selecting HVAC Door Cal Monitor in System Tests will display this information.** With the DRBIII® in HVAC, select System Tests, and then select HVAC Door Cal Monitor. Which message does the DRBIII® display for Recirc Status? No Pulses Go To 8 Too Few Pulses Inspect the A/C - Heater Housing Assembly for a condition causing the recirculation linkage/door to bind. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. Too Many Pulses Remove door actuator from housing. By hand, attempt to rotate actuator in both directions. Also, inspect for disconnected, missing, or broken door linkage, and a warped or broken door. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. Broken Linkage Remove door actuator from housing. By hand, attempt to rotate actuator in both directions. Also, inspect for disconnected, missing, or broken door linkage, and a warped or broken door. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

BLEND CALIBRATION FAULT - MTC — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Measure the resistance between the Common Door Driver circuit and the applicable door driver circuit. Is the resistance above 70.0 ohms? Yes → Go To 9 No → Reconnect C1. Rerun Recalibration. If DRB displays same fault, replace A/C-Htr Cntrl in accord with Service Info. If DRBIII displays a different fault, ck wiring & connectors for cause of intermittent condition. If no prob found, rerun test from Step 1. Perform BODY VERIFICATION TEST - VER 1.	All
9	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Remove the applicable door actuator from the A/C - Heater Housing Assembly. Disconnect the door actuator harness connector. Measure the resistance of the door driver circuit between the A/C - Heater Control Module C1 harness connector and the door actuator harness connector. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the door driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
10	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Remove the applicable door actuator from the A/C - Heater Housing Assembly. Disconnect the door actuator harness connector. Measure the resistance of the Common Door Driver circuit between the door actuator harness connector and the A/C - Heater Control Module C1 harness connector. Is the resistance below 5.0 ohms? Yes → Replace the door actuator in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Common Door Driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

BLEND CALIBRATION FAULT - MTC — Continued

TEST	ACTION	APPLICABILITY
11	**NOTE: After completing HVAC Door Recalibration, the DRBIII® will store the total span and the status of each door actuator. Selecting HVAC Door Cal Monitor in System Tests will display this information.** With the DRBIII® in HVAC, select System Tests, and then select HVAC Door Cal Monitor. Which message does the DRBIII® display for R Mode Status? No Pulses Go To 13 Too Few Pulses Inspect the Rear A/C - Heater Housing Assembly for a condition causing the rear mode linkage/door to bind. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. Too Many Pulses Remove door actuator from housing. By hand, attempt to rotate actuator in both directions. Also, inspect for disconnected, missing, or broken door linkage, and a warped or broken door. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. Broken Linage Remove door actuator from housing. By hand, attempt to rotate actuator in both directions. Also, inspect for disconnected, missing, or broken door linkage, and a warped or broken door. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
12	**NOTE: After completing HVAC Door Recalibration, the DRBIII® will store the total span and the status of each door actuator. Selecting HVAC Door Cal Monitor in System Tests will display this information.** With the DRBIII® in HVAC, select System Tests, and then select HVAC Door Cal Monitor. Which message does the DRBIII® display for R Blend Status? No Pulses Go To 13 Too Few Pulses Inspect the Rear A/C - Heater Housing Assembly for a condition causing the rear blend linkage/door to bind. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. Too Many Pulses Remove door actuator from housing. By hand, attempt to rotate actuator in both directions. Also, inspect for disconnected, missing, or broken door linkage, and a warped or broken door. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. Broken Linkage Remove door actuator from housing. By hand, attempt to rotate actuator in both directions. Also, inspect for disconnected, missing, or broken door linkage, and a warped or broken door. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

BLEND CALIBRATION FAULT - MTC — Continued

TEST	ACTION	APPLICABILITY
13	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Measure the resistance between the Rear Common Door Driver circuit and the applicable door driver circuit. Is the resistance above 70.0 ohms? Yes → Go To 14 No → Reconnect C1. Rerun Recalibration. If DRB displays same fault, replace A/C-Htr Cntrl in accord with Service Info. If DRBIII displays a different fault, ck wiring & connectors for cause of intermittent condition. If no prob found, rerun test from Step 1. Perform BODY VERIFICATION TEST - VER 1.	All
14	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Remove the applicable door actuator from the Rear A/C - Heater Housing Assembly. Disconnect the door actuator harness connector. Measure the resistance of the door driver circuit between the A/C - Heater Control Module C1 harness connector and the door actuator harness connector. Is the resistance below 5.0 ohms? Yes → Go To 15 No → Repair the Rear Common Door Driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
15	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Remove the applicable door actuator from the Rear A/C - Heater Housing Assembly. Disconnect the door actuator harness connector. Measure the resistance of the Rear Common Door Driver circuit between the door actuator harness connector and the A/C - Heater Control Module C1 harness connector. Is the resistance below 5.0 ohms? Yes → Replace the door actuator in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Rear Common Door Driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

BLEND OVERCURRENT (ACTIVE) - MTC
MODE OVERCURRENT (ACTIVE) - MTC
REAR BLEND OVERCURRENT (ACTIVE) - MTC
REAR MODE OVERCURRENT (ACTIVE) - MTC
RECIRC OVERCURRENT (ACTIVE) - MTC
ZONE OVERCURRENT (ACTIVE) - MTC

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be BLEND OVERCURRENT (ACTIVE) - MTC.

When Monitored and Set Condition:

BLEND OVERCURRENT (ACTIVE) - MTC

When Monitored: When actuator movement is requested.

Set Condition: This DTC will set if the A/C - Heater Control Module detects an excessive current draw on any of the door driver circuits while attempting to drive the passenger blend door actuator. Only one overcurrent DTC can set per ignition cycle.

MODE OVERCURRENT (ACTIVE) - MTC

When Monitored: When actuator movement is requested.

Set Condition: This DTC will set if the A/C - Heater Control Module detects an excessive current draw on any of the door driver circuits while attempting to drive this actuator. Only one overcurrent DTC can set per ignition cycle.

REAR BLEND OVERCURRENT (ACTIVE) - MTC

When Monitored: When actuator movement is requested.

Set Condition: This DTC will set if the A/C - Heater Control Module detects an excessive current draw on any of the door driver circuits while attempting to drive this actuator. Only one overcurrent DTC can set per ignition cycle.

REAR MODE OVERCURRENT (ACTIVE) - MTC

When Monitored: When actuator movement is requested.

Set Condition: This DTC will set if the A/C - Heater Control Module detects an excessive current draw on any of the door driver circuits while attempting to drive this actuator. Only one overcurrent DTC can set per ignition cycle.

RECIRC OVERCURRENT (ACTIVE) - MTC

When Monitored: When actuator movement is requested.

Set Condition: This DTC will set if the A/C - Heater Control Module detects an excessive current draw on any of the door driver circuits while attempting to drive this actuator. Only one overcurrent DTC can set per ignition cycle.

BLEND OVERCURRENT (ACTIVE) - MTC — Continued

ZONE OVERCURRENT (ACTIVE) - MTC

When Monitored: When actuator movement is requested.

Set Condition: This DTC will set if the A/C - Heater Control Module detects an excessive current draw on any of the door driver circuits while attempting to drive the driver (zone) blend door actuator. Only one overcurrent DTC can set per ignition cycle.

POSSIBLE CAUSES
RUN THE ACTUATOR CIRCUIT TEST

TEST	ACTION	APPLICABILITY
1	View repair Repair With the DRBIII® in HVAC, System Tests, actuate the Actuator Circuit Test. Read the Actuator Circuit Test message(s). Return to the symptom list and choose the symptom(s). If two or more drivelines are shorted together when running the Actuator Ckt Test, the DRBIII® may display Actuator Ckt Test Passed even though Overcurrent DTCs are active. If this occurs, refer to symptom Act Ckt Test Passed, Overcurrent DTCs Active. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
BLOWER NOT ON HIGH - MTC

When Monitored and Set Condition:

BLOWER NOT ON HIGH - MTC

When Monitored: When executing the Cooldown Test.

Set Condition: This message will be displayed if the front blower is not operating at high speed when executing the Cooldown Test.

POSSIBLE CAUSES
HVAC DTC(S) PRESENT
TEST SET UP CONDITIONS NOT MET
FRONT BLOWER/RELATED CIRCUITS

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read HVAC DTCs. Does the DRBIII® display any HVAC DTCs? Yes → Return to the symptom list and choose the symptom(s). After the repair is complete, with the DRBIII®, erase the DTC(s). Cycle the ignition switch. With the DRBIII®, actuate the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Was the front blower control set to high speed the entire time the Cooldown Test was actuated? Yes → Check the front blower motor and related circuits for front blower operation problems. Repair as necessary. After repair is complete, with the DRBIII®, actuate the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Start the engine. Set the Front Blower Front Control switch to high speed. With the DRBIII®, actuate the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

COOLDOWN TEST SENSOR FAILURE - MTC
COOLDOWN TIME EXCESSIVE FAULT - MTC

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be COOLDOWN TEST SENSOR FAILURE - MTC.

When Monitored and Set Condition:

COOLDOWN TEST SENSOR FAILURE - MTC

When Monitored: When executing the Cooldown Test.

Set Condition: This message will be displayed if a fault is detected with the Evaporator Temperature Sensor/circuit when executing the Cooldown Test.

COOLDOWN TIME EXCESSIVE FAULT - MTC

When Monitored: When executing the Cooldown Test.

Set Condition: This message will be displayed if the A/C system is unable to bring the evaporator temperature down 6.7°C (20°F) within two minutes.

POSSIBLE CAUSES
HVAC DTC(S) PRESENT
CHECK THE PCM/ECM FOR DTCS
A/C SYSTEM TESTING

TEST	ACTION	APPLICABILITY
1	**CAUTION: The evaporator temperature must be above 12.7°C (55°F) and the work area ambient temperature must be above 21.1°C (70°F) to test A/C system operation.** Turn the ignition on. With the DRBIII®, read HVAC DTCs. Does the DRBIII® display any HVAC DTCs? Yes → Return to the symptom list and choose the symptom(s). After repair is complete, rerun the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All

COOLDOWN TEST SENSOR FAILURE - MTC — Continued

TEST	ACTION	APPLICABILITY
2	**CAUTION: The evaporator temperature must be above 12.7°C (55°F) and the work area ambient temperature must be above 21.1°C (70°F) to test A/C system operation.** Turn the ignition on. With the DRBIII®, check the PCM/ECM for DTCs. Are any DTCs present? Yes → Refer to Powertrain Diagnostic information for the related symptom(s). After repair is complete, rerun the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Refer to the Service Information for additional Cooldown Test related diagnostic information and testing procedures. After repair is complete, rerun the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
COOLDOWN TEST TOO COLD TO START - MTC

When Monitored and Set Condition:

COOLDOWN TEST TOO COLD TO START - MTC

When Monitored: When executing the Cooldown Test.

Set Condition: This message will be displayed if the A/C - Heater Control Module sees evaporator temperature below 12.7°C (55°F) when executing the Cooldown Test.

POSSIBLE CAUSES
EVAPORATOR TEMPERATURE TOO LOW
HVAC DTC(S) PRESENT
CHECK THE PCM/ECM FOR DTCS
EVAPORATOR TEMPERATURE SENSOR
SENSOR GROUND CIRCUIT HIGH RESISTANCE
EVAPORATOR TEMPERATURE SENSOR SIGNAL CIRCUIT HIGH RESISTANCE
A/C - HEATER CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**CAUTION: The evaporator temperature must be above 12.7°C (55°F) and the work area ambient temperature must be above 21.1°C (70°F) to test A/C system operation.** Start the engine. Turn the A/C off. Turn the Blower on high. Allow the blower to run for 5 minutes to ensure that the Evaporator Temperature Sensor temperature is above 12.7°C (55°F). With the DRBIII®, actuate the Cooldown Test. Does the DRBIII® display: Cooldown Test Too Cold To Start? Yes → Go To 2 No → Perform additional testing as necessary. Perform BODY VERIFICATION TEST - VER 1.	All
2	**CAUTION: The evaporator temperature must be above 12.7°C (55°F) and the work area ambient temperature must be above 21.1°C (70°F) to test A/C system operation.** Turn the ignition on. With the DRBIII®, read HVAC DTCs. Does the DRBIII® display any HVAC DTCs? Yes → Return to the symptom list and choose the symptom(s). After the repair is complete, with the DRBIII®, erase the DTC(s). Cycle the ignition switch. With the DRBIII®, actuate the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

COOLDOWN TEST TOO COLD TO START - MTC — Continued

TEST	ACTION	APPLICABILITY
3	**CAUTION: The evaporator temperature must be above 12.7°C (55°F) and the work area ambient temperature must be above 21.1°C (70°F) to test A/C system operation.** Turn the ignition on. With the DRBIII®, check the PCM/ECM for DTCs. Are any DTCs present? Yes → Refer to Powertrain Diagnostic information for the related symptom(s). After the repair is complete, with the DRBIII®, erase the DTC(s). Cycle the ignition switch. With the DRBIII®, actuate the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the Evaporator Temperature Sensor harness connector. Turn the ignition on. With the DRBIII® in Sensor Display, read the Evaporator Temperature Sensor voltage. Is the voltage above 4.9 volts? Yes → Go To 5 No → Go To 6	All
5	Turn the ignition off. Disconnect the Evaporator Temperature Sensor harness connector. Connect a jumper wire between the Evaporator Temperature Sensor Signal circuit and the Sensor Ground circuit at the Evaporator Temperature Sensor harness connector. Turn the ignition on. With the DRBIII® in Sensor Display, read the Evaporator Temperature Sensor voltage. Is the voltage 0.0 volts? Yes → Replace the Evaporator Temperature Sensor in accordance with the Service Information. After repair is complete, rerun the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	**NOTE: Ensure that the Evaporator Temperature Sensor harness connector is connected to the Evaporator Temperature Sensor.** **NOTE: Ensure that the voltmeter leads meet the terminals in the connector and that there is good terminal to wire connection.** **NOTE: Ensure the voltmeter leads are connected for positive polarity.** Back probe the Sensor Ground circuit between the Evaporator Temperature Sensor harness connector and the A/C - Heater Control Module C1 harness connector. Turn the ignition on. Is the voltage below 0.10 volt? Yes → Go To 7 No → Repair the high resistance in the Sensor Ground circuit. After repair is complete, rerun the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1.	All

COOLDOWN TEST TOO COLD TO START - MTC — Continued

TEST	ACTION	APPLICABILITY
7	**NOTE: Ensure that the Evaporator Temperature Sensor harness connector is connected to the Evaporator Temperature Sensor.** **NOTE: Ensure the voltmeter leads meet the terminals in the connector and that there is good terminal to wire connection.** **NOTE: Ensure the voltmeter leads are connected for positive polarity** Back probe the Evaporator Temperature Sensor Signal circuit between the Evaporator Temperature Sensor harness connector and the A/C - Heater Control Module C1 harness connector. Turn the ignition on. Is the voltage below 0.10 volt? Yes → Replace the A/C - Heater Control Module in accordance with the Service Information. After repair is complete, rerun the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1. No → Repair the high resistance in the Evaporator Temperature Sensor Signal circuit. After repair is complete, rerun the Cooldown Test. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

EVAPORATOR TEMPERATURE SENSOR CIRCUIT OPEN (ACTIVE) - MTC

When Monitored and Set Condition:

EVAPORATOR TEMPERATURE SENSOR CIRCUIT OPEN (ACTIVE) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the A/C - Heater Control Module sees abnormally high voltage on the Evaporator Temperature Sensor Signal circuit.

POSSIBLE CAUSES
EVAPORATOR TEMPERATURE SENSOR SIGNAL CIRCUIT SHORTED HIGH
A/C - HEATER CONTROL MODULE
EVAPORATOR TEMPERATURE SENSOR SIGNAL CIRCUIT OPEN
SENSOR GROUND CIRCUIT OPEN
EVAPORATOR TEMPERATURE SENSOR

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Turn the ignition on. Measure the voltage between the Evaporator Temperature Sensor Signal circuit and ground. Is there any voltage present? Yes → Repair the Evaporator Temperature Sensor Signal circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All

EVAPORATOR TEMPERATURE SENSOR CIRCUIT OPEN (ACTIVE) - MTC — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Measure the resistance between the Evaporator Temperature Sensor Signal circuit and the Sensor Ground circuit. The approximate circuit resistance should be: 5,900 ohms @ 38°C (100°F). 6,600 ohms @ 35°C (95°F). 7,400 ohms @ 32°C (90°F). 8,300 ohms @ 29°C (85°F). 9,400 ohms @ 27°C (80°F). 10,600 ohms @ 24°C (75°F). 11,900 ohms @ 21°C (70°F). 13,500 ohms @ 18°C (65°F). 15,300 ohms @ 16°C (60°F). 17,500 ohms @ 13°C (55°F). 19,900 ohms @ 10°C (50°F). 22,800 ohms @ 7°C (45°F). 26,100 ohms @ 4°C (40°F). 30,000 ohms @ 2°C (35°F). 34,600 ohms @ -1°C (30°F). Is the resistance within the specifications? Yes → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Open the glove box door. Disconnect the glove box door roller latch from each side of the glove box. Roll the glove box downward toward the floor. Disconnect the in-line C202 harness connector. Measure the resistance of the Evaporator Temperature Sensor Signal circuit between the A/C - Heater Control Module C1 harness connector and the in-line C202 harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Evaporator Temperature Sensor Signal circuit between the A/C - Heater Control Module C1 harness connector and the in-line C202 harness connector (HVAC side) for an open. Perform BODY VERIFICATION TEST - VER 1.	All

EVAPORATOR TEMPERATURE SENSOR CIRCUIT OPEN (ACTIVE) - MTC — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Open the glove box door. Disconnect the glove box door roller latch from each side of the glove box. Roll the glove box downward toward the floor. Disconnect the in-line C202 harness connector. Measure the resistance of the Sensor Ground circuit between the A/C - Heater Control Module C1 harness connector and the in-line C202 harness connector. Is the resistance below 5.0 ohms? Yes → Check the wiring harness between the in-line C202 harness connector (plenum side) and the Evaporator Temperature Sensor for an open. Repair as necessary. If Ok, replace the Evaporator Temperature Sensor in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Sensor Ground circuit between the A/C - Heater Control Module C1 harness connector and the in-line C202 harness connector (HVAC side) for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

EVAPORATOR TEMPERATURE SENSOR CIRCUIT SHORT (ACTIVE) - MTC

When Monitored and Set Condition:

EVAPORATOR TEMPERATURE SENSOR CIRCUIT SHORT (ACTIVE) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the A/C - Heater Control Module sees abnormally low voltage on the Evaporator Temperature Sensor Signal circuit.

POSSIBLE CAUSES
EVAPORATOR TEMPERATURE SENSOR
EVAPORATOR TEMPERATURE SENSOR SIGNAL CIRCUIT SHORT TO GROUND
EVAPORATOR TEMPERATURE SENSOR SIGNAL CIRCUIT SHORT TO SENSOR GROUND CIRCUIT
A/C - HEATER CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Open the glove box door. Disconnect the glove box door roller latch from each side of the glove box. Roll the glove box downward toward the floor. Disconnect the in-line C202 harness connector. Turn the ignition on. With the DRBIII® in Sensor Display, read the Evaporator Temperature Sensor voltage. Does the DRBIII® display: 5.0 volts or greater? Yes → Check the Evap Temp Sensor Signal circuit between the in-line C202 harness connector (plenum side) and the Evap Temp Sensor for a short to ground. Repair as necessary. If Ok, replace the Evaporator Temperature Sensor in accordance with the Service Info. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All

EVAPORATOR TEMPERATURE SENSOR CIRCUIT SHORT (ACTIVE) - MTC — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Open the glove box door. Disconnect the glove box door roller latch from each side of the glove box. Roll the glove box downward toward the floor. Disconnect the in-line C202 harness connector. Measure the resistance between ground and the Evaporator Temperature Sensor Signal circuit (HVAC side). Is the resistance above 10K ohms? Yes → Go To 3 No → Repair the Evaporator Temperature Sensor Signal circuit between the A/C - Heater Control Module C1 harness connector and the in-line C202 harness connector (HVAC side) for a short to ground. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Open the glove box door. Disconnect the glove box door roller latch from each side of the glove box. Roll the glove box downward toward the floor. Disconnect the in-line C202 harness connector. Measure the resistance between the Evaporator Temperature Sensor Signal circuit and the Sensor Ground circuit (HVAC side). Is the resistance above 10K ohms? Yes → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Evaporator Temperature Sensor Signal circuit between the A/C - Heater Control Module C1 harness connector and the in-line C202 harness connector (HVAC side) for a short to Sensor Ground. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

FRONT AND REAR BLOWER OUTPUT 1 OPEN
FRONT AND REAR BLOWER OUTPUT 2 OPEN

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be FRONT AND REAR BLOWER OUTPUT 1 OPEN.

When Monitored and Set Condition:

FRONT AND REAR BLOWER OUTPUT 1 OPEN

When Monitored: Continuously.

Set Condition: If the FCM detects no voltage present on the Front/Rear Blower Motor Relay Control circuit.

FRONT AND REAR BLOWER OUTPUT 2 OPEN

When Monitored: Continuously.

Set Condition: If the FCM detects no voltage present on the Front/Rear Blower Motor Relay Control circuit.

POSSIBLE CAUSES
CHECK DTCS
B+ CIRCUIT OPEN
FRONT AND REAR BLOWER RELAYS OPEN
FRONT/REAR BLOWER MOTOR RELAY CONTROL CIRCUIT SHORTED TO GROUND
FRONT/REAR BLOWER MOTOR RELAY CONTROL CIRCUIT OPEN
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: If neither DTC will reset or is active, refer to the wiring diagrams located in the service information to help isolate a possible intermittent condition.** With the DRB, read the FCM DTCs. Are both the Front/Rear Blower Output 1 Open and the Front/Rear Blower Output 2 Open DTCs set? Yes → Go To 2 No → Replace the Front Control Module (FCM) in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

FRONT AND REAR BLOWER OUTPUT 1 OPEN — Continued

TEST	ACTION	APPLICABILITY
2	Remove either the Front Blower Motor Relay or the Rear Blower Motor Relay, if equipped, from the IPM. Using a 12-volt test light connected to ground, probe cavity 86 of the blower relay connector. Is the test light illuminated? Yes → Go To 3 No → Check the B+ feed to the Intelligent Power Module (IPM) for an open. If OK, replace the IPM in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Install a substitute relay in place of the existing Front Blower Motor Relay and the existing Rear Blower Motor Relay, if equipped. With the DRB, erase DTCs. Turn the ignition off, wait 30 seconds, then turn the ignition on. With the DRB, read DTCs. Did these DTCs reset? Yes → Go To 4 No → Replace the Front Blower Motor Relay and the Rear Blower Motor Relay, if equipped. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Remove the Front Control Module from the IPM. Remove the Front Blower Motor Relay and the Rear Blower Motor Relay, if equipped, from the IPM. Measure the resistance between ground and the Front/Rear Blower Motor Relay Control circuit (FCM connector cavity 30). Is the resistance below 5.0 ohms? Yes → Replace the Intelligent Power Module (IPM) in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Remove the Front Control Module from the IPM. Remove the Front Blower Motor Relay from the IPM. Measure the resistance of the Front/Rear Blower Motor Relay Control circuit between the FCM connector cavity 30 and the Front Blower Motor Relay connector cavity 85. Is the resistance below 5.0 ohms? Yes → Replace the Front Control Module (FCM) in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Intelligent Power Module (IPM) in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

FRONT AND REAR BLOWER OUTPUT 1 SHORT TO BATT
FRONT AND REAR BLOWER OUTPUT 2 SHORT TO BATT

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be FRONT AND REAR BLOWER OUTPUT 1 SHORT TO BATT.

When Monitored and Set Condition:

FRONT AND REAR BLOWER OUTPUT 1 SHORT TO BATT

When Monitored: With the ignition on.

Set Condition: The FCM detects excessive current when attempting to close the Front/ Rear Blower Motor Relays.

FRONT AND REAR BLOWER OUTPUT 2 SHORT TO BATT

When Monitored: With the ignition on.

Set Condition: The FCM detects excessive current when attempting to close the Front/ Rear Blower Motor Relays.

POSSIBLE CAUSES
CHECK DTCS
FRONT BLOWER MOTOR RELAY SHORTED
REAR BLOWER MOTOR RELAY SHORTED
FRONT/REAR BLOWER MOTOR RELAY CONTROL CIRCUIT SHORTED TO BATTERY
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **NOTE: If neither DTC will reset or is active, refer to the wiring diagrams located in the service information to help isolate a possible intermittent condition.** With the DRB, read the FCM DTCs. Are both of these DTCs set? Yes → Go To 2 No → Replace the Front Control Module (FCM) in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

FRONT AND REAR BLOWER OUTPUT 1 SHORT TO BATT — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. Install a substitute relay in place of the existing Front Blower Motor Relay. With the DRB, erase DTCs. Turn the ignition on. With the DRB, read DTCs. Did these DTCs reset? Yes, equipped with rear blower motor Go To 3 Yes, not equipped with rear blower motor Go To 4 No → Replace the original Front Blower Motor Relay. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Install a substitute relay in place of the existing Rear Blower Motor Relay. With the DRB, erase DTCs. Turn the ignition on. With the DRB, read DTCs. Did these DTCs reset? Yes → Go To 4 No → Replace the original Rear Blower Motor Relay. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Remove the Front Control Module from the IPM. Remove the Front Blower Motor Relay and the Rear Blower Motor Relay, if equipped, from the IPM. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Front Blower Motor Relay connector cavity 85. Is the test light illuminated? Yes → Replace the Intelligent Power Module (IPM) in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module (FCM) in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
LOOPBACK TEST FAILURE (ACTIVE) - MTC

When Monitored and Set Condition:

LOOPBACK TEST FAILURE (ACTIVE) - MTC

When Monitored: When the A/C - Heater Control Module executes an internal loopback test.

Set Condition: If the A/C - Heater Control Module fails to send a message, or none of the expected messages arrive for 5 seconds, an internal loopback test is executed. If the internal loopback test fails, the DTC will set.

POSSIBLE CAUSES
ADDITIONAL CODE(S) PRESENT
A/C - HEATER CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read HVAC DTCs. Does the DRBIII® display any additional HVAC DTCs? Yes → Return to the symptom list and choose the symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

NO FUEL LEVEL MESSAGE RECEIVED (ACTIVE) - MTC
PCM COMMUNICATION FAILURE (ACTIVE) - MTC
VEHICLE ODOMETER FAILURE (ACTIVE) - MTC

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be NO FUEL LEVEL MESSAGE RECEIVED (ACTIVE) - MTC.

When Monitored and Set Condition:

NO FUEL LEVEL MESSAGE RECEIVED (ACTIVE) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the A/C - Heater Control Module does not receive the Fuel Level message from the PCM for more than 5 seconds.

PCM COMMUNICATION FAILURE (ACTIVE) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the A/C - Heater Control Module does not receive the Fuel message from the PCM for more than 5 seconds.

VEHICLE ODOMETER FAILURE (ACTIVE) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the A/C - Heater Control Module does not receive the Vehicle Odometer message from the PCM for more than 5 seconds.

POSSIBLE CAUSES
MESSAGE NOT RECEIVED
ATTEMPT TO COMMUNICATE WITH THE PCM/ECM
PCI BUS CIRCUIT OPEN
POWERTRAIN/ENGINE CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, enter HVAC, System Tests then PCM Monitor. Does the DRBIII® display: PCM is active on BUS? Yes → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All

NO FUEL LEVEL MESSAGE RECEIVED (ACTIVE) - MTC — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition on. With the DRBIII®, attempt to communicate with the PCM/ECM. Was the DRBIII® able to communicate with the PCM/ECM? Yes → Go To 3 No → Refer to Communication for the related symptom(s) Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the PCM C2/ECM C1 harness connector. Read the following caution if vehicle is equipped with NGC. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Disconnect the DRBIII® from the Data Link Connector (DLC). Disconnect the negative battery cable. Measure the resistance of the PCI Bus circuit between the Data Link Connector (DLC) and the PCM C2/ECM C1 connector. Is the resistance below 5.0 ohms? Yes → Replace and program the Powertrain/Engine Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
REAR BLEND POT CIRCUIT OPEN (ACTIVE) - MTC

When Monitored and Set Condition:

REAR BLEND POT CIRCUIT OPEN (ACTIVE) - MTC

When Monitored: With the ignition on.

Set Condition: This DTC will set if the A/C - Heater Control Module sees voltage above 4.88 volts on the Rear Temperature Feedback Signal circuit.

POSSIBLE CAUSES
5 VOLT SUPPLY CIRCUIT SHORTED TO VOLTAGE
CHECK REAR TEMPERATURE FEEDBACK SIGNAL CIRCUIT VOLTAGE
REAR TEMPERATURE FEEDBACK SIGNAL CIRCUIT OPEN
A/C - HEATER CONTROL MODULE
5 VOLT SUPPLY CIRCUIT SHORTED TO REAR TEMPERATURE FEEDBACK SIGNAL CIRCUIT
REAR TEMPERATURE RETURN CIRCUIT OPEN
REAR BLEND POTENTIOMETER
A/C - HEATER CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Rear Blower Rear Control Switch C2 harness connector. Turn the ignition on. Measure the voltage of the 5 Volt Supply circuit. Is the voltage above 5.3 volts? Yes → Repair the 5 Volt Supply circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Disconnect the Rear Blower Rear Control Switch C2 harness connector. Turn the ignition on. Measure the voltage of the Rear Temperature Feedback Signal circuit. What voltage is present? Above 5.1 Volts Repair the Rear Temperature Feedback Signal circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. Below 0.25 Volts Go To 3 Between 0.25 & 5.1 Volts Go To 4	All

REAR BLEND POT CIRCUIT OPEN (ACTIVE) - MTC — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Disconnect the Rear Blower Rear Control Switch C2 harness connector. Measure the resistance of the Rear Temperature Feedback Signal circuit between the A/C - Heater Control Module C1 harness connector and the Rear Blower Rear Control Switch C2 harness connector. Is the resistance below 5.0 ohms? Yes → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Rear Temperature Feedback Signal circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Disconnect the Rear Blower Rear Control Switch C2 harness connector. Measure the resistance between the 5 Volt Supply circuit and the Rear Temperature Feedback Signal circuit. Is the resistance above 100K ohms? Yes → Go To 5 No → Repair the 5 Volt Supply circuit for a short to the Rear Temperature Feedback Signal circuit. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Disconnect the Rear Blower Rear Control Switch C2 harness connector. Measure the resistance of the Rear Temperature Return circuit between the A/C - Heater Control Module C1 harness connector and the Rear Blower Rear Control Switch C2 harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Rear Temperature Return circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

REAR BLEND POT CIRCUIT OPEN (ACTIVE) - MTC — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. **NOTE: Make sure that the Rear Blower Rear Control Switch C2 harness connector is connected to the Rear Blower Rear Control Switch.** Measure the resistance of the Rear Blower Rear Control Switch, Rear Blend Potentiometer as follows: Turn the Rear Blend knob to full hot. Measure the resistance between the 5 Volt Supply circuit and the Rear Temperature Feedback Signal circuit at the A/C - Heater Control Module C1 harness connector. The resistance should be approximately 800 ohms. Slowly rotate the Rear Blend knob from full hot to full cold while viewing the DVOM. The reading should change fluidly from approximately 800 to 10.5K ohms. Turn the Rear Blend knob to full hot. Measure the resistance between the 5 Volt Supply circuit and the Rear Temperature Return circuit at the A/C - Heater Control Module C1 harness connector. The resistance should be approximately 10.9K ohms. Slowly rotate the Rear Blend knob from full hot to full cold while viewing the DVOM. The reading should stay steady at approximately 10.9K ohms. Turn the Rear Blend knob to full hot. Measure the resistance between the Rear Temperature Return circuit and the Rear Temperature Feedback Signal circuit at the A/C - Heater Control Module C1 harness connector. The resistance should be approximately 10.2K ohms. Slowly rotate the Rear Blend knob from full hot to full cold while viewing the DVOM. The reading should change fluidly from approximately 10.2K to 800 ohms. Are all of the resistance measurements as specified? Yes → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Rear Blower Rear Control Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
REAR BLEND POT CIRCUIT SHORT (ACTIVE) - MTC

When Monitored and Set Condition:

REAR BLEND POT CIRCUIT SHORT (ACTIVE) - MTC

When Monitored: When the ignition is on.

Set Condition: This DTC will set if the A/C - Heater Control Module sees voltage below 0.25 volts on the Rear Temperature Feedback Signal circuit.

POSSIBLE CAUSES
5 VOLT SUPPLY CIRCUIT SHORTED TO GROUND
5 VOLT SUPPLY CIRCUIT OPEN
5 VOLT SUPPLY CIRCUIT SHORTED TO REAR TEMPERATURE RETURN CIRCUIT
REAR TEMPERATURE FEEDBACK SIGNAL CIRCUIT SHORTED TO GROUND
REAR TEMPERATURE FEEDBACK SIGNAL CKT SHORTED TO REAR TEMPERATURE RETURN CKT
REAR BLEND POTENTIOMETER SHORTED
A/C - HEATER CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Disconnect the Rear Blower Rear Control Switch C2 harness connector. Measure the resistance between ground and the 5 Volt Supply circuit. Is the resistance above 100K ohms? Yes → Go To 2 No → Repair the 5 Volt Supply circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Disconnect the Rear Blower Rear Control Switch C2 harness connector. Measure the resistance between the 5 Volt Supply circuit and the Rear Temperature Return circuit. Is the resistance above 100K ohms? Yes → Go To 3 No → Repair the 5 Volt Supply circuit for a short to the Rear Temperature Return circuit. Perform BODY VERIFICATION TEST - VER 1.	All

REAR BLEND POT CIRCUIT SHORT (ACTIVE) - MTC — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Disconnect the Rear Blower Rear Control Switch C2 harness connector. Measure the resistance of the 5 Volt Supply circuit between the A/C - Heater Control Module C1 harness connector and the Rear Blower Rear Control Switch C2 harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the 5 Volt Supply circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Disconnect the Rear Blower Rear Control Switch C2 harness connector. Measure the resistance between ground and the Rear Temperature Feedback Signal circuit. Is the resistance above 100K ohms? Yes → Go To 5 No → Repair the Rear Temperature Feedback Signal circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the A/C - Heater Control Module C1 harness connector. Disconnect the Rear Blower Rear Control Switch C2 harness connector. Measure the resistance between the Rear Temperature Feedback Signal circuit and the Rear Temperature Return circuit. Is the resistance above 100K ohms? Yes → Go To 6 No → Repair the Rear Temperature Feedback Signal circuit for a short to the Rear Temperature Return circuit. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Make sure that the A/C - Heater Control Module C1 harness connector is connected to the A/C - Heater Control Module. Disconnect the Rear Blower Rear Control Switch C2 harness connector. Turn the ignition on. With the DRBIII®, read active HVAC DTCs. Does the DRBIII® display: Rear Blend Pot Circuit Short? Yes → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Rear Blower Rear Control Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
TX FAILURE (ACTIVE) - MTC

When Monitored and Set Condition:

TX FAILURE (ACTIVE) - MTC

When Monitored: When the ignition is on.

Set Condition: This DTC will set if the A/C - Heater Control Module is unable to send a message.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE HVAC MODULE
ADDITIONAL CODE(S) PRESENT
ATTEMPT TO COMMUNICATE WITH THE PCM/ECM, BCM, AND FCM
A/C - HEATER CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, attempt to communicate with the HVAC Module. Was the DRBIII® able to I/D or communicate with the HVAC Module? Yes → Go To 2 No → Refer to Communication for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition on. With the DRBIII®, read HVAC DTCs. Does the DRBIII® display any additional HVAC DTCs? Yes → Return to the symptom list and choose the symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition on. With the DRBIII®, attempt to communicate with the PCM/ECM. With the DRBIII®, attempt to communicate with the BCM. With the DRBIII®, attempt to communicate with the FCM. Was the DRBIII® able to I/D or communicate with the PCM/ECM, BCM and FCM? Yes → Go To 4 No → Refer to Communication for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All

TX FAILURE (ACTIVE) - MTC — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition on. With the DRBIII®, erase HVAC DTCs. Cycle the ignition switch and wait approximately 1 minute. With the DRBIII®, read HVAC DTCs. Did this DTC reset? Yes → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom List:

***A/C STATUS INDICATOR FLASHING - MTC**
***RECIRC STATUS INDICATOR FLASHING - MTC**

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be *A/C STATUS INDICATOR FLASHING - MTC.

POSSIBLE CAUSES
AC COOLDOWN TEST NEEDS TO BE RUN
HVAC DOOR RECALIBRATION NEEDS TO BE RUN

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Which status indicator is flashing on the A/C-Heater Control Module? A/C Status Indicator Go To 2 RECIRC Status Indicator Go To 3	All
2	**CAUTION: The evaporator temperature must be above 12.7°C (55°F) and the work area ambient temperature must be above 21.1°C (70°F) to test A/C operation.** **NOTE: The A/C status indicator will flash twice per second to indicate that the AC Cooldown Test needs to be run.** **NOTE: The A/C status indicator will stop flashing twice per second if either the AC Cooldown Test returns passed, or if any button on the control is pressed, or if the ignition is cycled and the odometer shows greater than eight miles.** **NOTE: The Power and A/C status indicators will flash alternately while the AC Cooldown Test is running.** Start the engine. Turn the Blower control to the high speed position. With the DRBIII® in HVAC, System Tests, actuate the AC Cooldown Test. Does the DRBIII® display: Cooldown Test Passed? Yes → Test Complete. No → Return to the symptom list and choose the symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All

*A/C STATUS INDICATOR FLASHING - MTC — Continued

TEST	ACTION	APPLICABILITY
3	**NOTE: The RECIRC status indicator will flash twice per second to indicate that the HVAC Door Recalibration Test needs to be run.** **NOTE: The RECIRC status indicator will stop flashing twice per second if either the HVAC Door Recalibration Test returns passed, or if any button on the control is pressed, or if the ignition is cycled and the odometer shows greater than eight miles.** **NOTE: The Power and RECIRC status indicators will flash alternately while the HVAC Door Recalibration Test is running.** With the DRBIII® in HVAC, System Tests, actuate the HVAC Door Recalibration Test. Does the DRBIII® display: Recalibration Test Passed? Yes → Test Complete. No → Return to the symptom list and choose the symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***BLEND/MODE/RECIRC DOOR OPERATION IMPROPER -- DUAL & THREE-ZONE MTC**

POSSIBLE CAUSES
CHECK FOR ACTIVE HVAC DTCS
CHECK FOR HVAC DO0R RECALIBRATION FAULT MESSAGES
MODE DOOR ACTUATOR/LINKAGE/DOOR
PASSENGER BLEND DOOR ACTUATOR/LINKAGE/DOOR
DRIVER BLEND DOOR ACTUATOR/LINKAGE/DOOR
RECIRCULATION DOOR ACTUATOR/LINKAGE/DOOR
REAR MODE DOOR ACTUATOR/LINKAGE/DOOR
REAR BLEND DOOR ACTUATOR/LINKAGE/DOOR

TEST	ACTION	APPLICABILITY
1	**NOTE: All Actuator Circuit Test fault messages and Overcurrent DTCs must be repaired before diagnosing Calibration fault messages.** Turn the ignition on. With the DRBIII®, read active HVAC DTCs. Does the DRBIII® display any active HVAC DTCs? Yes → Return to the symptom list and choose the symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	**NOTE: All Actuator Circuit Test fault messages and Overcurrent DTCs must be repaired before diagnosing Calibration fault messages.** Turn the ignition on. With the DRBIII® in HVAC, System Tests, actuate the HVAC Door Recalibration Test. Does the DRBIII® display any HVAC Door Recalibration fault messages? Yes → Return to the symptom list and choose the symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

*BLEND/MODE/RECIRC DOOR OPERATION IMPROPER -- DUAL & THREE-ZONE MTC — Continued

TEST	ACTION	APPLICABILITY
3	Which door did customer ID as faulty? Mode Door Go To 4 Passenger Blend Door Go To 5 Driver Blend Door Go To 6 Recirculation Door Go To 7 Rear Mode Door Go To 8 Rear Blend Door Go To 9	All
4	Start the engine. Turn the blower control to the high speed position. Turn the mode control to each door position for a minimum of 30 seconds and check for airflow from the corresponding vents. Does air flow from the correct vents for each door position? Yes → Test Complete. No → Remove door actuator from A/C Heater Housing Assy. By hand, attempt to rotate door actuator in both directions. Also, inspect for disconnected, missing, or broken door actuator linkage. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
5	Start the engine. Turn the blower control to the high speed position. Turn the mode control to the panel position. Move the passenger blend control to the full hot position. Move the passenger blend control to the full cold position, in 25% increments, while checking for a change in airflow air temperature coming from the passenger's panel vents. Does the airflow air temperature change with respect to the position of the blend control? Yes → Test Complete. No → Remove door actuator from A/C-Heater Housing Assy. By hand, attempt to rotate the door actuator in both directions. Also, inspect for disconnected, missing, or broken door actuator linkage. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

*BLEND/MODE/RECIRC DOOR OPERATION IMPROPER -- DUAL & THREE-ZONE MTC — Continued

TEST	ACTION	APPLICABILITY
6	Start the engine. Turn the blower control to the high speed position. Turn the mode control to the panel position. Move the driver blend control to the full hot position. Move the driver blend control to the full cold position, in 25% increments, while checking for a change in airflow air temperature coming from the driver's panel vents. Does the airflow air temperature change with respect to the position of the blend control? Yes → Test Complete. No → Remove door actuator from A/C-Heater Housing Assy. By hand, attempt to rotate the door actuator in both directions. Also, inspect for disconnected, missing, or broken door actuator linkage. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
7	Start the engine. Turn the blower control to the high speed position. Turn the mode control to the panel position. Make sure that recirc is switched off (status indicator not illuminated). Press the recirc switch on (status indicator illuminated). The sound of the air flowing through the ducts should get louder as the recirculation door opens to bring in recirc air. Does the sound of the airflow get louder after pressing the recirc switch on? Yes → Test Complete. No → Remove door actuator from A/C-Heater Housing Assy. By hand, attempt to rotate the door actuator in both directions. Also, inspect for disconnected, missing, or broken door actuator linkage. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
8	Start the engine. Turn the rear blower control on the A/C-Heater Control Module to the rear control position. Turn the rear blower control on the Rear A/C-Heater Control to the high speed position. Turn the rear blend control to the full cold position and check for airflow from the corresponding vents. Turn the rear blend control to the full hot position and check for airflow from the corresponding vents. Does air flow from the correct vents for each door position? Yes → Test Complete. No → Remove door actuator from Rear A/C-Heater Housing Assy. By hand, attempt to rotate door actuator in both directions. Also, inspect for disconnected, missing, or broken door actuator linkage. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

*BLEND/MODE/RECIRC DOOR OPERATION IMPROPER -- DUAL & THREE-ZONE MTC — Continued

TEST	ACTION	APPLICABILITY
9	Start the engine. Turn the rear blower control on the A/C-Heater Control Module to the rear control position. Turn the rear blower control on the Rear A/C-Heater Control to the high speed position. Turn the rear blend control to the full cold position. Turn the rear blend control to the full hot position, in 25% increments, while checking for a change in airflow air temperature coming from the vents. Does the airflow air temperature change with respect to the position of the blend control? Yes → Test Complete. No → Remove door actuator from Rear A/C-Heater Housing Assy. By hand, attempt to rotate door actuator in both directions. Also, inspect for disconnected, missing, or broken door actuator linkage. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***BLEND/MODE/RECIRC DOOR OPERATION IMPROPER -- SINGLE-ZONE MTC**

POSSIBLE CAUSES
CHECK FOR ACTIVE HVAC DTCS
CHECK FOR HVAC DO0R RECALIBRATION FAULT MESSAGES
MODE DOOR ACTUATOR/LINKAGE/DOOR
BLEND DOOR ACTUATOR/LINKAGE/DOOR
RECIRCULATION DOOR ACTUATOR/LINKAGE/DOOR

TEST	ACTION	APPLICABILITY
1	**NOTE: All Actuator Circuit Test fault messages and Overcurrent DTCs must be repaired before diagnosing Calibration fault messages.** Turn the ignition on. With the DRBIII®, read active HVAC DTCs. Does the DRBIII® display any active HVAC DTCs? Yes → Return to the symptom list and choose the symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	**NOTE: All Actuator Circuit Test fault messages and Overcurrent DTCs must be repaired before diagnosing Calibration fault messages.** Turn the ignition on. With the DRBIII® in HVAC, System Tests, actuate the HVAC Door Recalibration Test. Does the DRBIII® display any HVAC Door Recalibration fault messages? Yes → Return to the symptom list and choose the symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Which door did customer ID as faulty? Mode Door Go To 4 Blend Door Go To 5 Recirculation Door Go To 6	All

*BLEND/MODE/RECIRC DOOR OPERATION IMPROPER -- SINGLE-ZONE MTC — Continued

TEST	ACTION	APPLICABILITY
4	Start the engine. Turn the blower control to the high speed position. Turn the mode control to each door position for a minimum of 30 seconds and check for airflow from the corresponding vents. Does air flow from the correct vents for each door position? Yes → Test Complete. No → Remove door actuator from A/C Heater Housing Assy. By hand, attempt to rotate door actuator in both directions. Also, inspect for disconnected, missing, or broken door actuator linkage. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
5	Start the engine. Turn the blower control to the high speed position. Turn the mode control to the panel position. Turn the blend control to the full hot position. Turn the blend control to the full cold position, in 25% increments, while checking for a change in airflow air temperature coming from the panel vents. Does the airflow air temperature change with respect to the position of the blend control? Yes → Test Complete. No → Remove door actuator from A/C-Heater Housing Assy. By hand, attempt to rotate the door actuator in both directions. Also, inspect for disconnected, missing, or broken door actuator linkage. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
6	Start the engine. Turn the blower control to the high speed position. Turn the mode control to the panel position. Make sure that recirc is switched off (status indicator not illuminated). Press the recirc switch on (status indicator illuminated). The sound of the air flowing through the ducts should get louder as the recirculation door opens to bring in recirc air. Does the sound of the airflow get louder after pressing the recirc switch on? Yes → Test Complete. No → Remove door actuator from A/C-Heater Housing Assy. By hand, attempt to rotate the door actuator in both directions. Also, inspect for disconnected, missing, or broken door actuator linkage. Repair as necessary in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***FRONT A/C - HEATER CONTROL ILLUMINATION INOPERATIVE - MTC**

POSSIBLE CAUSES
CHECK FOR HVAC DTCS
CHECK FOR BCM DTCS
A/C - HEATER CONTROL MODULE
PANEL LAMPS DRIVER CIRCUIT OPEN
BODY CONTROL MODULE - PANEL LAMPS DRIVER OPEN

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read HVAC DTCs. Does the DRBIII® display any HVAC DTCs? Yes → Return to the symptom list and choose the symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition on. With the DRBIII®, read the BCM DTCs. Does DRBIII® display Headlamp Switch: Mismatch; STG; Open; or Panel Dim Output Short? Yes → Refer to symptoms Headlamp Switch Mismatch, Headlamp Switch Shorted To Ground, and Headlamp Switch Open in the Exterior Lighting catagory. Refer to symptom Panel Dimming Output Short in the Instrument Cluster catagory. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Rotate the Panel Lamps Dimmer switch to the off position. Disconnect the A/C - Heater Control C1 harness connector. Turn the Headlamp switch on. Measure the voltage of the Panel Lamps Driver circuit while rotating the Panel Lamps Dimmer switch from the off position to the full brightness position. Does the voltage change from approximately 2.5 volts to 11.5 volts? Yes → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

*FRONT A/C - HEATER CONTROL ILLUMINATION INOPERATIVE - MTC

— Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the A/C - Heater Control C1 harness connector. Disconnect the Body Control Module C4 harness connector. Measure the resistance of the Panel Lamps Driver circuit between the A/C - Heater Control C1 harness connector and the Body Control Module C4 harness connector. Is the resistance below 5 ohms? Yes → Replace the Body Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Panel Lamps Driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

*FRONT BLOWER MOTOR INOPERATIVE - MTC

POSSIBLE CAUSES
FRONT CONTROL MODULE (FCM) DTC(S) PRESENT
IPM FUSE #10
FUSED FRONT BLOWER MOTOR RELAY OUTPUT CIRCUIT SHORTED TO GROUND
FRONT BLOWER MOTOR RESISTOR BLOCK SHORTED TO GROUND
FRONT BLOWER MOTOR RESISTOR BLOCK SHORTED TO GROUND
BLOWER MOTOR
BLOWER MOTOR
A/C - HEATER CONTROL MODULE
GROUND CIRCUIT OPEN
BLOWER MOTOR HIGH DRIVER CIRCUIT OPEN
FRONT BLOWER MOTOR RESISTOR BLOCK OPEN
FRONT BLOWER MOTOR RESISTOR BLOCK OPEN
IPM - OPEN CIRCUIT
IPM - OPEN CIRCUIT
FRONT BLOWER MOTOR RELAY
IPM - OPEN CIRCUIT
FUSED FRONT BLOWER MOTOR RELAY OUTPUT CIRCUIT OPEN

TEST	ACTION	APPLICABILITY
1	With the DRBIII® in Front Control Module, read the active DTCs. Are any active FCM DTCs present? Yes → For FCM DTCs related to the blower relay circuits, refer to the Heating & A/C catagory. For all other FCM DTCs, refer to the symptom list in the related catagory. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Remove and inspect Intelligent Power Module (IPM) Fuse #10. Is the fuse open? Yes → Go To 3 No → Go To 7	All

*FRONT BLOWER MOTOR INOPERATIVE - MTC — Continued

TEST	ACTION	APPLICABILITY
3	Replace IPM Fuse #10. Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. Operate the front blower in all speeds and modes. Does the blower motor operate properly without blowing the fuse? Yes → Check the Fused Front Blower Motor Relay Output circuit and the High Speed Blower Motor circuit for an intermittent short to ground. Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the Front Blower Motor Resistor Block C1 harness connector. Measure the resistance between ground and the Fused Front Blower Motor Relay Output circuit. Is the resistance below 10K ohms? Yes → Repair the Fused Front Blower Motor Relay Output circuit for a short to ground. Replace IPM Fuse #10. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Front Blower Motor Resistor Block C1 harness connector. Disconnect the Front Blower Motor Resistor Block C2 harness connector. Measure the resistance between Front Blower Motor Resistor Block pin C2-2 and pins C2-1, C1-1, C1-2, C1-3, C1-5, and C1-6. Is there continuity between pin C2-2 and any other pin? Yes → Replace the Front Blower Motor Resistor Block in accordance with the Service Information. Replace IPM Fuse #10. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off. Disconnect the Front Blower Motor Resistor Block C1 harness connector. Disconnect the Front Blower Motor Resistor Block C2 harness connector. Measure the resistance between Front Blower Motor Resistor Block pin C1-4 and pins C2-1, C1-1, C1-2, C1-3, C1-5, and C1-6. Is there continuity between pin C1-4 and any other pin? Yes → Replace the Front Blower Motor Resistor Block in accordance with the Service Information. Replace IPM Fuse #10. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Blower Motor in accordance with the Service Information. Replace IPM Fuse #10. Perform BODY VERIFICATION TEST - VER 1.	All

*FRONT BLOWER MOTOR INOPERATIVE - MTC — Continued

TEST	ACTION	APPLICABILITY
7	Ensure IPM Fuse #10 is installed. Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, back probe the High Speed Blower Motor circuit in the Front Blower Motor Resistor Block C2 harness connector. Does the test light illuminate brightly? Yes → Go To 8 No → Go To 12	All
8	Turn the Power switch on the A/C - Heater Control Module off. Turn the ignition off. Using a jumper wire connected to ground, back probe the Rear Blower High Speed circuit in the Front Blower Motor Resistor Block C2 harness connector. Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. Does the blower motor run at high speed? Yes → Go To 9 No → Replace the Blower Motor in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
9	Turn the Power switch on the A/C - Heater Control Module off. Turn the ignition off. Disconnect the A/C - Heater Control Module C2 harness connector. Using a jumper wire connected to ground, back probe the Blower Motor High Driver circuit in the A/C - Heater Control Module C2 harness connector. Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. Does the blower motor run at high speed? Yes → Go To 10 No → Go To 11	All
10	Turn the ignition off. Disconnect the A/C - Heater Control Module C2 harness connector. Measure the resistance of the Ground circuit between the A/C - Heater Control Module C2 harness connector and ground. Is the resistance below 5.0 ohms? Yes → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

*FRONT BLOWER MOTOR INOPERATIVE - MTC — Continued

TEST	ACTION	APPLICABILITY
11	Turn the ignition off. Disconnect the A/C - Heater Control Module C2 harness connector. Disconnect the Front Blower Motor Resistor Block C1 harness connector. Measure the resistance of the Blower Motor High Driver circuit between the A/C - Heater Control Module C2 harness connector and the Front Blower Motor Resistor Block C1 harness connector. Is the resistance below 5 ohms? Yes → Replace the Front Blower Motor Resistor Block in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Blower Motor High Driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
12	Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, back probe the Fused Front Blower Motor Relay Output circuit in the Front Blower Motor Resistor Block C1 harness connector. Does the test light illuminate brightly? Yes → Replace the Front Blower Motor Resistor Block in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 13	All
13	Turn the ignition off. Remove the Front Blower Motor Relay from the IPM. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, probe cavity 30 of the Front Blower Motor Relay connector. Does the test light illuminate brightly? Yes → Go To 14 No → Replace the IPM in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
14	Turn the ignition off. Remove the Front Blower Motor Relay from the IPM. Remove IPM Fuse #10. Measure the resistance between cavity 87 of the Front Blower Motor Relay connector and IPM Fuse #10 (power input cavity). Is the resistance below 5 ohms? Yes → Go To 15 No → Replace the IPM in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

*FRONT BLOWER MOTOR INOPERATIVE - MTC — Continued

TEST	ACTION	APPLICABILITY
15	Turn the ignition off. Make sure that the Front Blower Motor Relay is installed. Remove IPM Fuse #10. Turn the ignition on. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, probe IPM Fuse #10 (power input cavity). Does the test light illuminate brightly? Yes → Go To 16 No → Replace the Front Blower Motor Relay in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
16	Turn the ignition off. Remove IPM Fuse #10. Disconnect the IPM C6 harness connector. Measure the resistance between IPM Fuse #10 (power output cavity) and cavity 7 of the IPM C6 connector (IPM side). Is the resistance below 5 ohms? Yes → Repair the Fused Front Blower Motor Relay Output circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Replace the IPM in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
*FRONT BLOWER MOTOR SPEEDS INCORRECT - MTC

POSSIBLE CAUSES
BLOWER MOTOR DRIVER CIRCUIT(S) SHORTED TO GROUND
BLOWER MOTOR DRIVER CIRCUIT(S) SHORTED TO VOLTAGE
BLOWER MOTOR DRIVER CIRCUITS SHORTED TOGETHER
A/C - HEATER CONTROL MODULE - SPEEDS INCORRECT
BLOWER MOTOR DRIVER CIRCUIT(S) OPEN
BLOWER MOTOR RESISTOR BLOCK - OPEN SPEED

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the A/C - Heater Control Module C2 harness connector. Disconnect the Front Blower Motor Resistor Block C1 harness connector. Measure the resistance between ground and each of the Blower Motor Driver circuits. Is the resistance below 10K ohms on any of the circuits? Yes → Repair all Blower Motor Driver circuits with a resistance below 10K ohms for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Ensure that the Front Blower Motor Resistor Block C1 harness connector is connected to the Front Blower Motor Resistor Block. Disconnect the A/C - Heater Control Module C2 harness connector. Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, back probe each of the Blower Motor Driver circuits (cavities 2, 3, 5, 9, and 10). Does the test light illuminate brightly on each circuit? Yes → Go To 3 No → Go To 5	All
3	Turn the Power switch on the A/C - Heater Control Module off. Turn the ignition off. Disconnect the A/C - Heater Control Module C2 harness connector. Disconnect the Front Blower Motor Resistor Block C1 harness connector. Turn the ignition on. Measure the voltage of each of the Blower Motor Driver circuits (cavities 2, 3, 5, 9, and 10) in the A/C - Heater Control Module C2 harness connector. Is there any voltage present? Yes → Repair all Blower Motor Driver circuits with voltage present for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

*FRONT BLOWER MOTOR SPEEDS INCORRECT - MTC — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the A/C - Heater Control Module C2 harness connector. Disconnect the Front Blower Motor Resistor Block C1 harness connector. Measure the resistance between the Blower Motor Low Driver circuit and the M1, M2, M3 and Blower Motor High Driver circuits. Measure the resistance between the Blower Motor M1 Driver circuit and the M2, M3, and Blower Motor High Driver circuits. Measure the resistance between the Blower Motor M2 Driver circuit and the M3 and Blower Motor High Driver circuit. Measure the resistance between the Blower Motor M3 Driver circuit and the Blower Motor High Driver circuit. Is the resistance below 10K ohms between any of the circuits? Yes → Repair the shorted Blower Motor Driver circuits. Perform BODY VERIFICATION TEST - VER 1. No → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the A/C - Heater Control Module C2 harness connector. Disconnect the Front Blower Motor Resistor Block C1 harness connector. Measure the resistance of each Blower Motor Driver circuit between the Front Blower Motor Resistor Block C1 harness connector and the A/C - Heater Control Module C2 harness connector. Is the resistance below 5.0 ohms on each of the circuits? Yes → Replace the Front Blower Motor Resistor Block in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair all Blower Motor Driver circuits with a resistance above 5 ohms for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***HVAC SYSTEM TEST - MTC**

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE PCM/ECM, THE BCM, AND THE FCM
CHECK FOR HVAC RELATED DTCS IN THE PCM/ECM
CHECK FOR BCM DTCS
CHECK FOR FCM DTCS
CHECK FOR ACTIVE HVAC DTCS AND SYSTEM TESTS FAULT MESSAGES
CHECK FOR HVAC RELATED DTCS IN THE PCM/ECM
MANUAL A/C SYSTEM TEST

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, attempt to communicate with the Powertrain/Engine Control Module. With the DRBIII®, attempt to communicate with the Body Control Module. With the DRBIII®, attempt to communicate with the Front Control Module. Was the DRBIII® able to communicate with the PCM/ECM, the BCM, and the FCM? Yes → Go To 2 No → Refer to the communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII®, read Powertrain/Engine Computer DTCs. Are any HVAC related DTCs present? Yes → Refer to the Powertrain Diagnostic Procedures Manual for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, read Body Computer DTCs. Are any DTCs present? Yes → Refer to the appropriate catagory for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	With the DRBIII®, read Front Control Module DTCs. Are any DTCs present? Yes → For FCM DTCs related to the blower relay circuits, refer to the Heating & A/C catagory. For all other FCM DTCs, refer to the symptom list in the related catagory. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All

*HVAC SYSTEM TEST - MTC — Continued

TEST	ACTION	APPLICABILITY
5	**CAUTION: The evaporator temperature must be above 12.7°C (55°F) and the work area ambient temperature must be above 21.1°C (70°F) to test the A/C system operation.** **NOTE: Active codes must be resolved before diagnosing stored codes.** **NOTE: Anytime a DTC becomes active, or a Cooldown Test fault message, Actuator Circuit Test fault message, or HVAC Door Recalibration fault message is displayed, proceed to the conclusion question.** **NOTE: If multiple codes appear, diagnose those that relate to a short circuit first.** Start the engine. Press the A/C - Heater Control power switch on. Turn the mode select control to the panel position. Verify that the front blower motor and, if equipped, rear blower motor operates correctly in all speeds from each control. Diagnose and repair all blower related faults before proceeding with this test. Turn the front blower motor control to the high speed position. **NOTE: Before actuating the AC Cooldown Test, verify that the A/C compressor is not running. If the compressor is running, turn the A/C off and allow the evaporator to warm up before proceeding with the test.** With the DRBIII® in HVAC, System Tests, actuate the AC Cooldown Test. Turn the front blower motor control to the low speed position. If equipped, turn the rear blower motor control to the rear position. Set the passenger blend control to the full cold position. If equipped, set the zone/driver blend control to the full cold position. If equipped, on the Rear Blower Rear Control, set the rear blend/mode control to the full cold position. Monitor the DRBIII® for active HVAC DTCs while performing the following test steps. Turn the mode select control to the defrost position, wait 30 seconds, and then turn it back to the panel position. Press the recirculation mode switch on, wait 30 seconds, and then press it off. Press the A/C mode switch on, wait 30 seconds, and then press it off. Press the rear window defogger switch on, wait 30 seconds, and then press it off. Move the passenger blend control from full cold to full hot, wait 30 seconds, and then move it back to full cold. If equipped, move the zone/driver blend control from full cold to full hot, wait 30 seconds, and then move it back to full cold. If equipped, on the Rear Blower Rear Control, move the rear blend/mode control from full cold to full hot, wait 30 seconds, and then move it back to full cold. With the DRBIII® in HVAC, System Tests, actuate the Actuator Circuit Test. With the DRBIII® in HVAC, System Tests, actuate the HVAC Door Recalibration Test. Does the DRBIII® display any active HVAC DTC(s) or System Tests fault message(s)? Yes → Return to the symptom list and choose the symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	With the DRBIII®, read PCM/ECM DTCs. Are any HVAC related DTCs present? Yes → Refer to the Powertrain Diagnostic Procedures Manual for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Recheck the climate control system performance. Refer to Service Information for additional information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***REAR A/C - HEATER CONTROL ILLUMINATION INOPERATIVE - MTC**

POSSIBLE CAUSES
CHECK FOR HVAC DTCS
CHECK FOR BCM DTCS
INOPERATIVE BULB
GROUND CIRCUIT OPEN
REAR BLOWER REAR CONTROL SWITCH
PANEL LAMPS DRIVER CIRCUIT OPEN
BODY CONTROL MODULE - PANEL LAMPS DRIVER OPEN

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read HVAC DTCs. Does the DRBIII® display any HVAC DTCs? Yes → Return to the symptom list and choose the symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition on. With the DRBIII®, read the BCM DTCs. Does DRBIII® display Headlamp Switch: Mismatch; STG; Open; or Panel Dim Output Short? Yes → Refer to symptoms Headlamp Switch Mismatch, Headlamp Switch Shorted To Ground, and Headlamp Switch Open in the Exterior Lighting catagory. Refer to symptom Panel Dimming Output Short in the Instrument Cluster catagory. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Remove the bulb from the Rear Blower Rear Control Switch. **NOTE: Hold the bulb in front of a lamp to see the filament.** Inspect the bulb. Is the bulb Ok? Yes → Go To 4 No → Replace the bulb. Perform BODY VERIFICATION TEST - VER 1.	All

*REAR A/C - HEATER CONTROL ILLUMINATION INOPERATIVE - MTC

— Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Rotate the Panel Lamps Dimmer switch to the off position. Disconnect the Rear Blower Rear Control Switch C2 harness connector. Turn the Headlamp switch on. Measure the voltage of the Panel Lamps Driver circuit while rotating the Panel Lamps Dimmer switch from the off position to the full brightness position. Does the voltage change from approximately 2.5 volts to 11.5 volts? Yes → Go To 5 No → Go To 6	All
5	Turn the Headlamp switch off. Turn the ignition off. Disconnect the Rear Blower Rear Control Switch C2 harness connector. Measure the resistance of the Ground circuit between the Rear Blower Rear Control switch C2 harness connector and ground. Is the resistance below 5 ohms? Yes → Replace the Rear Blower Rear Control Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the Rear Blower Rear Control Switch C2 harness connector. Disconnect the Body Control Module C3 harness connector. Measure the resistance of the Panel Lamps Driver circuit between the Rear Blower Rear Control Switch C2 harness connector and the Body Control Module C3 harness connector. Is the resistance below 5 ohms? Yes → Replace the Body Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Panel Lamps Driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

*REAR BLOWER MOTOR INOPERATIVE - MTC

POSSIBLE CAUSES
FRONT CONTROL MODULE (FCM) DTC(S) PRESENT
IPM FUSE #12
FUSED REAR BLOWER MOTOR RELAY OUTPUT CIRCUIT SHORTED TO GROUND
BLOWER MOTOR
GROUND CIRCUIT OPEN
A/C - HEATER CONTROL MODULE
CHECK FOR POWER TO REAR BLOWER MOTOR
BLOWER MOTOR
REAR BLOWER HIGH SPEED CIRCUIT OPEN
REAR BLOWER MOTOR HIGH CIRCUIT OPEN
REAR BLOWER MOTOR RESISTOR BLOCK
IPM - OPEN CIRCUIT
IPM - OPEN CIRCUIT
REAR BLOWER MOTOR RELAY
IPM - OPEN CIRCUIT
FUSED REAR BLOWER MOTOR RELAY OUTPUT CIRCUIT OPEN

TEST	ACTION	APPLICABILITY
1	With the DRBIII® in Front Control Module, read the active DTCs. Are any active FCM DTCs present? Yes → For FCM DTCs related to the blower relay circuits, refer to the Heating & A/C catagory. For all other FCM DTCs, refer to the symptom list in the related catagory. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Remove and inspect Intelligent Power Module (IPM) Fuse #12. Is the fuse open? Yes → Go To 3 No → Go To 5	All

*REAR BLOWER MOTOR INOPERATIVE - MTC — Continued

TEST	ACTION	APPLICABILITY
3	Replace IPM Fuse #12. Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. Turn the rear blower on and operate it in all speeds and modes. Does the blower motor operate properly without blowing the fuse? Yes → Check the Fused Rear Blower Motor Relay Output circuit for an intermittent short to ground. Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the Rear Blower Motor 2-pin harness connector. Measure the resistance between ground and the Fused Rear Blower Motor Relay Output circuit. Is the resistance below 10K ohms? Yes → Repair the Fused Rear Blower Motor Relay Output circuit for a short to ground. Replace IPM Fuse #12. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Rear Blower Motor in accordance with the Service Information. Replace IPM Fuse #12 Perform BODY VERIFICATION TEST - VER 1.	All
5	Ensure IPM Fuse #12 is installed. Disconnect the Rear Blower Front Control Switch harness connector. Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, back probe the Rear Blower Motor High circuit in the Rear Blower Front Control Switch harness connector. Does the test light illuminate brightly? Yes → Go To 6 No → Go To 7	All
6	Turn the ignition off. Disconnect the Rear Blower Front Control Switch harness connector. Measure the resistance of the Ground circuit between the Rear Blower Front Control Switch harness connector and ground. Is the resistance below 5.0 ohms? Yes → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

*REAR BLOWER MOTOR INOPERATIVE - MTC — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, back probe the Fused Rear Blower Motor Relay Output circuit in the Rear Blower Motor 2-pin harness connector. Does the test light illuminate brightly? Yes → Go To 8 No → Go To 11	All
8	Turn the Power switch on the A/C - Heater Control Module off. Turn the ignition off. Using a jumper wire connected to ground, back probe the DB/OR wire in the Rear Blower Motor 2-pin harness connector. Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. Does the blower motor run at high speed? Yes → Go To 9 No → Replace the Rear Blower Motor in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
9	Turn the ignition off. Disconnect the Rear Blower Motor 2-pin harness connector. Disconnect the Rear Blower Motor Resistor Block harness connector. Measure the resistance of the DB/OR wire between the Rear Blower Motor 2-pin harness connector and the Rear Blower Motor Resistor Block harness connector. Is the resistance below 5 ohms? Yes → Go To 10 No → Repair the DB/OR wire between the Rear Blower Motor 2-pin harness connector and the Rear Blower Motor Resistor Block harness connector for an open. Perform BODY VERIFICATION TEST - VER 1.	All
10	Turn the ignition off. Disconnect the Rear Blower Motor Resistor Block harness connector. Disconnect the Rear Blower Front Control Switch harness connector. Measure the resistance of the Rear Blower Motor High circuit between the Rear Blower Motor Resistor Block harness connector and the Rear Blower Front Control Switch harness connector. Is the resistance below 5 ohms? Yes → Replace the Rear Blower Motor Resistor Block in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Rear Blower Motor High circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

*REAR BLOWER MOTOR INOPERATIVE - MTC — Continued

TEST	ACTION	APPLICABILITY
11	Turn the ignition off. Remove the Rear Blower Motor Relay from the IPM. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, probe cavity 30 of the Rear Blower Motor Relay connector. Does the test light illuminate brightly? Yes → Go To 12 No → Replace the IPM in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
12	Turn the ignition off. Remove the Rear Blower Motor Relay from the IPM. Remove IPM Fuse #12. Measure the resistance between cavity 87 of the Rear Blower Motor Relay connector and IPM Fuse #12 (power input cavity). Is the resistance below 5 ohms? Yes → Go To 13 No → Replace the IPM in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
13	Turn the ignition off. Make sure that the Rear Blower Motor Relay is installed. Remove IPM Fuse #12. Turn the ignition on. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, probe IPM Fuse #12 (power input cavity). Does the test light illuminate brightly? Yes → Go To 14 No → Replace the Rear Blower Motor Relay in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
14	Turn the ignition off. Remove IPM Fuse #12. Disconnect the IPM C8 harness connector. Measure the resistance between IPM Fuse #12 (power output cavity) and cavity 7 of the IPM C8 connector (IPM side). Is the resistance below 5 ohms? Yes → Repair the Fused Rear Blower Motor Relay Output circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Replace the IPM in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

*REAR BLOWER MOTOR SPEEDS INCORRECT - MTC

POSSIBLE CAUSES
REAR BLOWER REAR CONTROL SWITCH
REAR BLOWER MOTOR DRIVER CIRCUIT(S) SHORTED TO GROUND
A/C - HEATER CONTROL MODULE
REAR BLOWER REAR CONTROL SWITCH
REAR BLOWER MOTOR DRIVER CIRCUIT(S) SHORTED TO VOLTAGE
REAR BLOWER MOTOR FRONT CONTROL FEED CIRCUIT SHORTED TO VOLTAGE
REAR BLOWER DRIVER CKT(S) SHORTED TO REAR BLOWER FRONT CONTROL FEED CKT
REAR BLOWER MOTOR DRIVER CIRCUITS SHORTED TOGETHER
A/C - HEATER CONTROL MODULE
REAR BLOWER MOTOR DRIVER CIRCUIT(S) OPEN
REAR BLOWER MOTOR RESISTOR BLOCK

TEST	ACTION	APPLICABILITY
1	Turn the Rear Blower switch on the A/C - Heater Control Module off. Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. Does the rear blower run? Yes → Go To 2 No → Go To 4	All
2	Turn the Rear Blower switch on the A/C - Heater Control Module off. Turn the Power switch on the A/C - Heater Control Module off. Turn the ignition off. Disconnect the Rear Blower Rear Control Switch C1 harness connector. Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. Does the rear blower run? Yes → Go To 3 No → Replace the Rear Blower Rear Control Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

*REAR BLOWER MOTOR SPEEDS INCORRECT - MTC — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Rear Blower Front Control Switch harness connector. Disconnect the Rear Blower Rear Control Switch C1 harness connector. Measure the resistance between ground and each of the Rear Blower Motor Driver circuits (Low, Medium, and High) in the Rear Blower Front Control Switch harness connector. Is the resistance below 10K ohms on any of the circuits? Yes → Repair all Rear Blower Motor Driver circuits with a resistance below 10K ohms for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the Rear Blower switch on the A/C - Heater Control Module off. Turn the Power switch on the A/C - Heater Control Module off. Turn the ignition off. Disconnect the Rear Blower Rear Control Switch C1 harness connector. Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. Turn the Rear Blower switch on the A/C - Heater Control Module to the Low, Medium, and High speed positions while listening for the rear blower motor to change speed accordingly. Does the rear blower speed change accordingly? Yes → Replace the Rear Blower Rear Control Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the Power switch on the A/C - Heater Control Module off. Turn the ignition off. Disconnect the Rear Blower Front Control Switch harness connector. Disconnect the Rear Blower Rear Control Switch C1 harness connector. Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connect to ground, back probe each of the Rear Blower Motor Driver circuits (Low, Medium, and High) in the Rear Blower Front Control Switch harness connector and in the Rear Blower Rear Control Switch C1 harness connector. Does the test light illuminate brightly on each circuit? Yes → Go To 6 No → Go To 10	All

*REAR BLOWER MOTOR SPEEDS INCORRECT - MTC — Continued

TEST	ACTION	APPLICABILITY
6	Turn the Power switch on the A/C - Heater Control Module off. Turn the ignition off. Disconnect the Rear Blower Front Control Switch harness connector. Disconnect the Rear Blower Rear Control Switch C1 harness connector. Turn the ignition on Measure the voltage of each of the Rear Blower Motor Driver circuits (Low, Medium, and High). Is there voltage present on any of the circuits? Yes → Repair all Rear Blower Motor Driver circuits with voltage present for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the Power switch on the A/C - Heater Control Module off. Turn the ignition off. Disconnect the Rear Blower Front Control Switch harness connector. Disconnect the Rear Blower Rear Control Switch C1 harness connector. Turn the ignition on Measure the voltage of the Rear Blower Motor Front Control Feed circuit. Is there any voltage present? Yes → Repair the Rear Blower Motor Front Control Feed circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off. Disconnect the Rear Blower Front Control Switch harness connector. Disconnect the Rear Blower Rear Control Switch C1 harness connector. Measure the resistance between the Rear Blower Motor Front Control Feed circuit and each of the Rear Blower Motor Driver circuits (Low, Medium, and High). Is the resistance below 10K ohms on any of the circuits? Yes → Repair all Rear Blower Motor Driver circuits with a resistance below 10K ohms for a short to the Rear Blower Motor Front Control Feed circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off. Disconnect the Rear Blower Front Control Switch harness connector. Disconnect the Rear Blower Rear Control Switch C1 harness connector. Disconnect the Rear Blower Motor Resistor Block harness connector. Measure the resistance between the Rear Blower Motor Low circuit and the Rear Blower Motor Medium and High circuits. Measure the resistance between the Rear Blower Motor Medium circuit and the Rear Blower Motor High circuit. Is the resistance below 10K ohms between any of the circuits? Yes → Repair the shorted Rear Blower Motor Driver circuits. Perform BODY VERIFICATION TEST - VER 1. No → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

*REAR BLOWER MOTOR SPEEDS INCORRECT - MTC — Continued

TEST	ACTION	APPLICABILITY
10	Turn the ignition off. Disconnect the Rear Blower Front Control Switch harness connector. Disconnect the Rear Blower Rear Control Switch C1 harness connector. Disconnect the Rear Blower Motor Resistor Block harness connector. Measure the resistance of each of the Rear Blower Motor Driver circuits (Low, Medium, and High) between the Rear Blower Motor Resistor Block harness connector and the Rear Blower Motor Front Control Switch harness connector. Measure the resistance of each of the Rear Blower Motor Driver circuits (Low, Medium, and High) between the Rear Blower Motor Resistor Block harness connector and the Rear Blower Rear Control Switch C1 harness connector. Is the resistance below 5.0 ohms on each of the circuits? Yes → Replace the Rear Blower Motor Resistor Block in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair all Rear Blower Motor Driver circuit(s) with a resistance above 5 ohms for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***REAR BLOWER REAR CONTROL SWITCH INOP IN ONE OR MORE SPEEDS - MTC**

POSSIBLE CAUSES
REAR BLOWER MOTOR DRIVER CIRCUIT(S) OPEN
REAR BLOWER REAR CONTROL SWITCH
REAR BLOWER MOTOR FRONT CONTROL FEED CIRCUIT OPEN
A/C - HEATER CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Rear Blower Rear Control Switch C1 harness connector. Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Using a 12-volt test light connected to ground, back probe each of the Rear Blower Motor Driver circuits (Low, Medium, and High). Does the test light illuminate brightly on each circuit? Yes → Go To 2 No → Repair all Rear Blower Motor Driver circuits that failed to illuminate the test light brightly for an open. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the Power switch on the A/C - Heater Control Module off. Turn the ignition off. Make sure that the Rear Blower Rear Control C1 harness connector is connected to the Rear Blower Rear Control Switch. Using a jumper wire connected to ground, back probe the Rear Blower Motor Front Control Feed circuit in the Rear Blower Rear Control Switch C1 harness connector. Turn the ignition on. Turn the Power switch on the A/C - Heater Control Module on. Turn the Blower switch on the Rear Blower Rear Control Switch to each speed position. Does the rear blower run in all speeds? Yes → Go To 3 No → Replace the Rear Blower Rear Control Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

*REAR BLOWER REAR CONTROL SWITCH INOP IN ONE OR MORE SPEEDS - MTC — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Rear Blower Front Control Switch harness connector. Disconnect the Rear Blower Rear Control Switch C1 harness connector. Measure the resistance of the Rear Blower Motor Front Control Feed circuit between the Rear Blower Front Control Switch harness connector and the Rear Blower Rear Control Switch C1 harness connector. Is the resistance below 5.0 ohms? Yes → Replace the A/C - Heater Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Rear Blower Motor Front Control Feed circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

ACCESSORY POWER OUTPUT 1 OPEN

When Monitored and Set Condition:

ACCESSORY POWER OUTPUT #1 OPEN

When Monitored: Continuously with the ignition on.

Set Condition: The FCM has detected an open in the Accessory Relay control circuit.

POSSIBLE CAUSES
FRONT CONTROL MODULE
FUSE & RELAY CENTER INTERNAL MALFUNCTION
ACCESSORY RELAY
FRONT CONTROL MODULE
INTERMITTENT CONDITION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display both the ACCESSORY POWER OUTPUT OPEN trouble codes? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition off. Disconnect the Accessory Relay from the Fuse & Relay Center. Connect a known good relay to the Accessory Relay location in the Fuse & Relay Center. Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display both the ACCESSORY POWER OUTPUT OPEN trouble codes? Yes → Replace the Fuse and Relay Center. Perform BODY VERIFICATION TEST - VER 1. No → Replace the original Accessory Relay. Perform BODY VERIFICATION TEST - VER 1.	All

ACCESSORY POWER OUTPUT 1 OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display the ACCESSORY POWER OUTPUT 1 OPEN trouble code? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display the ACCESSORY POWER OUTPUT #2 OPEN trouble code? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → This symptom represents an internal malfunction in the Front Control Module. The condition that caused this symptom is currently not present. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

ACCESSORY POWER OUTPUT 1 SHORT TO B+

When Monitored and Set Condition:

ACCESSORY POWER OUTPUT #1 SHORT TO B+

When Monitored: Continuously with the ignition on.

Set Condition: The FCM has detected a short to battery voltage in the Accessory Relay control circuit.

POSSIBLE CAUSES
FRONT CONTROL MODULE
FUSE & RELAY CENTER INTERNAL MALFUNCTION
ACCESSORY RELAY
FRONT CONTROL MODULE
INTERMITTENT CONDITION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display both ACCESSORY POWER OUTPUT SHORTED TO BATTERY trouble codes? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition off. Disconnect the Accessory Relay from the Fuse & Relay Center. Connect a known good relay to the Accessory Relay location in the Fuse & Relay Center. Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display both ACCESSORY POWER OUTPUT SHORTED TO BATTERY trouble codes? Yes → Replace the Fuse and Relay Center. Perform BODY VERIFICATION TEST - VER 1. No → Replace the original Accessory Relay. Perform BODY VERIFICATION TEST - VER 1.	All

ACCESSORY POWER OUTPUT 1 SHORT TO B+ — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display the ACCESSORY POWER OUTPUT #1 SHORTED TO BATTERY trouble code? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display the ACCESSORY POWER OUTPUT #2 OPEN trouble code? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → This symptom represents an internal malfunction in the Front Control Module. The condition that caused this symptom is currently not present. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

ACCESSORY POWER OUTPUT 2 OPEN

When Monitored and Set Condition:

ACCESSORY POWER OUTPUT 2 OPEN

When Monitored: Continuously with the ignition on.

Set Condition: The FCM has detected an open in the Accessory Relay control circuit.

POSSIBLE CAUSES
FRONT CONTROL MODULE
FUSE & RELAY CENTER INTERNAL MALFUNCTION
ACCESSORY RELAY
FCM
INTERMITTENT CONDITION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display both ACCESSORY POWER OUTPUT OPEN trouble codes? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition off. Disconnect the Accessory Relay from the Fuse & Relay Center. Connect a known good relay to the Accessory Relay location in the Fuse & Relay Center. Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display both ACCESSORY POWER OUTPUT OPEN trouble codes? Yes → Replace the Fuse and Relay Center. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Accessory Relay. Perform BODY VERIFICATION TEST - VER 1.	All

ACCESSORY POWER OUTPUT 2 OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display the ACCESSORY POWER OUTPUT #1 OPEN trouble code? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display the ACCESSORY POWER OUTPUT #2 OPEN trouble code? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → This symptom represents an internal malfunction in the Front Control Module. The condition that caused this symptom is currently not present. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

ACCESSORY POWER OUTPUT 2 SHORT TO B+

When Monitored and Set Condition:

ACCESSORY POWER OUTPUT 2 SHORT TO B+

When Monitored: Continuously with the ignition on.

Set Condition: The FCM has detected a short to battery voltage in the Accessory Relay control circuit.

POSSIBLE CAUSES
FRONT CONTROL MODULE
FUSE & RELAY CENTER INTERNAL MALFUNCTION
ACCESSORY RELAY
FRONT CONTROL MODULE
INTERMITTENT CONDITION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display both ACCESSORY POWER OUTPUT SHORTED TO BATTERY trouble codes? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition off. Disconnect the Accessory Relay from the Fuse & Relay Center. Connect a known good relay to the Accessory Relay location in the Fuse & Relay Center. Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display both ACCESSORY POWER OUTPUT SHORTED TO BATTERY trouble codes? Yes → Replace the Fuse and Relay Center. Perform BODY VERIFICATION TEST - VER 1. No → Replace the original Accessory Relay. Perform BODY VERIFICATION TEST - VER 1.	All

ACCESSORY POWER OUTPUT 2 SHORT TO B+ — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display the ACCESSORY POWER OUTPUT #1 SHORTED TO BATTERY trouble code? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display the ACCESSORY POWER OUTPUT #2 SHORTED TO BATTERY trouble code? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → This symptom represents an internal malfunction in the Front Control Module. The condition that caused this symptom is currently not present. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

CPA NOT ENGAGED

When Monitored and Set Condition:

CPA NOT ENGAGED

When Monitored: Continuously with the ignition on.

Set Condition: If the connector positive assurance lock is not fully engaged, the Front Control Module will detect battery voltage on the B(+) Sense circuit. With voltage present, the FCM determines that there is a poor connection at connector C5 of the Fuse and Relay Center.

POSSIBLE CAUSES
FRONT CONTROL MODULE INTERNAL MALFUNCTION
FUSE AND RELAY CENTER INTERNAL MALFUNCTION
INTERMITTENT CONDITION
CONNECTOR POSITIVE ASSURANCE LOCK

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display: CPA NOT ENGAGED? Yes → Go To 2 No → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Front Control Module from the Fuse and Relay Center. Measure the voltage of the B(+) Sense circuit at the Fuse and Relay Center side of the FCM connector. Is the voltage above 10.0 volts? Yes → Go To 3 No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

CPA NOT ENGAGED — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Inspect connector C5 on the Fuse and Relay Center, ensure the connector lock is properly seated into the connector. Measure the voltage of the B(+) Sense circuit at the Fuse and Relay Center side of the FCM connector. Is the voltage above 10.0 volts? Yes → Replace the Fuse and Relay Center. Perform BODY VERIFICATION TEST - VER 1. No → Verify the Connector Positive Assurance lock is correctly seated. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
HORN INPUT STUCK

When Monitored and Set Condition:

HORN INPUT STUCK

When Monitored: Continuously with the ignition on.

Set Condition: The FCM has detected a fault in the Horn Switch Sense circuit.

POSSIBLE CAUSES
FRONT CONTROL MODULE INTERNAL MALFUNCTION
HORN SWITCH SENSE CIRCUIT SHORT TO GROUND
INTERMITTENT CONDITION
FUSE AND RELAY CENTER INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display: HORN INPUT STUCK? Yes → Go To 2 No → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect connector C7 on the Fuse and Relay Center. Measure the resistance between ground and the Horn Switch Sense circuit at the Fuse and Relay Center C7 connector. Is the resistance below 5.0 ohms? Yes → Repair the Horn Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the Front Control Module from the Fuse and Relay Center. Measure the resistance between ground and the Horn Switch Sense circuit at the Fuse and Relay Center side of the FCM connector. Is the resistance below 5.0 ohms? Yes → Replace the Fuse and Relay Center. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
HORN RELAY OPEN

When Monitored and Set Condition:

HORN RELAY OPEN

When Monitored: Continuously with the ignition on.

Set Condition: The FCM has detected an open in the Horn Relay Control circuit.

POSSIBLE CAUSES
FUSE AND RELAY CENTER INTERNAL MALFUNCTION
HORN RELAY
INTERMITTENT CONDITION
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display: HORN RELAY OPEN? Yes → Go To 2 No → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Remove the Horn Relay from the Fuse and Relay Center. Substitute the original Horn Relay with a known good relay. Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTCs. Turn the engine off, wait 10 seconds then turn the ignition on. Attempt to operate the horn. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display: HORN RELAY OPEN? Yes → Go To 3 No → Replace the Horn Relay. Perform BODY VERIFICATION TEST - VER 1.	All

HORN RELAY OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Remove the Horn Relay from the Fuse and Relay Center. Disconnect the Front Control Module from the Fuse and Relay Center. Measure the resistance of the Horn Relay Control circuit between the FCM connector cavity 10 and the Horn Relay connector cavity 85. Is the resistance below 5.0 ohms? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Fuse and Relay Center. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

HORN RELAY SHORTED TO B+

When Monitored and Set Condition:

HORN RELAY SHORTED TO BATTERY

When Monitored: Continuously with the ignition on.

Set Condition: The FCM has detected a short to battery in the Horn Relay Control circuit.

POSSIBLE CAUSES
FUSE AND RELAY CENTER INTERNAL MALFUNCTION
HORN RELAY
INTERMITTENT CONDITION
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display: HORN RELAY SHORTED TO BATTERY? Yes → Go To 2 No → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Remove the Horn Relay from the Fuse and Relay Center. Substitute the original Horn Relay with a known good relay. Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTCs. Turn the ignition off, wait 10 seconds, then turn the ignition on. Attempt to operate the horn. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display: HORN RELAY SHORTED TO BATTERY? Yes → Go To 3 No → Replace the Horn Relay. Perform BODY VERIFICATION TEST - VER 1.	All

HORN RELAY SHORTED TO B+ — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Front Control Module from the Fuse and Relay Center. Disconnect the Horn Relay from the Fuse and Relay Center. Measure the voltage of the Horn Relay Control circuit at the Fuse and Relay Center side of the FCM connector. Is the voltage above 10.0 volts? Yes → Replace the Fuse and Relay Center. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
IGNITION MUX SWITCH INPUT OPEN

When Monitored and Set Condition:

IGNITION MUX SWITCH INPUT OPEN

When Monitored: With the ignition on and battery voltage greater than 10.4 volts.

Set Condition: The Ignition MUX sense circuit voltage at the BCM goes above 4.9 volts.

POSSIBLE CAUSES
IGNITION SWITCH SENSE CIRCUIT SHORTED TO VOLTAGE
IGNITION SWITCH FAILURE
IGNITION SWITCH SENSE RETURN CIRCUIT OPEN
BODY CONTROL MODULE
IGNITION SWITCH SENSE CIRCUIT OPEN
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Ignition Switch 5-way connector. Turn the ignition on. Measure the voltage of the Ignition Switch Sense circuit. Is the voltage above 5.5 volts? Yes → Repair the Ignition Switch Sense circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Disconnect the Ignition Switch 5-way connector. Connect a jumper wire between the Ignition Switch Sense circuit and ground. With the DRBIII® in Sensors, read the IGNITION SW voltage. Does the DRBIII® display IGNITION SW 0.0 volts? Yes → Go To 3 No → Go To 5	All
3	Turn the ignition off. Disconnect the Ignition Switch 5-way connector. Connect a jumper wire between the Ignition Switch Sense circuit and the Ignition Switch Sense Return circuit. With the DRBIII® in Sensors, read the IGNITION SW voltage. Does the DRBIII® display IGNITION SW 0.0 volts? Yes → Replace the Ignition Switch in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

IGNITION MUX SWITCH INPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Reconnect the Ignition Switch 5-way connector. Gain access to the Body Control Module C4 connector. Backprobe a jumper wire between the Ignition Switch Sense Return circuit and ground. With the DRBIII® in Sensors, read the IGNITION SW voltage. Does the DRBIII® display IGNITION SW 0.0 volts? Yes → Repair the Ignition Switch Sense Return circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Gain access to the Body Control Module C5 connector. Backprobe a jumper wire between the Ignition Switch Sense circuit and ground. With the DRBIII® in Sensors, read the IGNITION SW voltage. Does the DRBIII® display IGNITION SW 0.0 volts? Yes → Repair the Ignition Switch Sense circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
IGNITION MUX SWITCH INPUT SHORT

When Monitored and Set Condition:

IGNITION MUX SWITCH INPUT SHORT

When Monitored: With the ignition on and battery voltage greater than 10.4 volts.

Set Condition: The Ignition MUX Sense circuit voltage at the BCM goes below 0.5 volt for more than 2 seconds.

POSSIBLE CAUSES
IGNITION SWITCH SHORTED
IGNITION SWITCH SENSE CIRCUIT SHORTED TO GROUND
IGNITION SWITCH SENSE CIRCUIT SHORTED TO IGNITION SWITCH SENSE RETURN CIRCUIT
IGNITION SWITCH SENSE RETURN CIRCUIT SHORTED TO GROUND
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Ignition Switch 5-way connector. With the DRBIII® in Sensors, read the IGNITION SW voltage. Does the DRBIII® display IGNITION SW 0.0 volts? Yes → Go To 2 No → Replace the Ignition Switch in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Ignition Switch 5-way connector. Disconnect the Body Control Module C5 connector. Measure the resistance between ground and the Ignition Switch Sense circuit in the BCM C5 connector. Is the resistance below 10K ohms? Yes → Repair the Ignition Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

IGNITION MUX SWITCH INPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Gain access to the Body Control Module. Disconnect the Body Control Module C4 and C5 harness connectors. Disconnect the Ignition Switch 5-way harness connector. Measure the resistance between the Ignition Switch Sense circuit and the Ignition Switch Sense Return circuit. Is the resistance below 10K ohms? Yes → Repair the Ignition Switch Sense circuit for a short to the Ignition Switch Sense Return circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the Ignition Switch 5-way connector. Disconnect the Body Control Module C4 connector. Measure the resistance between ground and the Ignition Switch Sense Return circuit in the BCM C4 connector. Is the resistance below 10K ohms? Yes → Repair the Ignition Switch Sense Return circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
IGNITION RUN OUTPUT SHORT

When Monitored and Set Condition:

IGNITION RUN OUTPUT SHORT

When Monitored: With the ignition on and battery voltage greater than 10.4 volts.

Set Condition: This DTC will set if the Body Control Module (BCM) sees voltage below 0.5 volt for more than two seconds on the Ignition Switch Output (Run) circuits.

POSSIBLE CAUSES
TEST FOR CURRENT DTCS
MODULE OR COMPONENT FAULT
FUSED IGNITION SWITCH OUTPUT (RUN) CIRCUIT SHORTED TO GROUND
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII® in Body Computer, record and erase BCM DTCs. Cycle the ignition from ON to OFF. Start the engine. With the DRBIII® in Body Computer, read BCM DTCs. Does the DRBIII® display IGNITION RUN OUTPUT SHORT? Yes → Go To 2 No → The condition that caused this DTC is currently not present. Use the wiring diagram/schematic as a guide, and inspect the related wiring harness for a possible intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All

IGNITION RUN OUTPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
2	**NOTE: Repeat this test until either the DTC is no longer present or all of the modules and components are disconnected from the Fused Ignition Switch Output (Run) circuit and the DTC is still present.** Turn the ignition off. Verify which of these modules and components are used on the vehicle you are diagnosing: HVAC (ATC or MTC); Rear ATC Control Switch; IP Switch Bank; Auto Daylight Mirror; Overhead Console; Heated Seat Module (Driver/Pass); Controller Antilock Brake. **NOTE: For the result of this test to be valid, disconnect only one module or component at a time and then verify if the DTC is still present.** Using the wiring diagram/schematic as a guide, disconnect the harness connector with the Fused Ignition Switch Output (Run) circuit from one module or component identified above. **NOTE: Check connectors - Clean/repair as necessary.** Turn the ignition on. With the DRBIII® in Body Computer, erase BCM DTCs. Cycle the ignition form ON to OFF. Start the engine. With the DRBIII® in Body Computer, read BCM DTCs. Does the DRBIII® display IGNITION RUN OUTPUT SHORT? Yes (All Modules/Components Disconnected Go To 3 No → Replace the module or the component that when disconnected did not reset the DTC in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
3	**NOTE: All modules and components identified in Test Number 2 must be disconnected from the BCM's Fused Ignition Switch Output (Run) circuit and the DTC must still be present for the result of this test to be valid.** Turn the ignition off. Disconnect the Body Control Module (BCM) C3 and C4 harness connectors. Measure the resistance between ground and the Fused Ignition Switch Output (Run) circuits in the BCM C3 harness connector. Measure the resistance between ground and the Fused Ignition Switch Output (Run) circuit in the BCM C4 harness connector. Is the resistance below 10K ohms on any of the circuits? Yes → Repair the Fused Ignition Switch Output (Run) circuit(s) with a resistance below 10K ohms for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module (BCM) in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
IGNITION RUN/START INPUT WIRING

When Monitored and Set Condition:

IGN RUN/START INPUT WIRING

When Monitored: With the ignition on and battery voltage greater than 10.4 volts.

Set Condition: The Fused Ignition Switch Output circuit voltage at the FCM goes below 0.5 volts.

POSSIBLE CAUSES
TEST FOR CURRENT DTC'S
FRONT CONTROL MODULE INTERNAL MALFUNCTION
FUSE AND RELAY CENTER INTERNAL MALFUNCTION
FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase the current Front Control Module DTC's. Cycle the ignition from ON to OFF. Start the vehicle and observe the DRBIII®. With the DRBIII®, read DTC's. Does the DRBIII® display: IGNITION RUN-START INPUT WIRING? Yes → Go To 2 No → The condition that caused this DTC is currently not present. Use the wiring diagram/schematic as a guide, and inspect the related wiring harness for a possible intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Front Control Module from the Fuse and Relay Center. Measure the voltage of the Fused Ignition Switch Output circuit (cavity 37) at the Fuse and Relay Center side of the FCM connector. Turn the ignition on. Is the voltage above 10.0 volts? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

IGNITION RUN/START INPUT WIRING — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Gain access to the bottom of the Fuse and Relay Center. Disconnect connector C9 from the Fuse and Relay Center. Measure the resistance of the Fused Ignition Switch Output circuit between the FCM connector cavity 37 and the Fuse and Relay Center connector C9 cavity 2. Is the resistance below 5.0 ohms? Yes → Repair the Fused Ignition Switch Output circuit for an open between the Fuse and Relay Center and the ignition switch. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Fuse and Relay Center. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
IGNITION START INPUT WIRING

When Monitored and Set Condition:

IGNITION START INPUT WIRING

When Monitored: With the ignition on and battery voltage greater than 10.4 volts.

Set Condition: The Fused Ignition Switch Output (Start) circuit voltage at the FCM goes below 0.5 volts.

POSSIBLE CAUSES
TEST FOR CURRENT DTC'S
FRONT CONTROL MODULE INTERNAL MALFUNCTION
FUSE AND RELAY CENTER INTERNAL MALFUNCTION
FUSED IGNITION SWITCH OUTPUT (START) CIRCUIT OPEN

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase the current Front Control Module DTC's. Cycle the ignition from ON to OFF. Start the vehicle and observe the DRBIII®. With the DRBIII®, read DTC's. Does the DRBIII® display: IGNITION START INPUT WIRING? Yes → Go To 2 No → The condition that caused this DTC is currently not present. Use the wiring diagram/schematic as a guide, and inspect the related wiring harness for a possible intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Front Control Module from the Fuse and Relay Center. Measure the voltage of the Fused Ignition Switch Output (Start) circuit (cavity 19) at the Fuse and Relay Center side of the FCM connector. Turn the ignition to the start position and monitor the voltage reading. Is the voltage above 10.0 volts with the ignition switch in the start position? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

IGNITION START INPUT WIRING — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Gain access to the bottom of the Fuse and Relay Center. Disconnect connector C9 from the Fuse and Relay Center. Measure the resistance of the Fused Ignition Switch Output circuit between the FCM connector cavity 37 and the Fuse and Relay Center connector C9 cavity 2. Is the resistance below 5.0 ohms? Yes → Repair the Fused Ignition Switch Output (Start) circuit for an open between the Fuse and Relay Center and the ignition switch. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Fuse and Relay Center. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INTERNAL DRIVER FAULT #1

When Monitored and Set Condition:

INTERNAL DRIVER FAULT #1

When Monitored: Continuously with the ignition on.

Set Condition: The Front Control Module has detected an internal malfunction of the module.

POSSIBLE CAUSES
FRONT CONTROL MODULE INTERNAL MALFUNCTION
INTERMITTENT CONDITION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display: INTERNAL DRIVER FAULT #1? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → This symptom represents an internal malfunction in the Front Control Module. The condition that caused this symptom is currently not present. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INTERNAL DRIVER FAULT #2

When Monitored and Set Condition:

INTERNAL DRIVER FAULT #2

When Monitored: Continuously with the ignition on.

Set Condition: The Front Control Module has detected an internal malfunction of the module.

POSSIBLE CAUSES
FRONT CONTROL MODULE INTERNAL MALFUNCTION
INTERMITTENT CONDITION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display: INTERNAL DRIVER FAULT #2? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → This symptom represents an internal malfunction in the Front Control Module. The condition that caused this symptom is currently not present. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INTERNAL DRIVER FAULT #3

When Monitored and Set Condition:

INTERNAL DRIVER FAULT #3

When Monitored: Continuously with the ignition on.

Set Condition: The Front Control Module has detected an internal malfunction of the module.

POSSIBLE CAUSES
FRONT CONTROL MODULE INTERNAL MALFUNCTION
INTERMITTENT CONDITION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current Front Control Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current Front Control Module DTC's. Does the DRBIII® display: INTERNAL DRIVER FAULT #3? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → This symptom represents an internal malfunction in the Front Control Module. The condition that caused this symptom is currently not present. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RUN/START HARDWARE INPUT FAILURE

When Monitored and Set Condition:

RUN/START HARDWARE INPUT FAILURE

When Monitored: With the ignition on and battery voltage greater than 10.4 volts.

Set Condition: The Fused Ignition Switch Output circuit voltage at the BCM goes below 0.5 volts and the BCM detects a voltage mismatch between the two ignition switch inputs.

POSSIBLE CAUSES
TEST FOR CURRENT DTC'S
FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
IGNITION SWITCH
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Cycle the ignition from ON to OFF. Start the vehicle and observe the DRBIII®. With the DRBIII®, read DTC's. Does the DRBIII® display RUN/START HARDWIRE INPUT FAILURE? Yes → Go To 2 No → The condition that caused this DTC is currently not present. Use the wiring diagram/schematic as a guide, and inspect the related wiring harness for a possible intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Gain access to the Ignition Switch connector. Turn the ignition on. While back probing, measure the voltage of the Fused Ignition Switch Output (Run/Start) circuit. Is the voltage above 10.0 volts? Yes → Go To 3 No → Replace the Ignition Switch in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All

RUN/START HARDWARE INPUT FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Gain access to the Body Control Module C2 connector. While back probing, measure the voltage of the Fused Ignition Switch Output (Run/Start) circuit. Is the voltage above 10.0 volts? Yes → Repair the Fused Ignition Switch Output circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module in accordance with the service information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

ABS LAMP CKT SHORT
ABS LAMP OPEN
AIRBAG LAMP CKT SHORT
AIRBAG LAMP OPEN

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be ABS LAMP CKT SHORT.

POSSIBLE CAUSES
INSTRUMENT CLUSTER

TEST	ACTION	APPLICABILITY
1	**NOTE: The Instrument Cluster performs internal tests on the ABS and Airbag indicator lamps during each ignition cycle. Instrument cluster LEDs are not replaceable.** Turn the ignition on. With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 15 seconds, then turn the ignition on. With the DRBIII®, read DTCs. Did the DTC reset? Yes → Replace the Instrument Cluster in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
EL PANEL SHORT

POSSIBLE CAUSES
CHECK EXTERIOR ILLUMINATION
CHECK OPERATION OF ALL GAUGES
VERIFY CONCERN
PANEL LAMP DRIVER CIRCUIT SHORT TO GROUND
PANEL LAMP DRIVER OPEN CIRCUIT
OPEN GROUND CIRCUIT
BCM PANEL LAMP DRIVER CIRCUIT INTERNAL FAILURE
INSTRUMENT CLUSTER PANEL LAMPS DRIVER INTERNAL FAILURE

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. Turn the Headlamp Switch to the ON position. Monitor the Instrument Cluster gauges for illumination. Are any Instrument Cluster gauges illuminated? Yes → Go To 3 No → Go To 2	All
2	Ignition on, engine not running. Turn the Headlamp Switch to the ON position. Monitor the Instrument Cluster gauges for illumination. Are all of the Instrument Cluster gauges illuminated? Yes → Go To 3 No → Replace the Instrument Cluster. Perform BODY VERIFICATION TEST - VER 1.	All
3	Ignition on, engine not running. Turn the headlamp switch to the ON position. Monitor the Headlamps for illumination. Are the Headlamps illuminated? Yes → Go To 4 No → Refer to EXTERIOR ILLUMINATION for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
4	Ignition on, engine not running. With the DRBIII®, erase DTCs. Cycle the ignition switch from OFF to ON. Wait 1 to 2 minutes for the system to cycle. With the DRBIII®, read DTCs. Did the DTC reset? Yes → Go To 5 No → Perform the Instrument Cluster Self-Test and verify the concern. Perform BODY VERIFICATION TEST - VER 1.	All

EL PANEL SHORT — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Measure the resistance between ground and the Panel Lamps Driver circuit (Instrument Cluster harness). Disconnect the BCM C2 harness connector. Is the resistance above 10,000 ohms? Yes → Go To 6 No → Repair the Panel Lamps Driver Circuit for a Short to Ground. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the BCM C2 harness connector. Disconnect the Instrument Cluster harness connector. Measure the resistance of the Panel Lamps Driver circuit between the BCM C2 connector and the Instrument Cluster connector. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the Panel Lamp Driver Circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
7	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Measure the resistance of the Instrument Cluster harness ground circuits. Are the resistances below 5.0 ohms? Yes → Go To 8 No → Repair Instrument Cluster ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
8	Turn the ignition off. Disconnect the BCM C2 harness connector. Connect a jumper wire between Panel Lamps Driver circuit (BCM C2 harness) and B(+). Turn the ignition on. Monitor the Instrument Cluster gauges for illumination. Did the Instrument Cluster gauges illuminate? Yes → Replace the Body Control Module. With the DRBIII, erase DTC's. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
FRONT FOG LAMP INDICATOR OPEN

POSSIBLE CAUSES
INTERMITTENT WIRING AND CONNECTORS
FRONT FOG LAMP INDICATOR CIRCUIT OPEN
FRONT FOG LAMP INDICATOR GROUND CIRCUIT OPEN
FRONT FOG LAMP INDICATOR CIRCUIT SHORT TO VOLTAGE
HEADLAMP SWITCH
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, record and erase Body Control Module DTC's. Turn the ignition off, wait 15 seconds, then turn the ignition on. Turn on the Front Fog Lamps. With the DRBIII®, read DTCs. Does the DRBIII® display FRONT FOG LAMP INDICATOR OPEN? Yes → Go To 2 No → Go To 8	All
2	Turn the ignition off to the lock position. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Turn ON the Front Fog Lamps. Using a 12-volt test light connected to ground, back probe the Front Fog Lamp Indicator circuit in the Headlamp Switch harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 3 No → Go To 6	All
3	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Headlamp Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Front Fog Lamp Indicator Ground circuit from the Body Control Module harness connector to the Headlamp Switch harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Front Fog Lamp Indicator Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

FRONT FOG LAMP INDICATOR OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Headlamp Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Measure the voltage of the Front Fog Lamp Indicator circuit in the Headlamp Switch harness connector. Is the voltage above 0.5 volt? Yes → Repair the Front Fog Lamp Indicator circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	If there are no possible causes remaining, view repair. Repair Replace the Headlamp Switch. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Headlamp Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Front Fog Lamp Indicator circuit from the Body Control Module harness connector to the Headlamp Switch harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Front Fog Lamp Indicator circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
8	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
FRONT FOG LAMP INDICATOR SHORT TO GROUND

POSSIBLE CAUSES
INTERMITTENT WIRING AND CONNECTORS
FRONT FOG LAMP INDICATOR CIRCUIT SHORT TO GROUND
HEADLAMP SWITCH
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, record and erase Body Control Module DTC's. Turn the ignition off, wait 15 seconds, then turn the ignition on. With the DRBIII®, read DTCs. Does the DRBIII® display FRONT FOG LAMP INDICATOR SHORT TO GROUND? Yes → Go To 2 No → Go To 6	All
2	Turn the ignition off to the lock position. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Turn ON the Front Fog Lamps. Using a 12-volt test light connected to ground, back probe the Rear Fog Lamp Indicator circuit in the Headlamp Switch harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 3 No → Go To 4	All
3	If there are no possible causes remaining, view repair. Repair Replace the Headlamp Switch. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Headlamp Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Front Fog Lamp Indicator circuit. Is the resistance below 5.0 ohms? Yes → Repair the Front Fog Lamp Indicator circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

FRONT FOG LAMP INDICATOR SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
6	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom List:

FUEL GAUGE CHECKSUM FAILURE
SPEEDOMETER CHECKSUM FAILURE
TACHOMETER CHECKSUM FAILURE
TEMPERATURE GAUGE CHECKSUM FAILURE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be FUEL GAUGE CHECKSUM FAILURE.

POSSIBLE CAUSES
INSTRUMENT CLUSTER

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 15 seconds, then turn the ignition on. With the DRBIII®, read DTCs. Did the Checksum DTC reset? Yes → Replace the Instrument Cluster in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
FUEL LEVEL SENDING UNIT INPUT OPEN

When Monitored and Set Condition:

FUEL LEVEL SENDING UNIT INPUT OPEN

When Monitored: With the ignition on.

Set Condition: Fuel Level Input to the BCM is greater than 9.8 volts for greater than 62.5 milliseconds.

POSSIBLE CAUSES
INTERMITTENT CONDITION
FUEL LEVEL SENSOR SIGNAL SHORTED TO B+
GROUND CIRCUIT OPEN
FUEL LEVEL SENDING UNIT
FUEL LEVEL SENSOR SIGNAL CIRCUIT OPEN
BCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase DTCs. Cycle the ignition off and on, leaving ignition key on for at least 15 seconds. With the DRBIII® in Body Computer, read DTCs. Does the DTC reset? Yes → Go To 2 No → Go To 7	All
2	Turn the ignition off. Disconnect the Fuel Tank Module harness connector. Turn the ignition on. **NOTE: The BCM sends out a low current 12 volt signal on the Fuel Level Sensor Signal circuit. This low current should not illuminate a 12 volt test light.** Using a 12-volt test light connected to ground, probe the Fuel Level Sensor Signal circuit in the Fuel Tank Module harness connector. Does the test light illuminate? Yes → Repair the Fuel Level Sensor Signal circuit shorted to battery voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

FUEL LEVEL SENDING UNIT INPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition on. Disconnect the Fuel Tank Module harness connector. Measure the resistance of the Ground circuits in the Fuel Tank Module harness connector. Is the resistance below 5.0 ohms for both measurements? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Fuel Tank Module harness connector. Turn the ignition on. With the DRBIII® in Body Computer then Sensors, monitor the Fuel Sensor. Using a jumper wire, jumper the Fuel Level Sensor Signal circuit to the ground circuit in the Fuel Tank Module harness connector. Does the DRB display below 0.5 volt? Yes → Replace the Fuel Level Sending Unit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Fuel Tank Module harness connector. Disconnect the BCM C3 harness connector. Measure the resistance of the Fuel Level Sensor Signal circuit between the Fuel Tank Module harness connector and the BCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Fuel Level Sensor Signal for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
7	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
FUEL LEVEL SENDING UNIT INPUT SHORT

When Monitored and Set Condition:

FUEL LEVEL SENDING UNIT INPUT SHORT

When Monitored: With the ignition on.

Set Condition: Fuel Level Input to the BCM is less than 2 volts for greater than 62.5 milliseconds.

POSSIBLE CAUSES
INTERMITTENT CONDITION
FUEL LEVEL SENDING UNIT
FUEL LEVEL SENSOR SIGNAL SHORTED TO GROUND
BCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase DTCs. Cycle the ignition off and on, leaving ignition key on for at least 15 seconds. With the DRBIII® in Body Computer, read DTCs. Does the DTC reset? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition on. With the DRBIII® in Body Computer and then Sensors, monitor the Fuel Sensor. Disconnect the Fuel Tank Module harness connector. Does the Fuel Sensor voltage go above 9.5 volts? Yes → Replace the Fuel Level Sending Unit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the BCM C3 harness connector. Disconnect Fuel Tank Module harness connector. Measure the resistance of the Fuel Level Sensor Signal circuit in the BCM harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the Fuel Level Sensor Signal circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

FUEL LEVEL SENDING UNIT INPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
4	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
5	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
IOD WAKEUP CLUSTER OUTPUT OPEN

When Monitored and Set Condition:

IOD WAKEUP CLUSTER OUTPUT OPEN

When Monitored: With the ignition on.

Set Condition: The BCM is active and the Instrument Cluster does not respond on the Instrument Cluster Wake Up Sense circuit.

POSSIBLE CAUSES
INTERMITTENT CONDITION
INSTRUMENT CLUSTER WAKE UP SENSE CKT OPEN
INSTRUMENT CLUSTER WAKE UP SENSE CKT SHORT TO GROUND
INSTRUMENT CLUSTER
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase DTCs. Cycle the ignition off and on several times, leaving ignition key on for at least 15 seconds. With the DRBIII® in Body Computer, read DTCs. Does the DTC reset? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition off. Disconnect the BCM C4 harness connector. Turn the ignition on. Measure the voltage of the Instrument Cluster Wake Up Sense circuit in the BCM C4 harness connector. Is the voltage above 10.0 volts? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Disconnect the BCM C4 harness connector. Measure the resistance of the Instrument Cluster Wake Up Sense circuit between the BCM C4 harness connector and the MIC harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Instrument Cluster Wake Up Sense circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

IOD WAKEUP CLUSTER OUTPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Disconnect the BCM C4 harness connector. Measure the resistance of the Instrument Cluster Wake Up Sense circuit in the MIC harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the Instrument Cluster Wake Up Sense circuit for a shorted to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Instrument Cluster. Perform BODY VERIFICATION TEST - VER 1.	All
5	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
IOD WAKEUP CLUSTER OUTPUT SHORT

When Monitored and Set Condition:

IOD WAKEUP CLUSTER OUTPUT SHORT

When Monitored: With the ignition on.

Set Condition: The BCM is active and senses the Instrument Cluster Wake Up Sense circuit shorted high.

POSSIBLE CAUSES
INTERMITTENT CONDITION
INSTRUMENT CLUSTER WAKE UP SENSE CKT SHORTED TO VOLTAGE
INSTRUMENT CLUSTER
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase DTCs. Cycle the ignition off and on several times, leaving the ignition key on for at least 15 seconds. With the DRBIII® in Body Computer, read DTCs. Does the DTC reset? Yes → Go To 2 No → Go To 4	All
2	Turn the ignition off. Disconnect the BCM C4 harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Instrument Cluster Wake Up Sense circuit. Is the test light illuminated? Yes → Go To 3 No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

IOD WAKEUP CLUSTER OUTPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the BCM C4 harness connector. Disconnect the Instrument Cluster harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Instrument Cluster Wake Up Sense circuit. Is the test light illuminated? Yes → Repair the Instrument Cluster Wake Up Sense circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Instrument Cluster. Perform BODY VERIFICATION TEST - VER 1.	All
4	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
LEFT TURN SIGNAL INDICATOR OPEN (HIGHLINE)

When Monitored and Set Condition:

LEFT TURN SIGNAL INDICATOR OPEN (HIGHLINE)

When Monitored: With the ignition on.

Set Condition: The BCM detects an open in the Left Turn Indicator Driver circuit.

POSSIBLE CAUSES
INTERMITTENT CONDITION
FUSED B+ CIRCUIT OPEN
MESSAGE CENTER OPERATION
LEFT TURN INDICATOR DRIVER SHORTED TO GROUND
LEFT TURN INDICATOR DRIVER OPEN
BCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Monitor the Left Turn Signal Indicator. Operate the Left Turn Signal. Is the Indicator lamp operating correctly? Yes → Go To 2 No → Go To 3	All
2	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

LEFT TURN SIGNAL INDICATOR OPEN (HIGHLINE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Message Center harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused B+ circuit in the Message Center harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused B+ circuit. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Message Center harness connector. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the Left Indicator Driver circuit in the Message Center harness connector. Operate the Multi-Function Switch and turn the Left Indication on. Does the test light flash on and off? Yes → Remove and inspect the Bulb. If OK, replace the Message Center. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Message Center harness connector. Disconnect the BCM C4 harness connector. Measure the resistance of the Left Turn Indicator Driver circuit at the Message Center harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the Left Turn Indicator for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off. Disconnect the Message Center harness connector. Disconnect the BCM C4 harness connector. Measure the resistance of the Left Turn Indicator Driver circuit between the BCM harness connector and the Message Center harness connector. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the Left Turn Indicator for an open. Perform BODY VERIFICATION TEST - VER 1.	All
7	If there are no possible causes remaining, view repair? Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
LEFT TURN SIGNAL INDICATOR OPEN (LOWLINE)

When Monitored and Set Condition:

LEFT TURN SIGNAL INDICATOR OPEN (LOWLINE)

When Monitored: With the ignition on.

Set Condition: The BCM detects an open in the Left Turn Indicator Driver.

POSSIBLE CAUSES
INTERMITTENT CONDITION
FUSED B+ CIRCUIT OPEN
INSTRUMENT CLUSTER
LEFT TURN INDICATOR DRIVER SHORTED TO GROUND
LEFT TURN INDICATOR DRIVER OPEN
BCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Monitor the Left Turn Signal Indicator. Operate the Left Turn Signal. Is the Indicator lamp operating correctly? Yes → Go To 2 No → Go To 3	All
2	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

LEFT TURN SIGNAL INDICATOR OPEN (LOWLINE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused B+ circuit in the Instrument Cluster harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused B+ circuit. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the Left Indicator Driver circuit in the Instrument Cluster harness connector. Operate the Multi-Function Switch and turn the Left Indication on. Does the test light flash on and off? Yes → Remove and inspect the Bulb. If OK, replace the Instrument Cluster printed circuit board. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Disconnect the BCM C4 harness connector. Measure the resistance of the Left Turn Indicator Driver circuit at the Instrument Cluster harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the Left Turn Indicator for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Disconnect the BCM C4 harness connector. Measure the resistance of the Left Turn Indicator Driver circuit between the BCM harness connector and the Instrument Cluster harness connector. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the Left Turn Indicator for an open. Perform BODY VERIFICATION TEST - VER 1.	All
7	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
LEFT TURN SIGNAL INDICATOR SHORT (HIGHLINE)

When Monitored and Set Condition:

LEFT TURN SIGNAL INDICATOR SHORT (HIGHLINE)

When Monitored: With the ignition on.

Set Condition: The BCM detects a short to voltage in the Left Turn Indicator Driver.

POSSIBLE CAUSES
INTERMITTENT CONDITION
FUSED B+ CIRCUIT
MESSAGE CENTER OPERATION
LEFT TURN INDICATOR DRIVER SHORTED TO VOLTAGE
BCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Monitor the Left Turn Signal Indicator. Operate the Left Turn Signal. Is the Indicator lamp operating correctly? Yes → Go To 2 No → Go To 3	All
2	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

LEFT TURN SIGNAL INDICATOR SHORT (HIGHLINE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Message Center harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused B+ circuit in the Message Center harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused B+ circuit. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Message Center harness connector. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the Left Indicator Driver circuit in the Message Center harness connector. Operate the Multi-Function Switch and turn the Left Indication on. Does the test light flash on and off? Yes → Remove and inspect the bulb. If OK, replace the Message Center. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Message Center harness connector. Disconnect the BCM C4 harness connector. Turn the ignition on. Measure the voltage of the Left Turn Indicator Driver circuit at the Message Center harness connector. Is the voltage above 1.0 volts? Yes → Repair the Left Turn Indicator for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair? Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
LEFT TURN SIGNAL INDICATOR SHORT (LOWLINE)

When Monitored and Set Condition:

LEFT TURN SIGNAL INDICATOR SHORT (LOWLINE)

When Monitored: With the ignition on.

Set Condition: The BCM detects a short to voltage in the Left Turn Indicator Driver.

POSSIBLE CAUSES
INTERMITTENT CONDITION
FUSED B+ CIRCUIT
INSTRUMENT CLUSTER OPERATION
LEFT TURN INDICATOR DRIVER SHORTED TO VOLTAGE
BCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Monitor the Left Turn Signal Indicator. Operate the Left Turn Signal. Is the Indicator lamp operating correctly? Yes → Go To 2 No → Go To 3	All
2	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

LEFT TURN SIGNAL INDICATOR SHORT (LOWLINE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused B+ circuit in the Instrument Cluster harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused B+ circuit. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the Left Indicator Driver circuit in the Instrument Cluster harness connector. Operate the Multi-Function Switch and turn the Left Indication on. Does the test light flash on and off? Yes → Remove and inspect the bulb. If OK, replace the Instrument Cluster printed circuit board. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Disconnect the BCM C4 harness connector. Measure the voltage of the Left Turn Indicator Driver circuit at the Instrument Cluster harness connector. Is the voltage above 1.0 volts? Yes → Repair the Left Turn Indicator for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair? Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

LOOPBACK FAILURE

POSSIBLE CAUSES
INSTRUMENT CLUSTER

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 15 seconds, then turn the ignition on. With the DRBIII®, read DTCs. Did the DTC reset? Yes → Replace the Instrument Cluster in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom List:

NO ABS BUS MESSAGES RECEIVED
NO BCM BUS MESSAGES RECEIVED
NO FCM BUS MESSAGES RECEIVED
NO ORC BUS MESSAGES RECEIVED
NO TCM BUS MESSAGES RECEIVED

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be NO ABS BUS MESSAGES RECEIVED.

POSSIBLE CAUSES
NO COMMUNICATION WITH THE ABS, BCM, FCM, ORC, OR TCM MODULE
INTERMITTENT CONDITION
INSTRUMENT CLUSTER

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, attempt to communicate with the ABS, BCM, FCM, ORC, or TCM module. Was the DRB able to I/D or communicate with the module in question? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRB, erase DTC's. Turn the ignition on and wait approximately 1 minute. With the DRB, read DTC's. Did this DTC reset? Yes → Replace the Instrument Cluster in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → The condition is not present at this time. Monitor DRBIII® parameters while wiggling the related wire harness. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness and connector terminals. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
NO PCM BUS MESSAGES RECEIVED

POSSIBLE CAUSES
PCM MESSAGE NOT RECEIVED
NO COMMUNICATION WITH THE PCM
PCI BUS CIRCUIT OPEN
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, enter Instrument Cluster, System Tests then PCM Monitor. Does the DRBIII® display: PCM is active on the BUS? Yes → Erase the DTC, if DTC resets, replace the Instrument Cluster in accordance with the Service Information.. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition on. With the DRBIII®, attempt to communicate with the PCM. Was the DRBIII® able to communicate with the PCM? Yes → Go To 3 No → Refer to the Communication category and perform the appropriate symptom. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the PCM C2 harness connector. Connect the diagnostic junction port tester #8339 to the diagnostic junction port. **NOTE: Do not connect the tester to the DRBIII®.** Measure the resistance of the PCI Bus circuit between the diagnostic junction port tester and the PCM C2 connector. Is the resistance below 5.0 ohms? Yes → Replace and program the Powertrain Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the PCI Bus circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

PANEL DIMMING OUTPUT SHORT

POSSIBLE CAUSES
INTERMITTENT WIRING AND CONNECTORS
EMIC DIMMING CIRCUIT SHORT TO GROUND
HEADLAMP SWITCH DIMMING CIRCUIT SHORT TO GROUND
HVAC MODULE DIMMING CIRCUIT SHORT TO GROUND
I/P MULTI-FUNCTION SWITCH DIMMING CIRCUIT SHORT TO GROUND
MIRROR SWITCH DIMMING CIRCUIT SHORT TO GROUND
RADIO DIMMING CIRCUIT SHORT TO GROUND
REAR BLOWER CONTROL SWITCH DIMMING CIRCUIT SHORT TO GROUND
EMIC
HEADLAMP SWITCH
I/P MULTI-FUNCTION SWITCH
MIRROR SWITCH
RADIO
REAR BLOWER CONTROL SWITCH
BODY CONTROL MODULE
HVAC MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, record and erase Body Control Module DTC's. Turn the ignition off, wait 15 seconds, then turn the ignition on. Turn on the Headlamps. With the DRBIII®, read DTCs. Does the DRBIII® display PANEL DIMMING OUTPUT SHORT? Yes → Go To 2 No → Go To 17	All
2	Turn the ignition on. With the DRBIII®, erase Body Control Module DTCs. Turn the ignition off to the lock position. Disconnect the EMIC harness connector. Turn the ignition on. Turn the Headlamps on. With the DRBIII®, read DTCs. Does the DRBIII® display PANEL DIMMING OUTPUT SHORT? Yes → Go To 3 No → Replace the EMIC in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

PANEL DIMMING OUTPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition on. With the DRBIII®, erase Body Control Module DTCs. Turn the ignition off to the lock position. Disconnect the Headlamp Switch harness connector. Turn the ignition on. With the DRBIII®, read DTCs. Does the DRBIII® display PANEL DIMMING OUTPUT SHORT? Yes → Go To 4 No → Replace the Headlamp Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition on. With the DRBIII®, erase Body Control Module DTCs. Turn the ignition off to the lock position. Disconnect the I/P Multi-Function Switch harness connector. Turn the ignition on. Turn the Headlamps on. With the DRBIII®, read DTCs. Does the DRBIII® display PANEL DIMMING OUTPUT SHORT? Yes → Go To 5 No → Replace the I/P Multi-Function Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition on. With the DRBIII®, erase Body Control Module DTCs. Turn the ignition off to the lock position. Disconnect the Mirror Switch harness connector. Turn the ignition on. Turn the Headlamps on. With the DRBIII®, read DTCs. Does the DRBIII® display PANEL DIMMING OUTPUT SHORT? Yes → Go To 6 No → Replace the Mirror Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition on. With the DRBIII®, erase Body Control Module DTCs. Turn the ignition off to the lock position. Disconnect the Rear Blower Control Switch harness connector. Turn the ignition on. Turn the Headlamps on. With the DRBIII®, read DTCs. Does the DRBIII® display PANEL DIMMING OUTPUT SHORT? Yes → Go To 7 No → Replace the Rear Blower Control Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

PANEL DIMMING OUTPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition on. With the DRBIII®, erase Body Control Module DTCs. Turn the ignition off to the lock position. Disconnect the HVAC Module harness connector. Turn the ignition on. Turn the Headlamps on. With the DRBIII®, read DTCs. Does the DRBIII® display PANEL DIMMING OUTPUT SHORT? Yes → Go To 8 No → Replace the HVAC Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
8	Turn the ignition on. With the DRBIII®, erase Body Control Module DTCs. Turn the ignition off to the lock position. Disconnect the Radio harness connector. Turn the ignition on. Turn the Headlamps on. With the DRBIII®, read DTCs. Does the DRBIII® display PANEL DIMMING OUTPUT SHORT? Yes → Go To 9 No → Replace the Radio in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
9	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the EMIC harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the EMIC Dimming circuit. Is the resistance below 5.0 ohms? Yes → Repair the EMIC Dimming circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 10	All
10	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Headlamp Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Headlamp Switch Dimming circuit. Is the resistance below 5.0 ohms? Yes → Repair the Headlamp Switch Dimming circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 11	All

PANEL DIMMING OUTPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
11	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the HVAC Module harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the HVAC Module Dimming circuit. Is the resistance below 5.0 ohms? Yes → Repair the HVAC Module Dimming circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 12	All
12	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the I/P Multi-Function Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the I/P Multi-Function Switch Dimming circuit. Is the resistance below 5.0 ohms? Yes → Repair the I/P Multi-Function Switch Dimming circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 13	All
13	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Mirror Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Mirror Switch Dimming circuit. Is the resistance below 5.0 ohms? Yes → Repair the Mirror Switch Dimming circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 14	All
14	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Rear Blower Control Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Rear Blower Control Switch Dimming circuit. Is the resistance below 5.0 ohms? Yes → Repair the Rear Blower Control Switch Dimming circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 15	All

PANEL DIMMING OUTPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
15	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Radio harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Radio Dimming circuit. Is the resistance below 5.0 ohms? Yes → Repair the Radio Dimming circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 16	All
16	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
17	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
REAR FOG INDICATOR OUTPUT OPEN

POSSIBLE CAUSES
INTERMITTENT WIRING AND CONNECTORS
REAR FOG LAMP INDICATOR CIRCUIT OPEN
REAR FOG LAMP INDICATOR GROUND CIRCUIT OPEN
REAR FOG LAMP INDICATOR CIRCUIT SHORT TO VOLTAGE
HEADLAMP SWITCH
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, record and erase Body Control Module DTC's. Turn the ignition off, wait 15 seconds, then turn the ignition on. Turn on the Rear Fog Lamps. With the DRBIII®, read DTCs. Does the DRBIII® display REAR FOG LAMP INDICATOR OPEN? Yes → Go To 2 No → Go To 8	All
2	Turn the ignition off to the lock position. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Turn ON the Rear Fog Lamps. Using a 12-volt test light connected to ground, back probe the Rear Fog Lamp Indicator circuit in the Headlamp Switch harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 3 No → Go To 6	All
3	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Headlamp Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Rear Fog Lamp Indicator Ground circuit from the Body Control Module harness connector to the Headlamp Switch harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Rear Fog Lamp Indicator Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

REAR FOG INDICATOR OUTPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Headlamp Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Measure the voltage of the Rear Fog Lamp Indicator circuit in the Headlamp Switch harness connector. Is the voltage above 0.5 volt? Yes → Repair the Rear Fog Lamp Indicator circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	If there are no possible causes remaining, view repair. Repair Replace the Headlamp Switch. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Headlamp Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Rear Fog Lamp Indicator circuit from the Body Control Module harness connector to the Headlamp Switch harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Rear Fog Lamp Indicator circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
8	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
REAR FOG INDICATOR OUTPUT SHORT

POSSIBLE CAUSES
INTERMITTENT WIRING AND CONNECTORS
REAR FOG LAMP INDICATOR CIRCUIT SHORT TO GROUND
HEADLAMP SWITCH
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, record and erase Body Control Module DTC's. Turn the ignition off, wait 15 seconds, then turn the ignition on. With the DRBIII®, read DTCs. Does the DRBIII® display REAR FOG LAMP INDICATOR SHORT TO GROUND? Yes → Go To 2 No → Go To 6	All
2	Turn the ignition off to the lock position. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Turn ON the Rear Fog Lamps. Using a 12-volt test light connected to ground, back probe the Rear Fog Lamp Indicator circuit in the Headlamp Switch harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 3 No → Go To 4	All
3	If there are no possible causes remaining, view repair. Repair Replace the Headlamp Switch. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Headlamp Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Rear Fog Lamp Indicator circuit. Is the resistance below 5.0 ohms? Yes → Repair the Rear Fog Lamp Indicator circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

REAR FOG INDICATOR OUTPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
6	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
RIGHT TURN SIGNAL INDICATOR OPEN (HIGHLINE)

When Monitored and Set Condition:

RIGHT TURN SIGNAL INDICATOR OPEN (HIGHLINE)

When Monitored: With the ignition on.

Set Condition: The BCM detects an open in the Right Turn Indicator Driver.

POSSIBLE CAUSES
INTERMITTENT CONDITION
FUSED B+ CIRCUIT
MESSAGE CENTER OPERATION
RIGHT TURN INDICATOR DRIVER SHORTED TO GROUND
RIGHT TURN INDICATOR DRIVER OPEN
BCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Monitor the Right Turn Signal Indicator. Operate the Right Turn Signal. Is the Indicator lamp operating correctly? Yes → Go To 2 No → Go To 3	All
2	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

RIGHT TURN SIGNAL INDICATOR OPEN (HIGHLINE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Message Center harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused B+ circuit in the Message Center harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused B+ circuit. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Message Center harness connector. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the Right Indicator Driver circuit in the Message Center harness connector. Operate the Multi-Function Switch and turn the Right Indication on. Does the test light flash on and off? Yes → Remove and inspect the Bulb. If OK, replace the Message Center. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Message Center harness connector. Disconnect the BCM C4 harness connector. Measure the resistance of the Right Turn Indicator Driver circuit at the Message Center harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the Right Turn Indicator for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off. Disconnect the Message Center harness connector. Disconnect the BCM C4 harness connector. Measure the resistance of the Right Turn Indicator Driver circuit between the BCM harness connector and the Message Center harness connector. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the Right Turn Indicator for an open. Perform BODY VERIFICATION TEST - VER 1.	All
7	If there are no possible causes remaining, view repair? Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RIGHT TURN SIGNAL INDICATOR OPEN (LOWLINE)

When Monitored and Set Condition:

RIGHT TURN SIGNAL INDICATOR OPEN (LOWLINE)

When Monitored: With the ignition on.

Set Condition: The BCM detects an open in the Right Turn Indicator Driver.

POSSIBLE CAUSES
RIGHT TURN INDICATOR DRIVER SHORTED TO GROUND
INTERMITTENT CONDITION
FUSED B+ CIRCUIT
INSTRUMENT CLUSTER OPERATION
RIGHT TURN INDICATOR DRIVER OPEN
BCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Monitor the Right Turn Signal Indicator. Operate the Right Turn Signal. Is the Indicator lamp operating correctly? Yes → Go To 2 No → Go To 3	All
2	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

RIGHT TURN SIGNAL INDICATOR OPEN (LOWLINE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused B+ circuit in the Instrument Cluster harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused B+ circuit. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the Right Indicator Driver circuit in the Instrument Cluster harness connector. Operate the Multi-Function Switch and turn the Right Indication on. Does the test light flash on and off? Yes → Remove and inspect the Bulb. If OK, replace the Instrument Cluster printed circuit board. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Disconnect the BCM C4 harness connector. Measure the resistance of the Right Turn Indicator Driver circuit between the BCM harness connector and the Instrument Cluster harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Right Turn Indicator for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Disconnect the BCM C4 harness connector. Measure the resistance of the Right Turn Indicator Driver circuit at the Instrument Cluster harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the Right Turn Indicator for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair? Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RIGHT TURN SIGNAL INDICATOR SHORT (HIGHLINE)

When Monitored and Set Condition:

RIGHT TURN SIGNAL INDICATOR SHORT (HIGHLINE)

When Monitored: With the ignition on.

Set Condition: The BCM detects a short to voltage in the Right Turn Indicator Driver.

POSSIBLE CAUSES
INTERMITTENT CONDITION
FUSED B+ CIRCUIT
MESSAGE CENTER OPERATION
RIGHT TURN INDICATOR DRIVER SHORTED TO VOLTAGE
BCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Monitor the Right Turn Signal Indicator. Operate the Right Turn Signal. Is the Indicator lamp operating correctly? Yes → Go To 2 No → Go To 3	All
2	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

RIGHT TURN SIGNAL INDICATOR SHORT (HIGHLINE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Message Center harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused B+ circuit in the Message Center harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused B+ circuit. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Message Center harness connector. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the Right Indicator Driver circuit in the Message Center harness connector. Operate the Multi-Function Switch and turn the Right Indication on. Does the test light flash on and off? Yes → Remove and inspect the bulb. If OK, replace the Message Center. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Message Center harness connector. Disconnect the BCM C4 harness connector. Turn the ignition on. Measure the voltage of the Right Turn Indicator Driver circuit at the Message Center harness connector. Is the voltage above 1.0 volts? Yes → Repair the Right Turn Indicator for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair? Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RIGHT TURN SIGNAL INDICATOR SHORT (LOWLINE)

When Monitored and Set Condition:

RIGHT TURN SIGNAL INDICATOR SHORT (LOWLINE)

When Monitored: With the ignition on.

Set Condition: The BCM detects a short to voltage in the Left Turn Indicator Driver.

POSSIBLE CAUSES
INTERMITTENT CONDITION
FUSED B+ CIRCUIT
INSTRUMENT CLUSTER OPERATION
RIGHT TURN INDICATOR DRIVER SHORTED TO VOLTAGE
BCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Monitor the Right Turn Signal Indicator. Operate the Right Turn Signal. Is the Indicator lamp operating correctly? Yes → Go To 2 No → Go To 3	All
2	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

RIGHT TURN SIGNAL INDICATOR SHORT (LOWLINE) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused B+ circuit in the Instrument Cluster harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused B+ circuit. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Turn the ignition on. Using a 12-volt test light connected to 12-volts, probe the Right Indicator Driver circuit in the Instrument Cluster harness connector. Operate the Multi-Function Switch and turn the Right Indication on. Does the test light flash on and off? Yes → Remove and inspect the bulb. If OK, replace the Instrument Cluster printed circuit board. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Instrument Cluster harness connector. Disconnect the BCM C4 harness connector. Turn the ignition on. Measure the voltage of the Right Turn Indicator Driver circuit at the Instrument Cluster harness connector. Is the voltage above 1.0 volts? Yes → Repair the Right Turn Indicator for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair? Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
TCM MESSAGE MISMATCH

POSSIBLE CAUSES
TCM COMMUNICATION FAILURE
INSTRUMENT CLUSTER

TEST	ACTION	APPLICABILITY
1	**NOTE: Diagnose and repair any TCM DTCs before proceeding with this test.** Turn the ignition on. With the DRBIII®, ensure PCI Bus communications with the TCM. Is the TCM communicating on the PCI Bus? Yes → Replace the Instrument Cluster in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Refer to COMMUNICATION category for the related symptom. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
*ANY PCI BUS INDICATOR INOPERATIVE

POSSIBLE CAUSES
NO RESPONSE - PCI BUS
NO RESPONSE - INSTRUMENT CLUSTER
NO RESPONSE - ECM / PCM
INDICATOR INOPERATIVE
INSTRUMENT CLUSTER

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, select J1850 Module Scan. Does the DRBIII® display MIC PRESENT on the BUS? Yes → Go To 2 No → Refer to the COMMUNICATION category and perform the appropriate symptom. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition on. With the DRBIII®, Select Body, MIC, the MODULE DISPLAY. Does the DRBIII® display NO RESPONSE from MIC? Yes → Refer to the symptom list for problems related to *NO RESPONSE FROM THE INSTRUMENT CLUSTER. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition on. With the DRBIII®, select Body, MIC, SYSTEM TESTS, PCM MONITOR. Does the DRBIII® display PCM INACTIVE on the BUS? Yes → Refer to the symptom list for problems related to *NO RESPONSE FROM THE POWERTRAIN CONTROL MODULE (Gas) / or *NO RESPONSE FROM THE ENGINE CONTROL MODULE (Diesel) Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	**NOTE: Diagnose and repair any PCM (gas) or ECM (diesel) DTCs before proceeding with this test.** Perform the Instrument Cluster diagnostic Self Test. Observe the indicator in question during the Self Test. Did the indicator illuminate? Yes → Refer to the appropriate Servic Information category to diagnose the related system. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Instrument Cluster in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
*SEAT BELT INDICATOR ALWAYS ON

POSSIBLE CAUSES
ACM SEAT BELT INDICATOR COMMAND PRESENT
INSTRUMENT CLUSTER

TEST	ACTION	APPLICABILITY
1	**NOTE: Ensure that the Driver seat belt buckle is not damaged and is buckled.** With the DRBIII®, select Airbag, then Monitors. Does the DRBIII® display ″S Belt Lamp On by ACM″? Yes → Refer to Airbag for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Replace the Instrument Cluster in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
DOOR/LIFTGATE LAMP OUTPUT SHORT

POSSIBLE CAUSES
INTERMITTENT CONDITION
COURTESY LAMPS DRIVER - LIFTGATE CIRCUIT SHORT TO GROUND
COURTESY LAMPS DRIVER - DOOR CIRCUIT SHORT TO GROUND
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. With the DRBIII®, read the DTC information. Does the DRBIII® read: Door/Liftgate Lamp Output Short? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Liftgate Door Harness. Open the Liftgate. Measure the resistance of the Liftgate Output circuit. Is the resistance below 5.0 ohms? Yes → Repair the Courtesy Lamps Driver - Liftgate Circuit for a short condition. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the BCM C3 harness connector. Disconnect the Drivers and Front Passenger door harness connectors one at a time. Measure the resistance of each Door Lamp Driver circuit to ground. Is the resistance below 5.0 ohms? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Applicable Courtesy Lamps Driver - Door Circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
FRONT COURTESY LAMPS OUTPUT SHORT

When Monitored and Set Condition:

FRONT COURTESY LAMPS OUTPUT SHORT

When Monitored: Anytime the BCM is active.

Set Condition: When the voltage of the Headlamp Switch MUX Return circuit falls below 5.0 volts for 10 seconds.

POSSIBLE CAUSES
INTERMITTENT CONDITION
FRONT COURTESY LAMP OUTPUT CIRCUIT SHORT
BODY CONTROL MODULE
OVERHEAD CONSOLE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. Turn the courtesy lamps on. With the DRBIII®, read the DTC information. Does the DRBIII® read: Front Courtesy Lamps Output Short? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Headlamp Switch harness connector. Disconnect the Body Control Module C5 harness connector. Measure the resistance of the Front Courtesy Lamp Output circuit. Is the resistance below 5.0 ohms? Yes → Repair the Front Courtesy Lamp Output circuit for a short condition. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the Body Control Module C2 harness connector. Measure the resistance of the Front Courtesy Lamp Output circuit. Is the resistance below 5.0 ohms? Yes → Replace the Overhead Console. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
READING LAMP OUTPUT SHORT

When Monitored and Set Condition:

READING LAMP OUTPUT SHORT

When Monitored: Anytime the Body Control Module is active.

Set Condition: When output voltage status is LOW.

POSSIBLE CAUSES
INTERMITTENT CONDITION
READING LAMPS DRIVER CIRCUIT SHORT
GLOVE BOX LAMP CIRCUIT SHORT TO GROUND
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, clear all BCM DTC's. Turn the Reading Lamps on. With the DRBIII®, read the DTC information. Does the DRBIII® display: Reading Lamp Output Short? Yes → Go To 2 No → The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the BCM C2 harness connector. Turn the reading lamps on. Measure the resistance of the Reading Lamps circuit. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Repair the Reading Lamps Driver Circuit for a short condition. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Body Control Module C2 and C4 harness connectors. Measure the resistance of the Glove Box and Reading Lamps Circuits. Is the resistance below 5.0 ohms in any of the circuits? Yes → Repair the Glove Box Lamp Driver/ Reading Lamps Circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
BCM MESSAGE NOT RECEIVED

When Monitored and Set Condition:

BCM MESSAGE NOT RECEIVED

When Monitored: Continuously when the PCI bus is active.

Set Condition: If the Memory Seat Mirror Module does receive this Bus message from the BCM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
BCM RESPONSE
STORED CODE/PCI BUS COMMUNICATION PROBLEMS
MEMORY SEAT MIRROR MODULE
INTERMITTENT PROBLEM

TEST	ACTION	APPLICABILITY
1	Turn ignition on. With the DRBIII® select Body Control Module. Is there a response from the Body Control Module? Yes → Go To 2 No → Refer to symptom *NO RESPONSE FROM BODY CONTROL MODULE in the COMMUNICATION category Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Turn the ignition switch to the Off position then start the engine and let run for one minute. Now be sure that there is still communication with the Body Control module, if not repair as necessary. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 3 No → Test complete. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
3	**NOTE: Visually inspect the related wiring harness including the PCI bus wire. Look for any chafed, pierced, pinched, or partially broken wires.** **Note: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any technical service bulletins that may apply.** Were any problems found? No → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. Yes → Repair as necessary. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
CHARGING VOLTAGE HIGH MESSAGE

When Monitored and Set Condition:

CHARGING VOLTAGE HIGH MESSAGE

When Monitored: During cranking or with the engine running.

Set Condition: When the Memory Seat Mirror Module receives three high charging system voltage messages above 15.94 volts over the PCI Bus. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
PCM TROUBLE CODES
STORED CODE COMMUNICATION PROBLEMS
MEMORY SEAT MIRROR MODULE
INTERMITTENT PROBLEM

TEST	ACTION	APPLICABILITY
1	Turn ignition on. With the DRBIII® read Engine DTCs. Is the DTC P1594 Charging System Voltage Too High set in the Power Control Module? Yes → Refer to symptom *P1594-CHARGING SYSTEM VOLTAGE TOO HIGH in the CHARGING category Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 2	All
2	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 3 No → Test complete. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
3	**Note: Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires.** **Note: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any technical service bulletins that may apply.** Were any problems found? No → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. Yes → Repair as necessary. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
CHARGING VOLTAGE LOW MESSAGE

When Monitored and Set Condition:

CHARGING VOLTAGE LOW MESSAGE

When Monitored: During cranking or with the engine running.

Set Condition: When the Memory Seat Mirror Module receives three low charging system voltage messages below 9 volts over the PCI Bus. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
PCM TROUBLE CODES
STORED CODE COMMUNICATION PROBLEMS
MEMORY SEAT MIRROR MODULE
INTERMITTENT PROBLEM

TEST	ACTION	APPLICABILITY
1	Turn ignition on. With the DRBIII® read Engine DTCs. Is the DTC P1682 Charging System Voltage Too Low set in the Power Control Module? Yes → Refer to symptom *P1682-CHARGING SYSTEM VOLTAGE TOO LOW in the CHARGING category Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 2	All
2	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 3 No → Test complete. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
3	**Note: Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires.** **Note: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any technical service bulletins that may apply.** Were any problems found? No → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. Yes → Repair as necessary. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
EEPROM REFRESH FAILURE

When Monitored and Set Condition:

EEPROM REFRESH FAILURE

When Monitored: With the ignition in the on position.

Set Condition: The Memory Seat Mirror Module has a internal EEPROM failure.

POSSIBLE CAUSES
EEPROM REFRESH FAILURE

TEST	ACTION	APPLICABILITY
1	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
FRONT RISER DOWN POSITION STUCK

When Monitored and Set Condition:

FRONT RISER DOWN POSITION STUCK

When Monitored: Continuously when the PCI bus is active.

Set Condition: If the seat switch is active for 30 seconds, this code will set and the Memory Seat Mirror Module will ignore the input until the state has changed. Three seconds after the stuck condition is removed, the seat will resume to normal operation. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
STORED DIAGNOSTIC TROUBLE CODE
POWER SEAT SWITCH
SEAT FRONT DOWN SWITCH SENSE WIRE SHORT TO VOLTAGE
MEMORY SEAT MIRROR MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Disconnect the Power Seat Switch connector. Measure the voltage of the Seat Front Down Switch Sense circuit. Is there any voltage present? Yes → Go To 3 No → Replace the Power Seat Switch. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
3	Disconnect the Power Seat Switch connector. Disconnect the Memory Seat Mirror Module C1 connector. Turn the ignition on. Measure the voltage of the Seat Front Down Switch Sense circuit to ground.. Is there any voltage present? Yes → Repair the Seat Front Down Switch Sense wire for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 4	All

FRONT RISER DOWN POSITION STUCK — Continued

TEST	ACTION	APPLICABILITY
4	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
FRONT RISER SENSOR OUT OF RANGE HIGH

When Monitored and Set Condition:

FRONT RISER SENSOR OUT OF RANGE HIGH

When Monitored: Continuously when the PCI bus is active.

Set Condition: This condition is immediately set when the seat motor potentiometer feeds a value higher than the Memory Seat Mirror Module has stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
MEMORY SEAT MIRROR MODULE SENSOR GROUND OPEN
SEAT POSITION SENSOR GROUND WIRE OPEN
5 VOLT SUPPLY SHORTED HIGH
CHECK VOLTAGE ON FRONT RISER POSITION SIGNAL CIRCUIT
FRONT RISER SENSOR HIGH
FRONT RISER SENSOR SHORT TO MOTOR
MEMORY SEAT MIRROR MODULE FRONT RISER HIGH
STORED DIAGNOSTIC TROUBLE CODE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Turn ignition off. Disconnect the Driver Power Seat Front Riser Position Sensor connector. Measure the resistance of the Seat Position Sensor Ground circuit at the Driver Power Seat Front Riser Position Sensor connector. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Go To 8	All

FRONT RISER SENSOR OUT OF RANGE HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Driver Power Seat Front Riser Position Sensor connector. Measure the voltage between Seat Sensor 5 volt supply circuit and ground. Turn ignition on. Is the voltage above 5.5 volts? Yes → Repair the Seat Sensor 5 Volt Supply circuit for a short to battery. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn ignition off. Disconnect the Driver Power Seat Front Riser Position Sensor Connector. Disconnect the Memory Seat Mirror Module C1 Connector. Turn ignition on. Measure the voltage between Front Riser Position Signal circuit and ground. Is the voltage above 0.2 volts? Yes → Repair the Front Riser Position Signal circuit for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn ignition off. Disconnect the Driver Power Seat Front Riser Position Sensor Connector. Ensure the Memory Seat Mirror Module is fully connected before proceeding. Turn ignition on. With the DRBIII® in Body Memory Seat Sensors Read the Front Riser Position Sensor voltage. Is the voltage above 0.2 volts? Yes → Go To 6 No → Replace the Seat Track Assembly. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
6	Ensure all seat and sensor connectors are connected and front riser motor is operational. With the DRBIII® in Body Memory Seat Sensors monitor the Front Riser Position Sensor while operating the front riser motor to both limits. Did the voltage ever go above 7.0 volts only when the motor was in operation? Yes → Replace the Seat Track Assembly. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

FRONT RISER SENSOR OUT OF RANGE HIGH — Continued

TEST	ACTION	APPLICABILITY
8	Turn ignition off. Disconnect the Memory Seat Mirror Module C2 connector. Disconnect the Driver Power Seat Front Riser Position Sensor connector. Measure the resistance of the Seat Position Sensor Ground wire between the Driver Power Seat Front Riser Position Sensor connector and the MSMM C2 connector. Is the resistance below 5.0 ohms? Yes → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Repair the open Seat Position Sensor Ground wire. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:

FRONT RISER SENSOR OUT OF RANGE LOW

When Monitored and Set Condition:

FRONT RISER SENSOR OUT OF RANGE LOW

When Monitored: Continuously when the PCI bus is active.

Set Condition: This code is immediately set when the seat motor potentiometer feeds a value lower than the Memory Seat Mirror Module has stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
MEMORY SEAT MIRROR MODULE 5 VOLT SUPPLY
SEAT 5 VOLT SUPPLY WIRE SHORT TO GROUND
SEAT SENSOR 5 VOLT SUPPLY WIRE OPEN
FRONT RISER POSITION SIGNAL CIRCUIT OPEN
FRONT RISER POSITION SIGNAL CIRCUIT SHORT TO GROUND
FRONT RISER SENSOR LOW
MEMORY SEAT MIRROR MODULE FRONT RISER LOW
STORED DIAGNOSTIC TROUBLE CODE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Ensure the Memory Seat Mirror Module is fully connected before proceeding. Disconnect the Driver Power Seat Front Riser Position Sensor connector. Turn ignition on. Measure the voltage of the Seat Sensor 5 Volt Supply circuit at front riser connector. Is the voltage above 4.5 volts? Yes → Go To 3 No → Go To 7	All

FRONT RISER SENSOR OUT OF RANGE LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn ignition off. Disconnect the Driver Power Seat Front Riser Position Sensor Connector. Disconnect the Memory Seat Mirror Module C1 Connector. Measure the resistance of the Front Riser Position Signal circuit between the front riser sensor and the Memory Seat Mirror Module connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Front Riser Position Signal circuit for an open. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
4	Turn ignition off. Disconnect the Memory Seat Mirror Module C1 connector. Disconnect the Driver Power Seat Front Riser Position Sensor connector. Measure the resistance of the Front Riser Position Signal circuit to ground. Is the resistance below 1000 ohms? Yes → Repair the Front Riser Position Signal circuit a short to ground. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn ignition off. Ensure the Memory Seat Mirror Module is fully connected before proceeding. Disconnect the Driver Power Seat Front Riser Position Sensor Connector. Connect a jumper wire between Seat Sensor 5 volt Supply and Front Riser Position Signal circuits. Turn ignition on. With the DRBIII® select Body Memory Seat Sensors. Read the Front Riser Position Sensor voltage. Is the voltage above 4.5 volts? Yes → Replace the Seat Track Assembly. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
7	Turn ignition off. Disconnect the Memory Seat Mirror Module C2 connector. Measure the resistance of the Seat Sensor 5 volt supply circuit to body ground. Is the resistance below 100.0 ohms? Yes → Repair the Seat 5 Volt Supply circuit for a short to ground. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 8	All

FRONT RISER SENSOR OUT OF RANGE LOW — Continued

TEST	ACTION	APPLICABILITY
8	Turn ignition off. Disconnect the Memory Seat Mirror Module C2 connector. Disconnect the Driver Power Seat Front Riser Position Sensor connector. Measure the resistance of the Seat Sensor 5 Volt Supply wire between the Front Riser Sensor connector and the C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the Seat Sensor 5 Volt Supply circuit for an open. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
9	If there are no possible cause remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
FRONT RISER UP POSITION STUCK

When Monitored and Set Condition:

FRONT RISER UP POSITION STUCK

When Monitored: Continuously when the PCI bus is active.

Set Condition: If the seat switch is active for 30 seconds, this code will set and the MSMM will ignore the input until the state has changed. Three seconds after the stuck condition is removed, the seat will resume to normal operation. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
STORED DIAGNOSTIC TROUBLE CODE
POWER SEAT SWITCH
SEAT FRONT UP SWITCH SENSE WIRE SHORT TO VOLTAGE
MEMORY SEAT MIRROR MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Disconnect the Power Seat Switch connector. Measure the voltage of the Seat Front Up Switch Sense circuit. Is there any voltage present? Yes → Go To 3 No → Replace the Power Seat Switch. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
3	Disconnect the Power Seat Switch connector. Disconnect the Memory Seat Mirror Module C1 connector. Turn the ignition on. Measure the voltage of the Seat Front Up Switch Sense circuit to ground.. Is there any voltage present? Yes → Repair the Seat Front Up Switch Sense wire for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 4	All

FRONT RISER UP POSITION STUCK — Continued

TEST	ACTION	APPLICABILITY
4	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
HORIZONTAL FORWARD POSITION STUCK

When Monitored and Set Condition:

HORIZONTAL FORWARD POSITION STUCK

When Monitored: Continuously when the PCI bus is active.

Set Condition: If the seat switch is active for 30 seconds, this code will set and the Memory Seat Mirror Module will ignore the input until the state has changed. Three seconds after the stuck condition is removed, the seat will resume to normal operation. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
STORED DIAGNOSTIC TROUBLE CODE
DRIVER POWER SEAT SWITCH
HORIZONTAL FORWARD SWITCH SENSE WIRE SHORT TO VOLTAGE
MEMORY SEAT MIRROR MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Disconnect the Power Seat Switch connector. Measure the voltage of the Seat Horizontal Forward Switch Sense circuit. Is there any voltage present? Yes → Go To 3 No → Replace the Power Seat Switch. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
3	Disconnect the Power Seat Switch connector. Disconnect the Memory Seat Mirror Module C1 connector. Turn the ignition on. Measure the voltage of the Horizontal Forward Switch Sense circuit to ground.. Is there any voltage present? Yes → Repair the Horizontal Forward Switch Sense wire for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 4	All

HORIZONTAL FORWARD POSITION STUCK — Continued

TEST	ACTION	APPLICABILITY
4	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
HORIZONTAL REARWARD POSITION STUCK

When Monitored and Set Condition:

HORIZONTAL REARWARD POSITION STUCK

When Monitored: Continuously when the PCI bus is active.

Set Condition: If the seat switch is active for 30 seconds, this code will set and the Memory Seat Mirror Module will ignore the input until the state has changed. Once the stuck condition is removed, the seat will resume to normal operation. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
STORED DIAGNOSTIC TROUBLE CODE
DRIVER POWER SEAT SWITCH
SEAT HORIZONTAL REARWARD SWITCH SENSE WIRE SHORT TO VOLTAGE
MEMORY SEAT MIRROR MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Disconnect the Power Seat Switch connector. Measure the voltage of the Seat Horizontal Rearward Switch Sense circuit. Is there any voltage present? Yes → Go To 3 No → Replace the Power Seat Switch. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

HORIZONTAL REARWARD POSITION STUCK — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Power Seat Switch connector. Disconnect the Memory Seat Mirror Module C1 connector. Turn the ignition on. Measure the voltage of the Seat Horizontal Rearward Switch Sense circuit to ground.. Is there any voltage present? Yes → Repair the Seat Horizontal Rearward Switch Sense wire for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 4	All
4	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
HORIZONTAL SENSOR OUT OF RANGE HIGH

When Monitored and Set Condition:

HORIZONTAL SENSOR OUT OF RANGE HIGH

When Monitored: Continuously when the PCI bus is active.

Set Condition: This condition is immediately set when the seat motor potentiometer feeds a value higher than the Memory Seat Mirror Module has stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
MEMORY SEAT MIRROR MODULE SENSOR GROUND OPEN
SEAT SENSOR GROUND WIRE OPEN
5 VOLT SUPPLY SHORTED HIGH
CHECK VOLTAGE ON HORIZONTAL POSITION SIGNAL CIRCUIT
HORIZONTAL SENSOR HIGH
CHECK HORIZONTAL SENSOR SHORT TO MOTOR
MEMORY SEAT MIRROR MODULE HORIZONTAL SENSOR HIGH
STORED DIAGNOSTIC TROUBLE CODE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Turn ignition off. Disconnect the Driver Power Seat Horizontal Position Sensor connector. Measure the resistance of the Seat Position Sensor Ground circuit at the driver power seat Horizontal connector. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Go To 8	All

HORIZONTAL SENSOR OUT OF RANGE HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Driver Power Seat Horizontal Position Sensor connector. Measure the voltage between Seat Sensor 5 volt supply circuit and ground. Turn ignition on. Is the voltage above 5.5 volts? Yes → Repair the Seat Sensor 5 Volt Supply circuit for a short to battery. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn ignition off. Disconnect the Driver Power Seat Horizontal Position Sensor Connector. Disconnect the Memory Seat Mirror Module C1 Connector. Turn ignition on. Measure the voltage between Horizontal Position Signal circuit and ground. Is the voltage above 0.2 volts? Yes → Repair the Horizontal Position Signal circuit for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn ignition off. Disconnect the Driver Power Seat Horizontal Position Sensor Connector. Ensure the Memory Seat Mirror Module is fully connected before proceeding. Turn ignition on. With the DRBIII® in Body Memory Seat Sensors Read the Horizontal Position Sensor voltage. Is the voltage above 0.2 volts? Yes → Go To 6 No → Replace the Seat Track Assembly. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
6	Ensure all seat and sensor connectors are connected and Horizontal motor is operational. With the DRBIII® in Body Memory Seat Sensors monitor the Horizontal Position sensor while operating the seat Horizontal motor to both limits. Did the voltage ever go above 7.0 volts only when the motor was in operation? Yes → Replace the Seat Track Assembly. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

HORIZONTAL SENSOR OUT OF RANGE HIGH — Continued

TEST	ACTION	APPLICABILITY
8	Turn ignition off. Disconnect the Memory Seat Mirror Module C2 connector. Disconnect the Driver Power Seat Horizontal Position Sensor connector. Measure the resistance of the Seat Position Sensor Ground wire between the Horizontal Sensor connector and the C2 connector. Is the resistance below 5.0 ohms? Yes → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Repair the open Seat Sensor Ground wire. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
HORIZONTAL SENSOR OUT OF RANGE LOW

When Monitored and Set Condition:

HORIZONTAL SENSOR OUT OF RANGE LOW

When Monitored: Continuously when the PCI bus is active.

Set Condition: This condition is immediately set when the seat motor potentiometer feeds a value lower than the Memory Seat Mirror Module has stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
SEAT 5 VOLT SUPPLY WIRE SHORT TO GROUND
SEAT SENSOR 5 VOLT SUPPLY WIRE OPEN
HORIZONTAL POSITION SIGNAL CIRCUIT OPEN
HORIZONTAL POSITION SIGNAL CIRCUIT SHORT TO GROUND
MEMORY SEAT MIRROR MODULE 5 VOLT SUPPLY
HORIZONTAL SENSOR LOW
MEMORY SEAT MIRROR MODULE HORIZONTAL LOW
STORED DIAGNOSTIC TROUBLE CODE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Ensure the Memory Seat Mirror Module is fully connected before proceeding. Disconnect the Driver Power Seat Horizontal Position Sensor connector. Turn ignition on. Measure the voltage of the Seat Sensor 5 Volt Supply circuit at Horizontal sensor connector. Is the voltage above 4.5 volts? Yes → Go To 3 No → Go To 7	All

HORIZONTAL SENSOR OUT OF RANGE LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn ignition off. Disconnect the Driver Power Seat Horizontal Position Sensor Connector. Disconnect the Memory Seat Mirror Module C1 Connector. Measure the resistance of the Horizontal Position Signal circuit between the Horizontal sensor and the Memory Seat Mirror Module connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Horizontal Position Signal circuit for an open. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
4	Turn ignition off. Disconnect the Memory Seat Mirror Module C1 connector. Disconnect the Driver Power Seat Horizontal Position Sensor connector. Measure the resistance of the Horizontal Position Signal circuit to ground. Is the resistance below 1000 ohms? Yes → Repair the Horizontal Position Signal circuit a short to ground. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn ignition off. Ensure the Memory Seat Mirror Module is fully connected before proceeding. Disconnect the Driver Power Seat Horizontal Position Sensor Connector. Connect a jumper wire between Seat Sensor 5 volt Supply and Horizontal Position Signal circuits. Turn ignition on. With the DRBIII® select Body Memory Seat Sensors. Read the Horizontal Position Sensor voltage. Is the voltage above 4.5 volts? Yes → Replace the Seat Track Assembly. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
7	Turn ignition off. Disconnect the Memory Seat Mirror Module C2 connector. Measure the resistance of the Seat Sensor 5 volt supply circuit to body ground. Is the resistance below 100.0 ohms? Yes → Repair the Seat 5 Volt Supply circuit for a short to ground. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 8	All

HORIZONTAL SENSOR OUT OF RANGE LOW — Continued

TEST	ACTION	APPLICABILITY
8	Turn ignition off. Disconnect the Memory Seat Mirror Module C2 connector. Disconnect the Driver Power Seat Horizontal Position Sensor connector. Measure the resistance of the Seat Sensor 5 Volt Supply wire between the Horizontal Sensor connector and the C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the Seat Sensor 5 Volt Supply circuit for an open. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
9	If there are no possible cause remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
LEFT MIRROR HORIZONTAL SENSOR OUT OF RANGE HIGH

When Monitored and Set Condition:

LEFT MIRROR HORIZONTAL SENSOR OUT OF RANGE HIGH

When Monitored: Continuously when the PCI bus is active

Set Condition: This code is set when the mirror sensor feedback to the Memory Seat Mirror Module is greater than the mirror out of range high value stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
LEFT MIRROR HORIZONTAL POSITION WIRE SHORTED TO VOLTAGE
LEFT MIRROR SENSOR GROUND WIRE OPEN
STORED DIAGNOSTIC TROUBLE CODE
LEFT MIRROR HORIZONTAL POSITION SIGNAL OPEN
LEFT POWER MIRROR
MEMORY SEAT MIRROR MODULE HORIZONTAL POSITION SIGNAL
MEMORY SEAT MIRROR MODULE SENSOR GROUND

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Left Power Mirror connector. Turn the ignition on. Measure the voltage of the Left Mirror Horizontal Position Signal circuit in the Left Power Mirror harness connector. Is the voltage between 4.5 and 5.5 volts? Yes → Go To 3 No → Go To 6	All

LEFT MIRROR HORIZONTAL SENSOR OUT OF RANGE HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Left Power Mirror connector. Measure the resistance of the Left Mirror Sensor Ground circuit in the harness connector to ground. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Go To 5	All
4	If there are no possible causes remaining, view repair. Repair Replace the Left Power Mirror. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the Left Power Mirror connector. Disconnect the Memory Seat Mirror Module C1 connector. Measure the resistance of Left Mirror Sensor Ground circuit between the Memory Seat Mirror Module connector and the Left Power Mirror connector. Is the resistance below 5.0 ohms? Yes → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Repair the open Sensor Ground circuit. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the Left Power Mirror connector. Disconnect the Memory Seat Mirror Module C1 connector. Turn the ignition on. Measure the voltage of Left Mirror Horizontal Position Signal circuit. Is there any voltage present? Yes → Repair the Left Mirror Horizontal Position Signal circuit for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off. Disconnect the Memory Seat Mirror Module C1 connector. Disconnect the Left Power Mirror connector. Measure the resistance of the Left Mirror Horizontal Position Signal circuit from the Left Power Mirror connector to the Memory Seat Mirror Module connector. Is the resistance below 5.0 ohms? Yes → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Repair the open Left Mirror Horizontal Position Signal wire. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
LEFT MIRROR HORIZONTAL SENSOR OUT OF RANGE LOW

When Monitored and Set Condition:

LEFT MIRROR HORIZONTAL SENSOR OUT OF RANGE LOW

When Monitored: Continuously when the PCI bus is active.

Set Condition: This code is set when the mirror sensor feedback to the MSMM is less than the mirror out of range low value stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
MSMM HORIZONTAL POSITION LOW
STORED DIAGNOSTIC TROUBLE CODE
LEFT MIRROR HORIZONTAL POSITION SIGNAL WIRE SHORT TO GROUND
LEFT POWER MIRROR

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Left Power Mirror connector. Turn the ignition on. Measure the voltage of the Left Mirror Horizontal Position Signal circuit in the Left Power Mirror harness connector. Is the voltage between 4.5 and 5.5 volts? Yes → Replace the Left Power Mirror. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 3	All

LEFT MIRROR HORIZONTAL SENSOR OUT OF RANGE LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Memory Seat Mirror Module C1 connector. Disconnect the Left Power Mirror connector. Measure the resistance of the Left Mirror Horizontal Position Signal circuit to ground at the Left Power Mirror harness side connector. Is the resistance below 1000.0 ohms? Yes → Repair the Left Mirror Horizontal Position Signal wire for a short to ground. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
LEFT MIRROR VERTICAL SENSOR OUT OF RANGE HIGH

When Monitored and Set Condition:

LEFT MIRROR VERTICAL SENSOR OUT OF RANGE HIGH

When Monitored: Continuously when the PCI bus is active.

Set Condition: This code is set when the mirror sensor feedback to the Memory Seat Mirror Module is greater than the mirror out of range high value stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
LEFT MIRROR SENSOR GROUND WIRE OPEN
LEFT MIRROR VERTICAL POSITION WIRE SHORTED TO VOLTAGE
STORED DIAGNOSTIC TROUBLE CODE
LEFT MIRROR VERTICAL POSITION SIGNAL OPEN
LEFT POWER MIRROR
MEMORY SEAT MIRROR MODULE SENSOR GROUND
MEMORY SEAT MIRROR MODULE VERTICAL POSITION SIGNAL

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Left Power Mirror connector. Turn the ignition on. Measure the voltage of the Left Mirror Vertical Position Signal circuit in the Left Power Mirror harness connector. Is the voltage between 4.5 and 5.5 volts? Yes → Go To 3 No → Go To 6	All

LEFT MIRROR VERTICAL SENSOR OUT OF RANGE HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Left Power Mirror connector. Measure the resistance of the Left Mirror Sensor Ground circuit in the harness connector to ground. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Go To 5	All
4	If there are no possible causes remaining, view repair. Repair Replace the Left Power Mirror. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the Left Power Mirror connector. Disconnect the Memory Seat Mirror Module C1 connector. Measure the resistance of Left Mirror Sensor Ground circuit between the Memory Seat Mirror Module connector and the Left Power Mirror connector. Is the resistance below 5.0 ohms? Yes → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Repair the open Sensor Ground circuit. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the Left Power Mirror connector. Disconnect the Memory Seat Mirror Module C1 connector. Turn the ignition on. Measure the voltage of Left Mirror Vertical Position Signal circuit. Is there any voltage present? Yes → Repair the Left Mirror Vertical Position Signal circuit for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off. Disconnect the Memory Seat Mirror Module C1 connector. Disconnect the Left Power Mirror connector. Measure the resistance of the Left Mirror Vertical Position Signal circuit from the left power mirror connector to the Memory Seat Mirror Module connector. Is the resistance below 5.0 ohms? Yes → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Repair the open Left Mirror Vertical Position Signal wire. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
LEFT MIRROR VERTICAL SENSOR OUT OF RANGE LOW

When Monitored and Set Condition:

LEFT MIRROR VERTICAL SENSOR OUT OF RANGE LOW

When Monitored: Continuously when the PCI bus is active.

Set Condition: This code is set when the mirror sensor feedback to the Memory Seat Mirror Module is less than the mirror out of range low value stored in EEPROM. Code will remain for 50 ignition cycles

POSSIBLE CAUSES
MSMM VERTICAL POSITION LOW
STORED DIAGNOSTIC TROUBLE CODE
LEFT MIRROR VERTICAL POSITION SIGNAL WIRE SHORT TO GROUND
LEFT POWER MIRROR

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Left Power Mirror connector. Turn the ignition on. Measure the voltage of the Left Mirror Vertical Position Signal circuit in the Left Power Mirror harness connector. Is the voltage between 4.5 and 5.5 volts? Yes → Replace the Left Power Mirror. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 3	All

LEFT MIRROR VERTICAL SENSOR OUT OF RANGE LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Memory Seat Mirror Module C1 connector. Disconnect the Left Power Mirror connector. Measure the resistance of the Left Mirror Vertical Position Signal circuit to ground at the Left Power Mirror harness side connector. Is the resistance below 1000.0 ohms? Yes → Repair the Left Mirror Vertical Position Signal wire for a short to ground. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
MEMORY POSITION SWITCH STUCK

When Monitored and Set Condition:

MEMORY POSITION SWITCH STUCK

When Monitored: Anytime the Body Control Module is awake.

Set Condition: If the Memory switch is active for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
MEMORY SET SWITCH STUCK
MEMORY SELECT SWITCH MUX SHORT TO GROUND
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Cycle the ignition OFF then back ON. With the DRBIII®, read DTCs. Operate the Memory Set switch several times while monitoring the DRBIII. Does the DRBIII® display MEMORY SWITCH INPUT STUCK? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Disconnect the Memory Set Switch connector Turn the ignition on. With the DRBIII® in Sensors, read the Memory Select SW Volts. Is the voltage above 4.8 volts? Yes → Replace the Memory Set Switch. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the Memory Set switch connector. Disconnect the BCM C1 harness connector. Measure the resistance between ground and the Memory Select Switch MUX circuit. Is the resistance above 1000.0 ohms? Yes → Go To 4 No → Repair the Memory Select Switch MUX circuit for a short to ground. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

MEMORY POSITION SWITCH STUCK — Continued

TEST	ACTION	APPLICABILITY
4	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:

MEMORY SWITCH INPUT OPEN

When Monitored and Set Condition:

MEMORY SWITCH INPUT OPEN

When Monitored: Continuously when the PCI bus is active.

Set Condition: If the Memory Set switch voltage is greater than 4.8 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
MEMORY SET SWITCH OPEN
MEMORY SELECT SWITCH MUX OPEN
MEMORY SELECT SWITCH RETURN OPEN
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Cycle the ignition OFF then back ON. With the DRBIII®, read DTCs. Operate the Memory Set switch several times while monitoring the DRBIII. Does the DRBIII® display MEMORY SWITCH INPUT OPEN? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Disconnect the Memory Set Switch connector Turn the ignition on. Connect a jumper wire between Memory Select Switch MUX and Memory Select Switch Return. With the DRBIII® in Sensors, read the Memory Select SW Volts. Is the voltage below 1.0 volt? Yes → Replace the Memory Set Switch. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 3	All

MEMORY SWITCH INPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Memory Set switch connector. Disconnect the BCM C1 harness connector. Measure the resistance of the Memory Select Switch MUX circuit between the Memory Set Switch connector and the BCM C1 connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Memory Select Switch MUX circuit for an open. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Memory Set switch connector. Disconnect the BCM C1 harness connector. Measure the resistance of the Memory Select Switch Return circuit between the Memory Set Switch connector and the BCM C1 connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Memory Select Switch Return circuit for an open. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
MEMORY SWITCH INPUT SHORT

When Monitored and Set Condition:

MEMORY SWITCH INPUT SHORT

When Monitored: Anytime the Body Control Module is awake.

Set Condition: If the Memory Set switch voltage is less than 1.35 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
MEMORY SET SWITCH SHORTED
MEMORY SELECT SWITCH MUX SHORTED
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Cycle the ignition OFF then back ON. With the DRBIII®, read DTCs. Operate the Memory Set switch several times while monitoring the DRBIII. Does the DRBIII® display MEMORY SWITCH INPUT SHORT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Disconnect the Memory Set Switch connector Turn the ignition on. With the DRBIII® in Sensors, read the Memory Select SW Volts. Is the voltage above 4.8 volts? Yes → Replace the Memory Set Switch. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the Memory Set switch connector. Disconnect the BCM C1 harness connector. Measure the resistance between ground and the Memory Select Switch MUX circuit. Is the resistance above 5.0 ohms? Yes → Go To 4 No → Repair the Memory Select Switch MUX circuit for a short to ground. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

MEMORY SWITCH INPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
4	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
REAR RISER DOWN POSITION STUCK

When Monitored and Set Condition:

REAR RISER DOWN POSITION STUCK

When Monitored: Continuously when the PCI bus is active.

Set Condition: If the seat switch is active for 30 seconds, this code will set and the Memory Seat Mirror Module will ignore the input until the state has changed. Three seconds after the stuck condition is removed, the seat will resume to normal operation. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
STORED DIAGNOSTIC TROUBLE CODE
DRIVER POWER SEAT SWITCH
SEAT REAR DOWN SWITCH SENSE WIRE SHORT TO VOLTAGE
MEMORY SEAT MIRROR MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Disconnect the Power Seat Switch connector. Measure the voltage of the Seat Rear Down Switch Sense circuit. Is there any voltage present? Yes → Go To 3 No → Replace the Power Seat Switch. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
3	Disconnect the Power Seat Switch connector. Disconnect the Memory Seat Mirror Module C1 connector. Turn the ignition on. Measure the voltage of the Seat Rear Down Switch Sense circuit to ground.. Is there any voltage present? Yes → Repair the Seat Rear Down Switch Sense wire for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 4	All

REAR RISER DOWN POSITION STUCK — Continued

TEST	ACTION	APPLICABILITY
4	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
REAR RISER SENSOR OUT OF RANGE HIGH

When Monitored and Set Condition:

REAR RISER SENSOR OUT OF RANGE HIGH

When Monitored: Continuously when the PCI bus is active.

Set Condition: This condition is immediately set when the seat motor potentiometer feeds a value higher than the Memory Seat Mirror Module has stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
MEMORY SEAT MIRROR MODULE SENSOR GROUND OPEN
SEAT SENSOR GROUND WIRE OPEN
5 VOLT SUPPLY SHORTED HIGH
CHECK VOLTAGE ON REAR RISER POSITION SIGNAL CIRCUIT
REAR RISER SENSOR HIGH
CHECK REAR RISER SHORT TO MOTOR
MEMORY SEAT MIRROR MODULE REAR RISER HIGH
STORED DIAGNOSTIC TROUBLE CODE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Turn ignition off. Disconnect the Driver Power Seat Rear Riser Position Sensor connector. Measure the resistance of the Seat Position Sensor Ground circuit at the driver power seat rear riser connector. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Go To 8	All

REAR RISER SENSOR OUT OF RANGE HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Rear Riser Position Sensor connector. Measure the voltage between Seat Sensor 5 volt supply circuit and ground. Turn ignition on. Is the voltage above 5.5 volts? Yes → Repair the Seat Sensor 5 Volt Supply circuit for a short to battery. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn ignition off. Disconnect the Driver Power Seat Rear Riser Position Sensor Connector. Disconnect the Memory Seat Mirror Module C1 Connector. Turn ignition on. Measure the voltage between Rear Riser Position Signal circuit and ground. Is the voltage above 0.2 volts? Yes → Repair the Rear Riser Position Signal circuit for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn ignition off. Disconnect the Driver Power Seat Rear Riser Position Sensor Connector. Ensure the Memory Seat Mirror Module is fully connected before proceeding. Turn ignition on. With the DRBIII® in Body Memory Seat Sensors Read the Rear Riser Position Sensor voltage. Is the voltage above 0.2 volts? Yes → Go To 6 No → Replace the Seat Track Assembly. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
6	Ensure all seat and sensor connectors are connected and rear riser motor is operational. With the DRBIII® in Body Memory Seat Sensors monitor the Rear Riser Position sensor while operating the seat rear riser to both limits. Did the voltage ever go above 7.0 volts only when the motor was in operation? Yes → Replace the Seat Track Assembly. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

REAR RISER SENSOR OUT OF RANGE HIGH — Continued

TEST	ACTION	APPLICABILITY
8	Turn ignition off. Disconnect the Memory Seat Mirror Module C2 connector. Disconnect the Driver Power Seat Rear Riser Position Sensor connector. Measure the resistance of the Seat Position Sensor Ground wire between the Rear Riser Sensor connector and the C2 connector. Is the resistance below 5.0 ohms? Yes → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Repair the open Seat Sensor Ground wire. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:

REAR RISER SENSOR OUT OF RANGE LOW

When Monitored and Set Condition:

REAR RISER SENSOR OUT OF RANGE LOW

When Monitored: Continuously when the PCI bus is active.

Set Condition: This condition is immediately set when the seat motor potentiometer feeds a value lower than the Memory Seat Mirror Module has stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
MEMORY SEAT MIRROR MODULE 5 VOLT SUPPLY
SEAT 5 VOLT SUPPLY WIRE SHORT TO GROUND
SEAT SENSOR 5 VOLT SUPPLY WIRE OPEN
REAR RISER POSITION SIGNAL CIRCUIT OPEN
REAR RISER POSITION SIGNAL CIRCUIT SHORT TO GROUND
REAR RISER SENSOR LOW
MEMORY SEAT MIRROR MODULE REAR RISER LOW
STORED DIAGNOSTIC TROUBLE CODE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Ensure the Memory Seat Mirror Module is fully connected before proceeding. Disconnect the Driver Power Seat Rear Riser Sensor connector. Turn ignition on. Measure the voltage of the Seat Sensor 5 Volt Supply circuit at rear riser connector. Is the voltage above 4.5 volts? Yes → Go To 3 No → Go To 7	All

REAR RISER SENSOR OUT OF RANGE LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn ignition off. Disconnect the Driver Power Seat Rear Riser Position Sensor Connector. Disconnect the Memory Seat Mirror Module C1 Connector. Measure the resistance of the Rear Riser Position Signal circuit between the rear riser sensor and the Memory Seat Mirror Module connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Rear Riser Position Signal circuit for an open. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
4	Turn ignition off. Disconnect the Memory Seat Mirror Module C1 connector. Disconnect the Driver Power Seat Rear Riser Position Sensor connector. Measure the resistance of the Rear Riser Position Signal circuit to ground. Is the resistance below 1000 ohms? Yes → Repair the Rear Riser Position Signal circuit a short to ground. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn ignition off. Ensure the Memory Seat Mirror Module is fully connected before proceeding. Disconnect the Driver Power Seat Rear Riser Position Sensor Connector. Connect a jumper wire between Seat Sensor 5 volt Supply and Rear Riser Position Signal circuits. Turn ignition on. With the DRBIII® select Body Memory Seat Sensors. Read the Rear Riser Position Sensor voltage. Is the voltage above 4.5 volts? Yes → Replace the Seat Track Assembly. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
7	Turn ignition off. Disconnect the Memory Seat Mirror Module C2 connector. Measure the resistance of the Seat Sensor 5 volt supply circuit to body ground. Is the resistance below 100.0 ohms? Yes → Repair the Seat 5 Volt Supply circuit for a short to ground. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 8	All

REAR RISER SENSOR OUT OF RANGE LOW — Continued

TEST	ACTION	APPLICABILITY
8	Turn ignition off. Disconnect the Memory Seat Mirror Module C2 connector. Disconnect the Driver Power Seat Rear Riser Position Sensor connector. Measure the resistance of the Seat Sensor 5 Volt Supply wire between the Rear Riser Sensor connector and the C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the Seat Sensor 5 Volt Supply circuit for an open. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
9	If there are no possible cause remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
REAR RISER UP POSITION STUCK

When Monitored and Set Condition:

REAR RISER UP POSITION STUCK

When Monitored: Continuously when the PCI bus is active.

Set Condition: If the seat switch is active for 30 seconds, this code will set and the MSMM will ignore the input until the state has changed. Three seconds after the stuck condition is removed, the seat will resume to normal operation. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
STORED DIAGNOSTIC TROUBLE CODE
DRIVER POWER SEAT SWITCH
SEAT REAR UP SWITCH SENSE WIRE SHORT TO VOLTAGE
MEMORY SEAT MIRROR MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Disconnect the Power Seat Switch connector. Measure the voltage of the Seat Rear Up Switch Sense circuit. Is there any voltage present? Yes → Go To 3 No → Replace the Power Seat Switch. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
3	Disconnect the Power Seat Switch connector. Disconnect the Memory Seat Mirror Module C1 connector. Turn the ignition on. Measure the voltage of the Seat Rear Up Switch Sense circuit to ground.. Is there any voltage present? Yes → Repair the Seat Rear Up Switch Sense wire for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 4	All

REAR RISER UP POSITION STUCK — Continued

TEST	ACTION	APPLICABILITY
4	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
RECLINER DOWN POSITION STUCK

When Monitored and Set Condition:

RECLINER DOWN POSITION STUCK

When Monitored: Continuously when the PCI bus is active.

Set Condition: If the seat switch is active for 30 seconds, this code will set and the MSMM will ignore the input until the state has changed. Three seconds after the stuck condition is removed, the seat will resume to normal operation. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
STORED DIAGNOSTIC TROUBLE CODE
DRIVER POWER SEAT SWITCH
SEAT RECLINER DOWN SWITCH SENSE WIRE SHORT TO VOLTAGE
MEMORY SEAT MIRROR MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Disconnect the Power Seat Switch connector. Measure the voltage of the Recliner Down Switch Sense circuit. Is there any voltage present? Yes → Go To 3 No → Replace the Power Seat Switch. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
3	Disconnect the Power Seat Switch connector. Disconnect the Memory Seat Mirror Module C1 connector. Turn the ignition on. Measure the voltage of the Recliner Down Switch Sense circuit to ground.. Is there any voltage present? Yes → Repair the Recliner Down Switch Sense wire for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 4	All

RECLINER DOWN POSITION STUCK — Continued

TEST	ACTION	APPLICABILITY
4	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
RECLINER SENSOR OUT OF RANGE HIGH

When Monitored and Set Condition:

RECLINER SENSOR OUT OF RANGE HIGH

When Monitored: Continuously when the PCI bus is active.

Set Condition: This condition is immediately set when the seat motor potentiometer feeds a value higher than the Memory Seat Mirror Module has stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
MEMORY SEAT MIRROR MODULE SENSOR GROUND OPEN
SEAT SENSOR GROUND WIRE OPEN
5 VOLT SUPPLY SHORTED HIGH
CHECK VOLTAGE ON RECLINER POSITION SIGNAL CIRCUIT
RECLINER SENSOR HIGH
CHECK RECLINER SENSOR SHORT TO MOTOR
MEMORY SEAT MIRROR MODULE RECLINER SENSOR HIGH
STORED DIAGNOSTIC TROUBLE CODE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Turn ignition off. Disconnect the Driver Power Seat Recliner Position Sensor connector. Measure the resistance of the Seat Position Sensor Ground circuit at the driver power seat Recliner connector to ground. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Go To 8	All

RECLINER SENSOR OUT OF RANGE HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Driver Power Seat Recliner Position Sensor connector. Measure the voltage between Seat Sensor 5 volt supply circuit and ground. Turn ignition on. Is the voltage above 5.5 volts? Yes → Repair the Seat Sensor 5 Volt Supply circuit for a short to battery. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn ignition off. Disconnect the Driver Power Seat Recliner Position Sensor Connector. Disconnect the Memory Seat Mirror Module C1 Connector. Turn ignition on. Measure the voltage between Recliner Position Signal circuit and ground. Is the voltage above 0.2 volts? Yes → Repair the Recliner Position Signal circuit for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn ignition off. Disconnect the Driver Power Seat Recliner Position Sensor Connector. Ensure the Memory Seat Mirror Module is fully connected before proceeding. Turn ignition on. With the DRBIII® in Body Memory Seat Sensors Read the Recliner Position Sensor voltage. Is the voltage above 0.2 volts? Yes → Go To 6 No → Replace the Seat Track Assembly. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
6	Ensure all seat and sensor connectors are connected and Recliner motor is operational. With the DRBIII® in Body Memory Seat Sensors monitor the Recliner Position sensor while operating the seat Recliner motor to both limits. Did the voltage ever go above 7.0 volts only when the motor was in operation? Yes → Replace the Seat Track Assembly. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

RECLINER SENSOR OUT OF RANGE HIGH — Continued

TEST	ACTION	APPLICABILITY
8	Turn ignition off. Disconnect the Memory Seat Mirror Module C2 connector. Disconnect the Driver Power Seat Recliner Position Sensor connector. Measure the resistance of the Seat Position Sensor Ground wire between the Recliner Sensor connector and the C2 connector. Is the resistance below 5.0 ohms? Yes → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Repair the open Seat Sensor Ground wire. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:

RECLINER SENSOR OUT OF RANGE LOW

When Monitored and Set Condition:

RECLINER SENSOR OUT OF RANGE LOW

When Monitored: Continuously when the PCI bus is active.

Set Condition: This condition is immediately set when the seat motor potentiometer feeds a value lower than the Memory Seat Mirror Module has stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
SEAT 5 VOLT SUPPLY WIRE SHORT TO GROUND
SEAT SENSOR 5 VOLT SUPPLY WIRE OPEN
RECLINER POSITION SIGNAL CIRCUIT OPEN
RECLINER POSITION SIGNAL CIRCUIT SHORT TO GROUND
MEMORY SEAT MIRROR MODULE 5 VOLT SUPPLY
RECLINER SENSOR LOW
MEMORY SEAT MIRROR MODULE RECLINER LOW
STORED DIAGNOSTIC TROUBLE CODE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Ensure the Memory Seat Mirror Module is fully connected before proceeding. Disconnect the Driver Power Seat Recliner Position Sensor connector. Turn ignition on. Measure the voltage of the Seat Sensor 5 Volt Supply circuit at Recliner sensor connector. Is the voltage above 4.5 volts? Yes → Go To 3 No → Go To 7	All

RECLINER SENSOR OUT OF RANGE LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn ignition off. Disconnect the Driver Power Seat Recliner Position Sensor Connector. Disconnect the Memory Seat Mirror Module C1 Connector. Measure the resistance of the Recliner Position Signal circuit between the Recliner sensor and the Memory Seat Mirror Module connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Recliner Position Signal circuit for an open. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
4	Turn ignition off. Disconnect the Memory Seat Mirror Module C1 connector. Disconnect the Driver Power Seat Recliner Position Sensor connector. Measure the resistance of the Recliner Position Signal circuit to ground. Is the resistance below 1000 ohms? Yes → Repair the Recliner Position Signal circuit a short to ground. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn ignition off. Ensure the Memory Seat Mirror Module is fully connected before proceeding. Disconnect the Driver Power Seat Recliner Position Sensor Connector. Connect a jumper wire between Seat Sensor 5 volt Supply and Recliner Position Signal circuits. Turn ignition on. With the DRBIII® select Body Memory Seat Sensors. Read the Recliner Position Sensor voltage. Is the voltage above 4.5 volts? Yes → Replace the Seat Track Assembly. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
7	Turn ignition off. Disconnect the Memory Seat Mirror Module C2 connector. Measure the resistance of the Seat Sensor 5 volt supply circuit to body ground. Is the resistance below 100.0 ohms? Yes → Repair the Seat 5 Volt Supply circuit for a short to ground. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 8	All

RECLINER SENSOR OUT OF RANGE LOW — Continued

TEST	ACTION	APPLICABILITY
8	Turn ignition off. Disconnect the Memory Seat Mirror Module C2 connector. Disconnect the Driver Power Seat Recliner Position Sensor connector. Measure the resistance of the Seat Sensor 5 Volt Supply wire between the Recliner Sensor connector and the C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the Seat Sensor 5 Volt Supply circuit for an open. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
9	If there are no possible cause remaining, view repair. Repair Replace the Memory Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
RECLINER UP POSITION STUCK

When Monitored and Set Condition:

RECLINER UP POSITION STUCK

When Monitored: Continuously when the PCI bus is active.

Set Condition: If the seat switch is active for 30 seconds, this code will set and the Memory Seat Mirror Module will ignore the input until the state has changed. Three seconds after the stuck condition is removed, the seat will resume to normal operation. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
STORED DIAGNOSTIC TROUBLE CODE
DRIVER POWER SEAT SWITCH
RECLINER UP SWITCH SENSE WIRE SHORT TO VOLTAGE
MEMORY SEAT MIRROR MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Disconnect the Power Seat Switch connector. Measure the voltage of the Recliner Up Switch Sense circuit. Is there any voltage present? Yes → Go To 3 No → Replace the Power Seat Switch. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
3	Disconnect the Power Seat Switch connector. Disconnect the Memory Seat Mirror Module C1 connector. Turn the ignition on. Measure the voltage of the Recliner Up Switch Sense circuit to ground.. Is there any voltage present? Yes → Repair the Recliner Up Switch Sense wire for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 4	All

RECLINER UP POSITION STUCK — Continued

TEST	ACTION	APPLICABILITY
4	If there are no possible causes remaining, view ″Repair″. Repair Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
RIGHT MIRROR HORIZONTAL SENSOR OUT OF RANGE HIGH

When Monitored and Set Condition:

RIGHT MIRROR HORIZONTAL SENSOR OUT OF RANGE HIGH

When Monitored: Continuously when the PCI bus is active.

Set Condition: This code is set when the mirror sensor feedback to the Memory Seat Mirror Module is greater than the mirror out of range high value stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
RIGHT MIRROR HORIZONTAL POSITION WIRE SHORTED TO VOLTAGE
RIGHT MIRROR SENSOR GROUND WIRE OPEN
STORED DIAGNOSTIC TROUBLE CODE
RIGHT MIRROR HORIZONTAL POSITION SIGNAL OPEN
RIGHT POWER MIRROR
MEMORY SEAT MIRROR MODULE HORIZONTAL POSITION SIGNAL
MEMORY SEAT MIRROR MODULE SENSOR GROUND

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Right Power Mirror connector. Turn the ignition on. Measure the voltage of the Right Mirror Horizontal Position Signal circuit in the Right Power Mirror harness connector. Is the voltage between 4.5 and 5.5 volts? Yes → Go To 3 No → Go To 6	All

RIGHT MIRROR HORIZONTAL SENSOR OUT OF RANGE HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Right Power Mirror connector. Measure the resistance of the Right Mirror Sensor Ground circuit in the harness connector to ground. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Go To 5	All
4	If there are no possible causes remaining, view repair. Repair Replace the Right Power Mirror. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the Right Power Mirror connector. Disconnect the Memory Seat Mirror Module C1 connector. Measure the resistance of Right Mirror Sensor Ground circuit between the Memory Seat Mirror Module connector and the Right Power Mirror connector. Is the resistance below 5.0 ohms? Yes → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Repair the open Sensor Ground circuit. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the Right Power Mirror connector. Disconnect the Memory Seat Mirror Module C1 connector. Turn the ignition on. Measure the voltage of Right Mirror Horizontal Position Signal circuit. Is there any voltage present? Yes → Repair the Right Mirror Horizontal Position Signal circuit for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off. Disconnect the Memory Seat Mirror Module C1 connector. Disconnect the Right Power Mirror connector. Measure the resistance of the Right Mirror Horizontal Position Signal circuit from the Right power mirror connector to the Memory Seat Mirror Module connector. Is the resistance below 5.0 ohms? Yes → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Repair the open Right Mirror Horizontal Position Signal wire. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:

RIGHT MIRROR HORIZONTAL SENSOR OUT OF RANGE LOW

When Monitored and Set Condition:

RIGHT MIRROR HORIZONTAL SENSOR OUT OF RANGE LOW

When Monitored: Continuously when the PCI bus is active.

Set Condition: This code is set when the mirror sensor feedback to the Memory Seat Mirror Module is less than the mirror out of range low value stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
MSMM HORIZONTAL POSITION LOW
STORED DIAGNOSTIC TROUBLE CODE
RIGHT MIRROR HORIZONTAL POSITION SIGNAL WIRE SHORT TO GROUND
RIGHT POWER MIRROR

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Right Power Mirror connector. Turn the ignition on. Measure the voltage of the Right Mirror Horizontal Position Signal circuit in the Right Power Mirror harness connector. Is the voltage between 4.5 and 5.5 volts? Yes → Replace the Right Power Mirror. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 3	All

RIGHT MIRROR HORIZONTAL SENSOR OUT OF RANGE LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Memory Seat Mirror Module C1 connector. Disconnect the Right Power Mirror connector. Measure the resistance of the Right Mirror Horizontal Position Signal circuit to ground at the Right Power Mirror harness side connector. Is the resistance below 1000.0 ohms? Yes → Repair the Right Mirror Horizontal Position Signal wire for a short to ground. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:

RIGHT MIRROR VERTICAL SENSOR OUT OF RANGE HIGH

When Monitored and Set Condition:

RIGHT MIRROR VERTICAL SENSOR OUT OF RANGE HIGH

When Monitored: Continuously when the PCI bus is active.

Set Condition: This code is set when the mirror sensor feedback to the Memory Seat Mirror Module is greater than the mirror out of range high value stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
RIGHT MIRROR SENSOR GROUND WIRE OPEN
RIGHT MIRROR VERTICAL POSITION WIRE SHORTED TO VOLTAGE
STORED DIAGNOSTIC TROUBLE CODE
RIGHT MIRROR VERTICAL POSITION SIGNAL OPEN
RIGHT POWER MIRROR
MEMORY SEAT MIRROR MODULE SENSOR GROUND
MEMORY SEAT MIRROR MODULE VERTICAL POSITION SIGNAL

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Right Power Mirror connector. Turn the ignition on. Measure the voltage of the Right Mirror Vertical Position Signal circuit in the Right Power Mirror harness connector. Is the voltage between 4.5 and 5.5 volts? Yes → Go To 3 No → Go To 6	All

RIGHT MIRROR VERTICAL SENSOR OUT OF RANGE HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Right Power Mirror connector. Measure the resistance of the Right Mirror Sensor Ground circuit in the harness connector to ground. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Go To 5	All
4	If there are no possible causes remaining, view repair. Repair Replace the Right Power Mirror. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the Right Power Mirror connector. Disconnect the Memory Seat Mirror Module C1 connector. Measure the resistance of Right Mirror Sensor Ground circuit between the Memory Seat Mirror Module connector and the Right Power Mirror connector. Is the resistance below 5.0 ohms? Yes → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Repair the open Sensor Ground circuit. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the Right Power Mirror connector. Disconnect the Memory Seat Mirror Module C1 connector. Turn the ignition on. Measure the voltage of Right Mirror Vertical Position Signal circuit. Is there any voltage present? Yes → Repair the Right Mirror Vertical Position Signal circuit for a short to voltage. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off. Disconnect the Memory Seat Mirror Module C1 connector. Disconnect the Right Power Mirror connector. Measure the resistance of the Right Mirror Vertical Position Signal circuit from the Right power mirror connector to the Memory Seat Mirror Module connector. Is the resistance below 5.0 ohms? Yes → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Repair the open Right Mirror Vertical Position Signal wire. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:

RIGHT MIRROR VERTICAL SENSOR OUT OF RANGE LOW

When Monitored and Set Condition:

RIGHT MIRROR VERTICAL SENSOR OUT OF RANGE LOW

When Monitored: Continuously when the PCI bus is active.

Set Condition: This code is set when the mirror sensor feedback to the Memory Seat Mirror Module is less than the mirror out of range low value stored in EEPROM. Code will remain for 50 ignition cycles.

POSSIBLE CAUSES
MSMM VERTICAL POSITION LOW
STORED DIAGNOSTIC TROUBLE CODE
RIGHT MIRROR VERTICAL POSITION SIGNAL WIRE SHORT TO GROUND
RIGHT POWER MIRROR

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC from Memory Seat Mirror Module. Operate the driver's power seat and memory system. Turn the ignition switch to the Off position then start the engine and let run for one minute. With the DRB check for the same DTC to reset in the MSMM. Did the same DTC reset? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Right Power Mirror connector. Turn the ignition on. Measure the voltage of the Right Mirror Vertical Position Signal circuit in the Right Power Mirror harness connector. Is the voltage between 4.5 and 5.5 volts? Yes → Replace the Right Power Mirror. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Go To 3	All

RIGHT MIRROR VERTICAL SENSOR OUT OF RANGE LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Memory Seat Mirror Module C1 connector. Disconnect the Right Power Mirror connector. Measure the resistance of the Right Mirror Vertical Position Signal circuit to ground at the Right Power Mirror harness side connector. Is the resistance below 1000.0 ohms? Yes → Repair the Right Mirror Vertical Position Signal wire for a short to ground. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1. No → Replace the Memory Seat Mirror Module. Perform MEMORY SYSTEM VERIFICATION TEST - VER 1.	All

Symptom:
BUS MESSAGES MISSING

When Monitored and Set Condition:

BUS MESSAGES MISSING

When Monitored: While the EVIC is performing a series of tests on the microprocessor, compass coil, and internal circuitry.

Set Condition: The code will be set, if during the self test the EVIC does not receive messages from the BCM, FCM, EATX or PCM.

POSSIBLE CAUSES
BCM COMMUNICATION
PCM COMMUNICATION
FCM COMMUNICATION
EATX COMMUNICATION
EVIC

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, attempt to communicate with BCM. Can communication be established with the BCM? Yes → Go To 2 No → Refer to Communication Category and perform the appropriate system. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition on. With the DRBIII®, access Body Control Module. Select Body Controller and System test. Does the DRBIII® display PCM Active on the Bus? Yes → Go To 3 No → Refer to Communication Category and perform the appropriate system. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition on. With the DRBIII®, attempt to communicate with the FCM. Can communication be established with the FCM? Yes → Go To 4 No → Refer to Communication Category and perform the appropriate system. Perform BODY VERIFICATION TEST - VER 1.	All

BUS MESSAGES MISSING — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition on. With the DRBIII®, attempt to communicate with the EATX. Can communication be established with the EATX? Yes → Replace the EVIC Module. Perform BODY VERIFICATION TEST - VER 1. No → Refer to Communication Category and perform the appropriate system. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

COMPASS TEST FAILURE

When Monitored and Set Condition:

COMPASS TEST FAILURE

When Monitored: During the EVIC self test.

Set Condition:

POSSIBLE CAUSES
CMTC/EVIC MODULE

TEST	ACTION	APPLICABILITY
1	Perform the CMTC/EVIC self test. Turn the ignition off. Depress and hold the RESET and STEP buttons while turning the ignition on. **NOTE: This test may also be performed using the DRBIII®.** Does the CMTC/EVIC or DRBIII® display ″FAILED SELF TEST″? Yes → Replace the CMTC or EVIC in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

DEMAGNETIZE COMPASS AS PER SERVICE MANUAL

When Monitored and Set Condition:

DEMAGNETIZE COMPASS AS PER SERVICE MANUAL

When Monitored: During the EVIC self test.

Set Condition: Compass has been magnetized.

POSSIBLE CAUSES
DEMAGNETIZE COMPASS

TEST	ACTION	APPLICABILITY
1	Refer to the Service Information for the Demagnetizing Procedure. View Repair for Verification Test. Repair When the Demagnetizing Procedure is complete perform the Verification Test. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
EC MIRROR DAY/NIGHT LINE FAULT

When Monitored and Set Condition:

EC MIRROR DAY/NIGHT LINE FAULT

When Monitored: With the ignition on.

Set Condition: The EVIC Module does not receive any messages from the EC Mirror.

POSSIBLE CAUSES
INTERMITTENT CONDITION
AUTOMATIC DAY/NIGHT MIRROR
AUTOMATIC HEADLAMP SWITCH SENSOR CIRCUIT OPEN
AUTOMATIC HEADLAMP SWITCH SENSOR CIRCUIT SHORTED TO GROUND
AUTOMATIC HEADLAMP SWITCH SENSOR CIRCUIT SHORTED TO VOLTAGE
CMTC/EVIC MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase the DTC. Cycle the ignition on and off several times, leaving the ignition on for at least 15 seconds. With the DRBIII®, read DTCs. Did the DTC reset? Yes → Go To 2 No → The condition is not present at this time. Monitor DRBIII® parameters while wiggling the related wire harness. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness and connector terminals. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Automatic Day/Night Mirror harness connector. Turn the ignition on. Measure the voltage of the Automatic Headlamp Switch Sensor circuit in the Automatic Day/Night Mirror harness connector. Is the voltage 4.9 volts? Yes → Replace the Automatic Day/Night Mirror in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

EC MIRROR DAY/NIGHT LINE FAULT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the EVIC harness connector. Disconnect the Automatic Day/Night Mirror harness connector. Measure the resistance of the Automatic Headlamp Switch Sensor circuit between the Automatic Day/Night Mirror harness connector and the EVIC harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Automatic Headlamp Switch Sensor circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the EVIC harness connector. Disconnect the Automatic Day/Night Mirror harness connector. Measure the resistance of the Automatic Headlamp Switch Sensor circuit in the EVIC harness connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the Automatic Headlamp Switch Sensor circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Automatic Day/Night Mirror harness connector. Disconnect the EVIC harness connector. Using a 12 volt test light connected to ground, probe the Automatic Headlamp Switch Sensor circuit in the Automatic Day/Night Mirror harness connector. Does the test illuminate brightly? Yes → Repair the Automatic Headlamp Switch Sensor circuit for a shorted to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the CMTC/EVIC Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
EVIC INTERNAL FAILURE

When Monitored and Set Condition:

EVIC INTERNAL FAILURE

When Monitored: When a SELF TEST command is received from the DRBIII, the EVIC performs a series of tests on the microprocessor, compass coil, and internal circuitry.

Set Condition: The code will be set, if during the self test the EVIC detects a problem the microprocessor, compass coil, and internal circuitry.

POSSIBLE CAUSES
EVIC INTERNAL FAILURE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the DTC. Cycle the ignition on and off several times leaving the ignition in the on position for at least 15 second each time. With the DRBIII®, read DTCs. Does the DTC reset? Yes → Replace Electronic Vehicle Information Center. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

LOOPBACK FAILURE

POSSIBLE CAUSES
CMTC/EVIC MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase DTCs. Turn the ignition off, and wait approximately 15 seconds. With the DRBIII®, read DTCs. Did this DTC reset? Yes → Replace the CMTC or EVIC in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
NO BCM MESSAGES RECEIVED

POSSIBLE CAUSES
DTC PRESENT
NO RESPONSE - PCI BUS - BCM
CMTC/EVIC MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase DTCs. Cycle the ignition and wait approximately 1 minute. With the DRBIII®, read DTCs. Did this DTC reset? Yes → Go To 2 No → The condition is not present at this time. Monitor DRBIII® parameters while wiggling the related wire harness. refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness and connector terminals. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition on. With the DRBIII®, attempt to I/D or communicate with the BCM. Was the DRBIII® able to communicate with the BCM? Yes → Replace the CMTC or EVIC in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Refer to the COMMUNICATION category and perform the appropriate symptom. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
NO FCM MESSAGES RECEIVED

POSSIBLE CAUSES
DTC PRESENT
NO RESPONSE - PCI BUS - FCM
CMTC/EVIC MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase DTCs. Cycle the ignition and wait approximately 1 minute. With the DRBIII®, read DTCs. Did this DTC reset? Yes → Go To 2 No → The condition is not present at this time. Monitor DRBIII® parameters while wiggling the related wire harness. refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness and connector terminals. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition on. With the DRBIII®, attempt to I/D or communicate with the FCM. Was the DRBIII® able to communicate with the FCM? Yes → Replace the CMTC or EVIC in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Refer to the COMMUNICATION category and perform the appropriate symptom. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
NO PCM MESSAGES RECEIVED

POSSIBLE CAUSES
DTC PRESENT
NO RESPONSE - PCI BUS - PCM
CMTC/EVIC MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase DTCs. Cycle the ignition and wait approximately 15 seconds. With the DRBIII®, read DTCs. Did this DTC reset? Yes → Go To 2 No → The condition is not present at this time. Monitor DRBIII® parameters while wiggling the related wire harness. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness and connector terminals. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition on. With the DRBIII®, enter Body Computer, System Tests, then PCM Monitor. Does the DRBIII® display PCM Active on the Bus? Yes → Replace the CMTC or EVIC in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Refer to the COMMUNICATION category and perform the appropriate symptom. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
NO TCM MESSAGES RECEIVED

POSSIBLE CAUSES
DTC PRESENT
NO RESPONSE - PCI BUS - TCM
CMTC/EVIC MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase DTCs. Cycle the ignition and wait approximately 1 minute. With the DRBIII®, read DTCs. Did this DTC reset? Yes → Go To 2 No → The condition is not present at this time. Monitor DRBIII® parameters while wiggling the related wire harness. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness and connector terminals. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition on. With the DRBIII®, attempt to I/D or communicate with the TCM. Was the DRBIII® able to communicate with the TCM? Yes → Replace the CMTC or EVIC in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Refer to the COMMUNICATION category and perform the appropriate symptom. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
OTIS MODULE MESSAGE MISMATCH

When Monitored and Set Condition:

OTIS MODULE MESSAGE MISMATCH

When Monitored: With the ignition on.

Set Condition: BCM has learned EC Mirror but the vehicle is Not equipped with EC Mirror.

POSSIBLE CAUSES
INTERMITTENT CONDITION
EVIC COMMUNICATION
CMTC/EVIC MODULE
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**NOTE: All communication DTC(s) that may have set along with this DTC must be diagnosed before continuing.** **NOTE: If the DTC EC Mirror Day/Night Line Fault is present in the EVIC along with this DTC, diagnose the EC Mirror Day/Night Line Fault first before continuing.** With the DRBIII®, erase the DTC. Cycle the ignition on and off several times, leaving the ignition on for at least 15 seconds. With the DRBIII®, read DTCs. Did the DTC OTIS Module Message Mismatch reset? Yes → Go To 2 No → Go To 4	All
2	Turn the ignition on. With the DRBIII®, attempt to communicate with the CMTC/EVIC Module. Can communication be established with the CMTC/EVIC Module? Yes → Go To 3 No → Refer to the Communication Category and perform the appropriate symptom. Perform BODY VERIFICATION TEST - VER 1.	All

OTIS MODULE MESSAGE MISMATCH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Install a substitute CMTC/EVIC Module in place of the original module. With the DRBIII®, erase DTCs. Turn the ignition on. Cycle the ignition on and off, leaving the ignition in the on position for at least 15 seconds each time. With the DRBIII®, read DTCs. Did the DTC reset? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Replace the CMTC/EVIC Module. Perform BODY VERIFICATION TEST - VER 1.	All
4	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
OTIS MODULE MESSAGE MISMATCH (DIESEL)

When Monitored and Set Condition:

OTIS MODULE MESSAGE MISMATCH (DIESEL)

When Monitored: With the ignition on.

Set Condition: FCM has learned EC Mirror but the vehicle is Not equipped with EC Mirror.

POSSIBLE CAUSES
INTERMITTENT CONDITION
CMTC/EVIC COMMUNICATION
CMTC/EVIC MODULE
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**NOTE: All communication DTC(s) that may have set along with this DTC must diagnosed before continuing.** **NOTE: If the DTC EC Mirror Day/Night Line Fault is present in the EVIC along with this DTC, diagnose the EC Mirror Day/Night Line Fault first before continuing.** With the DRBIII®, erase the DTC. Cycle the ignition on and off several times, leaving the ignition on for at least 15 seconds. With the DRBIII®, read DTCs. Did the DTC OTIS Module Message Mismatch reset? Yes → Go To 2 No → Go To 4	All
2	Turn the ignition on. With the DRBIII®, attempt to communicate with the CMTC/EVIC Module. Can communication be established with the CMTC/EVIC Module? Yes → Go To 3 No → Refer to the Communication Category and perform the appropriate symptom. Perform BODY VERIFICATION TEST - VER 1.	All

OTIS MODULE MESSAGE MISMATCH (DIESEL) — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Install a substitute CMTC/EVIC Module in place of the original module. With the DRBIII®, erase DTCs. Turn the ignition on. Cycle the ignition on and off, leaving the ignition in the on position for at least 15 seconds each time. With the DRBIII®, read DTCs. Did the DTC reset? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Replace the CMTC/EVIC Module. Perform BODY VERIFICATION TEST - VER 1.	All
4	**WARNING: WHEN THE ENGINE IS OPERATING, DO NOT STAND IN A DIRECT LINE WITH THE FAN. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR FAN. DO NOT WEAR LOOSE CLOTHING.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** With the engine running at normal operating temperature, monitor the DRB parameters related to the DTC while wiggling the wiring harness. Look for parameter values to change and/or a DTC to set. Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

***REPAIRING CMTC DISPLAYS DOUBLE DASH (- -) IN TEMP DISPLAY**

POSSIBLE CAUSES
NO RESPONSE - PCI BUS - FRONT CONTROL MODULE
CMTC BUS MESSAGE FAILURE
COMPASS MINI-TRIP COMPUTER
AMBIENT TEMPERATURE SENSOR
AMBIENT TEMPERATURE SENSOR SIGNAL CIRCUIT SHORT TO SENSOR CIRCUIT
AMBIENT TEMPERATURE SENSOR SIGNAL CIRCUIT SHORT TO GROUND
AMBIENT TEMPERATURE SENSOR SIGNAL CIRCUIT OPEN
AMBIENT TEMPERATURE SENSOR RETURN CIRCUIT OPEN
INTELLIGENT POWER MODULE
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, select System Monitors, J1850 Module Scan. Does the DRBIII® display FCM on the BUS? Yes → Go To 2 No → Refer to the COMMUNICATIONS category and perform the appropriate symptom.	All
2	Turn the ignition on. With the DRBIII®, select Body, Compass Mini-Trip, System Tests, then Auto Self Test. Does the DRBIII® display TEST FAILED: Bus Message Failure? Yes → Refer to the COMMUNICATIONS category and perform the appropriate symptom. No → Go To 3	All
3	Turn the ignition on. With the DRBIII®, select Body, Compass Mini-Trip, System Tests, then Auto Self Test. Does the DRBIII® display TEST FAILED: Internal EVIC Failure? Yes → Replace the Compass Mini-Trip Computer in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

*REPAIRING CMTC DISPLAYS DOUBLE DASH (- -) IN TEMP DISPLAY — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Ambient Temperature Sensor harness connector. Check connectors - Clean/repair as necessary. Measure the resistance of the Ambient Temperature Sensor. 0°C (32°F) Sensor Resistance = 29.33 - 35.99 kilohms 10°C (50°F) Sensor Resistance = 17.99 - 21.81 kilohms 20°C (68°F) Sensor Resistance = 11.37 - 13.61 kilohms 30°C (86°F) Sensor Resistance = 7.37 - 8.75 kilohms 40°C (104°F) Sensor Resistance = 4.90 - 5.75 kilohms Does the Ambient Temperature Sensor measure within specifications? Yes → Go To 5 No → Replace the Ambient Temperature Sensor in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the Ambient Temperature Sensor harness connector. Disconnect the IPM C1 harness connector. Check connectors - Clean/repair as necessary. Measure the resistance of the Ambient Temperature Sensor Signal circuit to the Sensor Return circuit. Does the resistance measure less than 5.0 ohms? Yes → Repair the Ambient Temperature Sensor Signal circuit for a short to the Sensor Return circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off. Disconnect the Ambient Temperature Sensor harness connector. Disconnect the IPM C1 harness connector. Check connectors - Clean/repair as necessary. Measure the resistance of the Ambient Temperature Sensor Signal circuit to ground. Does the resistance measure less than 5.0 ohms? Yes → Repair the Ambient Temperature Sensor Signal circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off. Disconnect the Ambient Temperature Sensor harness connector. Disconnect the IPM C1 harness connector. Check connectors - Clean/repair as necessary. Measure the resistance of the Ambient Temperature Sensor Signal circuit. Does the resistance measure less than 5.0 ohms? Yes → Go To 8 No → Repair the Ambient Temperature Sensor Signal circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

*REPAIRING CMTC DISPLAYS DOUBLE DASH (- -) IN TEMP DISPLAY — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the Ambient Temperature Sensor harness connector. Disconnect the IPM C1 harness connector. Check connectors - Clean/repair as necessary. Measure the resistance of the Ambient Temperature Sensor Return circuit. Does the resistance measure less than 5.0 ohms? Yes → Go To 9 No → Repair the Ambient Temperature Sensor Return circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
9	Turn the ignition off. Disconnect and isolate the battery negative cable. Disconnect the IPM C1 harness connector. Disconnect the FCM from the IPM. Check connectors - Clean/repair as necessary. Measure the resistance of the Ambient Temperature Sensor Signal circuit and the Return circuit through the IPM. Does each circuit resistance measure less than 5.0 ohms? Yes → Replace the Front Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Intelligent Power Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

DRIVER DOOR LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE

When Monitored and Set Condition:

DRIVER DOOR LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the door lock switch above 4.6 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - DRIVER DOOR LOCK SWITCH VOLTAGE LOW
DOOR LOCK SWITCH GROUND OPEN
DOOR LOCK SWITCH MUX CIRCUIT OPEN
DOOR LOCK SWITCH OPEN
DOOR LOCK SWITCH MUX CIRCUIT SHORT TO VOLTAGE
BODY CONTROL MODULE - DOOR LOCK SWITCH MUX SHORT TO VOLTAGE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Cycle the ignition switch from ON to OFF to ON. With the DRBIII®, read DTC's. Remove the key and operate the door locks from the Driver Door Lock Switch while monitoring the DRBIII®. Wait 10 seconds. Does the DRBIII® display DR DOOR LOCK SW INPUT OPEN OR SHORT TO VOLTAGE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII® in Sensors, read the DR DOOR LOCK SW voltage. Does the DRBIII® display 4.3 volts or greater? Yes → Go To 3 No → Disconnect the BCM harness connector(s). Check connectors - Clean/repair as necessary. If okay, replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

DRIVER DOOR LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Driver Door Lock Switch connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit in the harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Driver Door Lock Switch connector. Measure the voltage between Door Lock Switch Mux circuit and Ground in the harness connector. Select the voltage present. Below 4.3 volts.. Repair the Door Lock Switch Mux circuit for an open. Perform BODY VERIFICATION TEST - VER 1. Between 4.4 volts and 5.2 volts. Replace the Door Lock Switch. Perform BODY VERIFICATION TEST - VER 1. Above 5.3 volts. Go To 5	All
5	Disconnect the Driver Door Lock Switch connector. Disconnect the Body Control Module C3 connector. **NOTE: Check connectors - Clean/repair as necessary.** Turn the ignition on. Turn the park lamps on. Measure the voltage between Door Lock Switch Mux circuit and ground. Is there any voltage present? Yes → Repair the Door Lock Switch Mux circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
DRIVER DOOR LOCK SWITCH INPUT SHORT

When Monitored and Set Condition:

DRIVER DOOR LOCK SWITCH INPUT SHORT

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the door lock switch below .5 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
DOOR LOCK SWITCH SHORTED
DOOR LOCK SWITCH MUX SHORTED
BODY CONTROL MODULE - DOOR LOCK SWITCH VOLTAGE SHORTED

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, record and erase DTC's. With the DRBIII®, read DTC's. Remove the key and operate the door locks several times from the Driver Door Lock Switch while monitoring the DRBIII®. Wait 10 seconds. Does the DRBIII® display DR DOOR LOCK SW INPUT SHORT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Door Lock Switch connector. With the DRBIII® in Sensors, read the DR DOOR SW MUX circuit Is the voltage above 4.6 volts? Yes → Replace the Door Lock Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the Driver Door Lock Switch connector. Disconnect the Body Control Module C3 connector. **NOTE: Check connectors - Clean/repair as necessary.** Measure the resistance between Door Lock Switch Mux circuit and ground. Is the resistance below 1000.0 ohms? Yes → Repair the Door Lock Switch Mux circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

DRIVER DOOR LOCK SWITCH INPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
4	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
DRIVER DOOR LOCK SWITCH INPUT STUCK

When Monitored and Set Condition:

DRIVER DOOR LOCK SWITCH INPUT STUCK

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the door lock switch between 1.3 and 3.25 for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - DOOR LOCK SWITCH VOLTAGE INCORRECT
DOOR LOCK SWITCH GROUND OPEN
DOOR LOCK SWITCH MUX OPEN
DOOR LOCK SWITCH STUCK

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, record and erase DTC's. With the DRBIII®, read DTC's. Remove the key and operate the door lock several times from the Driver Door Lock Switch while monitoring the DRBIII®. Wait 10 seconds. Does the DRBIII® display DR DOOR LOCK SW INPUT STUCK? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII® in Sensors, read the DR DOOR LOCK SW voltage. Does the DRBIII® display voltage between 1.3 and 3.25 volts? Yes → Go To 3 No → Disconnect the BCM harness connector(s). Check connectors - Clean/repair as necessary. If okay, replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Driver Door Lock Switch connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

DRIVER DOOR LOCK SWITCH INPUT STUCK — Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the Driver Door Lock Switch connector. Measure the voltage between Door Lock Switch Mux circuit and ground. Is the voltage above 4.6 volts? Yes → Go To 5 No → Repair the Door Lock Switch Mux circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the Door Lock Switch. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

LEFT CYLINDER LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE

When Monitored and Set Condition:

LEFT CYLINDER LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the cylinder lock switch above 4.6 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - LEFT CYLINDER LOCK SWITCH VOLTAGE LOW
CYLINDER LOCK SWITCH GROUND OPEN
CYLINDER LOCK SWITCH MUX OPEN
CYLINDER LOCK SWITCH OPEN
CYLINDER LOCK SWITCH MUX SHORT TO VOLTAGE
BODY CONTROL MODULE - LEFT CYLINDER LOCK SWITCH MUX SHORT TO VOLTAGE

TEST	ACTION	APPLICABILITY
1	NOTE: When this code is present, the VTSS indicator will illuminate solid during the arming process. With the DRBIII®, record and erase DTC's. Cycle the ignition switch from ON to OFF to ON. With the DRBIII®, read DTC's. Remove the key and operate the door locks several times from the Left Cylinder Lock Switch while monitoring the DRBIII®. Wait 10 seconds. Does the DRBIII® display LEFT CYL LOCK SW INPUT OPEN OR SHORT TO VOLTAGE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII® in Sensors, read the LEFT CYL LOCK SW voltage. Does the DRBIII® display 4.0 volts or greater? Yes → Go To 3 No → Disconnect the BCM harness connector(s). Check connectors - Clean/repair as necessary. If okay, replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

LEFT CYLINDER LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Left Cylinder Lock Switch connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit in the harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Left Cylinder Lock Switch connector. Measure the voltage between Cylinder Lock Switch Mux circuit and Ground in the harness connector. Select the voltage present. Below 4.2 volts. Repair the Cylinder Lock Switch Mux circuit for an open. Perform BODY VERIFICATION TEST - VER 1. Between 4.3 volts and 5.2 volts. Replace the Cylinder Lock Switch. Perform BODY VERIFICATION TEST - VER 1. Above 5.3 volts. Go To 5	All
5	Disconnect the Left Cylinder Door Lock Switch connector. Disconnect the Body Control Module C3 connector. **NOTE: Check connectors - Clean/repair as necessary.** Turn the ignition on. Measure the voltage between Left Cylinder Lock Switch Mux circuit and ground. Is there any voltage present? Yes → Repair the Cylinder Lock Switch Mux circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

LEFT CYLINDER LOCK SWITCH INPUT SHORT

When Monitored and Set Condition:

LEFT CYLINDER LOCK SWITCH INPUT SHORT

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the cylinder lock switch below .5 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
CYLINDER LOCK SWITCH SHORTED
CYLINDER LOCK SWITCH MUX CIRCUIT SHORTED
BODY CONTROL MODULE - LEFT CYLINDER LOCK SWITCH VOLTAGE SHORTED

TEST	ACTION	APPLICABILITY
1	NOTE: When this code is present, the VTSS indicator will stay on solid during the arming process. With the DRBIII®, record and erase DTC's. Cycle the ignition switch from ON to OFF to ON. With the DRBIII®, read DTC's. Remove the key and operate the door locks several times from the Left Cylinder Lock Switch while monitoring the DRBIII®. Wait 10 seconds. Does the DRBIII® display LEFT CYL LOCK SW INPUT SHORT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Left Cylinder Lock Switch connector. With the DRBIII® in Sensors, read the LEFT CYL SW MUX circuit Is the voltage above 4.6 volts? Yes → Replace the Cylinder Lock Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

LEFT CYLINDER LOCK SWITCH INPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Right Cylinder Lock Switch connector. Disconnect the Body Control Module C3 connector. Measure the resistance between Cylinder Lock Switch Mux circuit and ground. Is the resistance below 1000.0 ohms? Yes → Repair the Cylinder Lock Switch Mux circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	If there are no possible causes remaining, view repair. Repair Disconnect the BCM harness connector(s). Check connectors - Clean/repair as necessary. If okay, replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
LEFT CYLINDER LOCK SWITCH INPUT STUCK

When Monitored and Set Condition:

LEFT CYLINDER LOCK SWITCH INPUT STUCK

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the cylinder lock switch between 1.3 and 3.25 for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - LEFT CYLINDER LOCK SWITCH VOLTAGE INCORRECT
LEFT CYLINDER LOCK SWITCH GROUND OPEN
LEFT CYLINDER LOCK SWITCH MUX OPEN
CYLINDER LOCK SWITCH STUCK

TEST	ACTION	APPLICABILITY
1	NOTE: When this code is present, the VTSS indicator will stay on solid during the arming process. With the DRBIII®, record and erase DTC's. Cycle the ignition switch from ON to OFF to ON. With the DRBIII®, read DTC's. Remove the key and operate the door lock several times from the Left Cylinder Lock Switch while monitoring the DRBIII®. Wait 10 seconds. Does the DRBIII® display LEFT CYL LOCK SW INPUT STUCK? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII® in Sensors, read the LEFT CYL LOCK SW voltage. Does the DRBIII® display voltage between 1.3 and 3.25 volts? Yes → Go To 3 No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Left Cylinder Lock Switch connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

LEFT CYLINDER LOCK SWITCH INPUT STUCK — Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the Left Cylinder Lock Switch connector. Measure the voltage between Cylinder Lock Switch Mux circuit and ground. Is the voltage above 4.6 volts? Yes → Go To 5 No → Repair the Left Cylinder Lock Switch Mux circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the Cylinder Lock Switch. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

LEFT UNLOCK OUTPUT FAILURE

When Monitored and Set Condition:

LEFT UNLOCK OUTPUT FAILURE

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses a short condition on the left side door unlock circuits for over 125 milliseconds.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - LEFT DOOR UNLOCK DRIVER SHORT TO GROUND
LEFT FRONT DOOR UNLOCK DRIVER SHORT TO GROUND
LEFT SLIDING DOOR UNLOCK DRIVER SHORT TO GROUND
LEFT FRONT DOOR LOCK MOTOR - SHORT TO GROUND
LEFT SLIDING DOOR LOCK MOTOR - SHORT TO GROUND

TEST	ACTION	APPLICABILITY
1	NOTE: When this code is present all unlock outputs may be turned off. With the DRBIII®, record and erase DTC's. With the DRBIII®, read DTC's. Operate the door locks several times from the Driver Door Lock Switch while monitoring the DRBIII®. Does the DRBIII® display LEFT UNLOCK OUTPUT FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Body Control Module C2 connector. Measure the resistance between ground and the Left Front Door Unlock Driver circuit and then the Left Sliding Door Unlock Driver circuit. Select the appropriate reading. Left Front Door Unlock under 1000.0 ohms Go To 3 Left Sliding Door Unlk under 1000.0 ohms Go To 4 Neither circuit under 1000.0 ohms. Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

LEFT UNLOCK OUTPUT FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Body Control Module C2 connector. Disconnect the Left Front Door Lock Motor/Ajar Switch connector. Measure the resistance between ground and the Left Front Door Unlock Driver circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Left Front Door Unlock Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Door Lock Motor. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Body Control Module C2 connector. Disconnect the Left Sliding Door Lock Motor connector. Measure the resistance between ground and the Left Sliding Door Unlock Driver circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Left Sliding Door Unlock Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Sliding Door Lock Motor (latch assembly). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

LIFTGATE CYLINDER LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE - (EXPORT ONLY)

When Monitored and Set Condition:

LIFTGATE CYLINDER LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE - (EXPORT ONLY)

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the cylinder lock switch above 4.6 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - LIFTGATE CYLINDER SWITCH VOLTAGE LOW
LIFTGATE CYLINDER SWITCH GROUND OPEN
LIFTGATE CYLINDER SWITCH MUX OPEN
LIFTGATE CYLINDER SWITCH OPEN
CYLINDER LOCK SWITCH MUX SHORT TO VOLTAGE
BODY CONTROL MODULE - LIFTGATE CYLINDER LOCK SWITCH MUX SHORT TO VOLTAGE

TEST	ACTION	APPLICABILITY
1	NOTE: When this code is present, the VTSS indicator will stay on solid during the arming process. With the DRBIII®, record and erase DTC's. With the DRBIII®, read DTC's. Remove the key and operate the Liftgate Cylinder Switch several times while monitoring the DRBIII®. Wait 10 seconds. Does the DRBIII® display LGATE CYL SW INPUT OPEN OR SHORT TO VOLTAGE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII® in Sensors, read the LGATE CYL SW voltage. Does the DRBIII® display 4.2 volts or greater? Yes → Go To 3 No → Disconnect the BCM harness connector(s). Check connectors - Clean/repair as necessary. If okay, replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

LIFTGATE CYLINDER LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE - (EXPORT ONLY) — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Liftgate Cylinder Switch connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Liftgate Cylinder Switch connector. Measure the voltage between Cylinder Lock Switch Mux circuit and ground. Select the voltage present. Below 1.2 volts. Repair the Liftgate Cylinder Lock Switch Mux circuit for an open. Perform BODY VERIFICATION TEST - VER 1. Between 1.3 volts and 5.2 volts. Replace the Liftgate Cylinder Switch. Perform BODY VERIFICATION TEST - VER 1. Above 5.3 volts. Go To 5	All
5	Disconnect the Liftgate Cylinder Door Lock Switch connector. Disconnect the Body Control Module C3 connector. **NOTE: Check connectors - Clean/repair as necessary.** Turn the ignition on. Measure the voltage between Liftgate Cylinder Lock Switch Mux circuit and ground. Is there any voltage present? Yes → Repair the Cylinder Lock Switch Mux circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

LIFTGATE CYLINDER LOCK SWITCH INPUT SHORT - (EXPORT ONLY)

When Monitored and Set Condition:

LIFTGATE CYLINDER LOCK SWITCH INPUT SHORT - (EXPORT ONLY)

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the cylinder lock switch is below .5 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
LIFTGATE CYLINDER SWITCH SHORTED
LIFTGATE CYLINDER LOCK SWITCH MUX CIRCUIT SHORTED
BODY CONTROL MODULE - LIFTGATE CYLINDER LOCK SWITCH MUX SHORTED

TEST	ACTION	APPLICABILITY
1	NOTE: When this code is present, the VTSS indicator will stay on solid during the arming process. With the DRBIII®, record and erase DTC's. With the DRBIII®, read DTC's. Remove the key and operate the Liftgate Cylinder Switch several times while monitoring the DRBIII®. Wait 10 seconds. Does the DRBIII® display LGATE CYL LOCK SW INPUT SHORT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Liftgate Cylinder Switch connector. With the DRBIII® in Sensors, read the LGATE CYL SW voltage. Is the voltage above 4.6 volts? Yes → Replace the Liftgate Cylinder Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

LIFTGATE CYLINDER LOCK SWITCH INPUT SHORT - (EXPORT ONLY)

— Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Liftgate Cylinder Switch connector. Disconnect the Body Control Module C3 connector. Measure the resistance between Cylinder Lock Switch Mux circuit and ground. Is the resistance below 1000.0 ohms? Yes → Repair the Liftgate Cylinder Lock Switch Mux circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	If there are no possible causes remaining, view repair. Repair Disconnect the BCM harness connector(s). Check connectors - Clean/repair as necessary. If okay, replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

LIFTGATE CYLINDER LOCK SWITCH INPUT STUCK - (EXPORT ONLY)

When Monitored and Set Condition:

LIFTGATE CYLINDER LOCK SWITCH INPUT STUCK - (EXPORT ONLY)

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the cylinder lock switch between 1.3 and 3.25 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - LIFTGATE CYLINDER SWITCH VOLTAGE INCORRECT
LIFTGATE CYLINDER SWITCH GROUND OPEN
LIFTGATE CYLINDER LOCK SWITCH MUX OPEN
CYLINDER LOCK SWITCH STUCK

TEST	ACTION	APPLICABILITY
1	NOTE: When this code is present, the VTSS indicator will stay on solid during the arming process. With the DRBIII®, record and erase DTC's. With the DRBIII®, read DTC's. Remove the key and operate the Liftgate Cylinder Switch several times while monitoring the DRBIII®. Wait 10 seconds. Does the DRBIII® display LGATE CYL SW INPUT STUCK? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII® in Sensors, read the LGATE CYL LOCK SW voltage. Does the DRBIII® display voltage between 1.3 and 3.25 volts? Yes → Go To 3 No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Liftgate Cylinder Switch connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

LIFTGATE CYLINDER LOCK SWITCH INPUT STUCK - (EXPORT ONLY)

— Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the Liftgate Cylinder Lock Switch connector. Measure the voltage between Cylinder Lock Switch Mux circuit and ground. Is the voltage above 4.6 volts? Yes → Go To 5 No → Repair the Liftgate Cylinder Lock Switch Mux circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the Cylinder Lock Switch. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
LIFTGATE POWER RELEASE OUTPUT SHORT

When Monitored and Set Condition:

LIFTGATE POWER RELEASE OUTPUT SHORT

When Monitored: Continuously for non power liftgate vehicles

Set Condition: When the Body Control Module senses a low output on the Liftgate Release Driver circuit for longer than 125 ms during a liftgate release actuation.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - LIFTGATE RELEASE DRIVER SHORTED
LIFTGATE RELEASE DRIVER WIRE SHORT TO GROUND
LIFTGATE RELEASE MOTOR SHORTED

TEST	ACTION	APPLICABILITY
1	Ensure vehicle is unlocked before proceeding. Turn the ignition on. With the DRBIII®, record and erase DTC's. With the DRBIII®, read DTC's. Operate the Liftgate Release several times from the Liftgate Handle Switch while monitoring the DRBIII®. Does the DRBIII® display LIFTGATE POWER RELEASE OUTPUT SHORT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Body Control Module C3 connector. Measure the resistance between ground and the Liftgate Release Driver circuit. Is the resistance below 3.5 ohms? Yes → Go To 3 No → Disconnect the BCM harness connector(s). Check connectors - Clean/repair as necessary. If okay, replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Liftgate Ajar Switch connector. Disconnect the Body Control Module C3 connector. **NOTE: Check connectors - Clean/repair as necessary.** Measure the resistance between Liftgate Release Driver circuit and ground. Is the resistance below 100.0 ohms? Yes → Repair the Liftgate Release Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

LIFTGATE POWER RELEASE OUTPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
4	If there are no possible causes remaining, view repair. Repair Replace the Liftgate Release Motor. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

LOCK OUTPUT FAILURE

When Monitored and Set Condition:

LOCK OUTPUT FAILURE

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses a short condition on the door lock circuits for over 125 milliseconds.

POSSIBLE CAUSES
DTC PRESENT
DOOR LOCK DRIVER SHORT TO GROUND
LEFT FRONT DOOR LOCK DRIVER SHORT GROUND
LEFT SLIDING DOOR LOCK DRIVER WIRE SHORT TO GROUND
RIGHT FRONT DOOR LOCK DRIVER WIRE SHORT TO GROUND
RIGHT SLIDING DOOR LOCK DRIVER WIRE SHORT TO GROUND
LEFT FRONT DOOR LOCK MOTOR - SHORT TO GROUND
LEFT SLIDING DOOR LOCK MOTOR - SHORT TO GROUND
RIGHT FRONT DOOR LOCK MOTOR - SHORT TO GROUND
RIGHT SLIDING DOOR LOCK MOTOR - SHORT TO GROUND

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Cycle the ignition switch from ON to OFF. With the DRBIII®, read DTC's. Remove the key and operate the door locks several times from the Driver Door Lock Switch while monitoring the DRBIII® Does the DRBIII® display LOCK OUTPUT FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent problem. Perform BODY VERIFICATION TEST - VER 1.	All

LOCK OUTPUT FAILURE — Continued

TEST	ACTION	APPLICABILITY
2	Disconnect the Body Control Module C2 connector. **NOTE: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and each of the Door Lock Driver circuits. Select the appropriate reading. Right Front Door Lock under 1000.0 ohm Go To 3 Right Sliding Door Lock under 1000.0 ohm Go To 4 Left Front Door Lock under 1000.0 ohm Go To 5 Left Sliding Door Lock under 1000.0 ohm Go To 6 None of the circuits under 1000.0 ohms. Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Body Control Module C2 connector. Disconnect the Right Front Door Lock Motor/Ajar Switch connector. Measure the resistance between ground and the Right Front Door Lock Driver circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Right Front Door Lock Driver wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Door Lock Motor. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Body Control Module C2 connector. Disconnect the Right Sliding Door Lock Motor connector. Measure the resistance between ground and the Right Sliding Door Lock Driver circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Right Sliding Door Lock Driver wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Right Sliding Door Lock Motor (Latch assy.) Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Body Control Module C2 connector. Disconnect the Left Front Door Lock Motor connector. Measure the resistance between ground and the Left Front Door Lock Driver circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Left Front Door Lock Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Door Lock Motor. Perform BODY VERIFICATION TEST - VER 1.	All

LOCK OUTPUT FAILURE — Continued

TEST	ACTION	APPLICABILITY
6	Disconnect the Body Control Module C2 connector. Disconnect the Left Sliding Door Lock Motor connector. Measure the resistance between ground and the Left Sliding Door Lock Driver circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Left Sliding Door Lock Driver wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Left Sliding Door Lock Motor (Latch assy.) Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

PASSENGER DOOR LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE

When Monitored and Set Condition:

PASSENGER DOOR LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the door lock switch above 4.6 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - PASSENGER DOOR LOCK SWITCH VOLTAGE LOW
DOOR LOCK SWITCH GROUND OPEN
DOOR LOCK SWITCH MUX OPEN
DOOR LOCK SWITCH OPEN
DOOR LOCK SWITCH MUX SHORT TO VOLTAGE
BODY CONTROL MODULE - DOOR LOCK SWITCH MUX SHORT TO VOLTAGE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Cycle the ignition from ON to OFF to ON. With the DRBIII®, read DTC's. Remove the key and operate the door locks several times from the Passenger Door Lock Switch while monitoring the DRBIII®. Does the DRBIII® display PASS DOOR LOCK SW INPUT OPEN OR SHORT TO VOLTAGE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII® in Sensors, read the PASS DOOR LOCK SW voltage. Does the DRBIII® display 4.0 volts or greater? Yes → Go To 3 No → Disconnect the BCM harness connector(s). Check connectors - Clean/repair as necessary. If okay, replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

PASSENGER DOOR LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Passenger Door Lock Switch connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Passenger Door Lock Switch connector. Measure the voltage between Door Lock Switch Mux circuit and ground. Select the voltage present. Below 4.0 volts. Repair the Door Lock Switch Mux circuit for an open. Perform BODY VERIFICATION TEST - VER 1. Between 4.1 volts and 5.2 volts. Replace the Door Lock Switch. Perform BODY VERIFICATION TEST - VER 1. Above 5.3 volts Go To 5	All
5	Disconnect the Passenger Door Lock Switch connector. Disconnect the Body Control Module C3 connector. **NOTE: Check connectors - Clean/repair as necessary.** Turn the ignition on. Measure the voltage between Door Lock Switch Mux circuit and ground. Is there any voltage present? Yes → Repair the Door Lock Switch Mux circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
PASSENGER DOOR LOCK SWITCH INPUT SHORT

When Monitored and Set Condition:

PASSENGER DOOR LOCK SWITCH INPUT SHORT

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the door lock switch below .5 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
PASSENGER DOOR LOCK SWITCH SHORTED
DOOR LOCK SWITCH MUX SHORTED
BODY CONTROL MODULE - PASSENGER DOOR LOCK SWITCH VOLTAGE SHORTED

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Cycle ignition ON to OFF to ON. With the DRBIII®, read DTCs. Remove the key and operate the door locks several times from the Driver Door Lock Switch while monitoring the DRBIII. Does the DRBIII® display DR DOOR LOCK SW INPUT SHORT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Passenger Door Lock Switch connector. With the DRBIII® in Sensors, read the PASS DOOR SW MUX circuit Is the voltage above 4.6 volts? Yes → Replace the Door Lock Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the Passenger Door Lock Switch connector. Disconnect the Body Control Module C3 connector. Measure the resistance between Door Lock Switch Mux circuit and ground. Is the resistance below 1000.0 ohms? Yes → Repair the Door Lock Switch Mux circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

PASSENGER DOOR LOCK SWITCH INPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
4	If there are no possible causes remaining, view repair. Repair Disconnect the BCM harness connector(s). Check connectors - Clean/repair as necessary. If okay, replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
PASSENGER DOOR LOCK SWITCH INPUT STUCK

When Monitored and Set Condition:

PASSENGER DOOR LOCK SWITCH INPUT STUCK

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the door lock switch between 1.3 and 3.25 for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - PASSENGER DOOR LOCK SWITCH VOLTAGE INCORRECT
DOOR LOCK SWITCH GROUND OPEN
DOOR LOCK SWITCH MUX OPEN
DOOR LOCK SWITCH STUCK

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Cycle the ignition ON to OFF to ON. With the DRBIII®, read DTCs. Remove the key and operate the door lock several times from the Passenger Door Lock Switch while monitoring the DRBIII. Does the DRBIII® display PASS DOOR LOCK SW INPUT STUCK? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII® in Sensors, read the PASS DOOR LOCK SW voltage. Does the DRBIII® display voltage between 1.3 and 3.25 volts? Yes → Go To 3 No → Disconnect the BCM harness connector(s). Check connectors - Clean/repair as necessary. If okay, replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Passenger Door Lock Switch connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

PASSENGER DOOR LOCK SWITCH INPUT STUCK — Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the Passenger Door Lock Switch connector. Measure the voltage between Door Lock Switch Mux circuit and ground. Is the voltage above 4.6 volts? Yes → Go To 5 No → Repair the Door Lock Switch Mux circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the Door Lock Switch. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

RIGHT CYLINDER LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE

When Monitored and Set Condition:

RIGHT CYLINDER LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the cylinder lock switch above 4.6 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - RIGHT CYLINDER LOCK SWITCH VOLTAGE LOW
CYLINDER LOCK SWITCH GROUND OPEN
CYLINDER LOCK SWITCH MUX OPEN
CYLINDER LOCK SWITCH OPEN
CYLINDER LOCK SWITCH MUX SHORT TO VOLTAGE
BODY CONTROL MODULE - RIGHT CYLINDER LOCK SWITCH MUX SHORT TO VOLTAGE

TEST	ACTION	APPLICABILITY
1	NOTE: When this code is present, the VTSS indicator will stay on solid during the arming process. With the DRBIII®, record and erase DTC's. With the DRBIII®, read DTCs. Remove the key and operate the door locks several times from the Right Cylinder Lock Switch while monitoring the DRBIII®. Wait 10 seconds. Does the DRBIII® display RIGHT CYL LOCK SW INPUT OPEN OR SHORT TO VOLTAGE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII® in Sensors, read the RIGHT CYL LOCK SW voltage. Does the DRBIII® display 4.2 volts or greater? Yes → Go To 3 No → Disconnect the BCM harness connector(s). Check connectors - Clean/repair as necessary. If okay, replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

RIGHT CYLINDER LOCK SWITCH INPUT OPEN OR SHORT TO VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Right Cylinder Lock Switch connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Right Cylinder Lock Switch connector. Measure the voltage between Cylinder Lock Switch Mux circuit and ground. Select the voltage present. Below 4.2 volts. Repair the Cylinder Lock Switch Mux circuit for an open. Perform BODY VERIFICATION TEST - VER 1. Between 4.3 and 5.2 volts. Replace the Cylinder Lock Switch. Perform BODY VERIFICATION TEST - VER 1. Above 5.3 volts. Go To 5	All
5	Disconnect the Right Cylinder Door Lock Switch connector. Disconnect the Body Control Module C3 connector. **NOTE: Check connectors - Clean/repair as necessary.** Turn the ignition on. Measure the voltage between Right Cylinder Lock Switch Mux circuit and Ground in the harness connector. Is there any voltage present? Yes → Repair the Cylinder Lock Switch Mux circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RIGHT CYLINDER LOCK SWITCH INPUT SHORT

When Monitored and Set Condition:

RIGHT CYLINDER LOCK SWITCH INPUT SHORT

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the cylinder lock switch below .5 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
CYLINDER LOCK SWITCH SHORTED
CYLINDER LOCK SWITCH MUX CIRCUIT SHORTED
BODY CONTROL MODULE - RIGHT CYLINDER LOCK SWITCH VOLTAGE SHORTED

TEST	ACTION	APPLICABILITY
1	NOTE: When this code is present, the VTSS indicator will stay on solid during the arming process. With the DRBIII®, record and erase DTC's. With the DRBIII®, read DTC's. Remove the key and operate the door locks several times from the Right Cylinder Lock Switch while monitoring the DRBIII®. Wait 10 seconds. Does the DRBIII® display RIGHT CYL LOCK SW INPUT SHORT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Right Cylinder Lock Switch connector. With the DRBIII® in Sensors, read the RIGHT CYL SW MUX circuit Is the voltage above 4.6 volts? Yes → Replace the Cylinder Lock Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the Right Cylinder Lock Switch connector. Disconnect the Body Control Module C3 connector. Measure the resistance between Cylinder Lock Switch Mux circuit and ground. Is the resistance below 1000.0 ohms? Yes → Repair the Cylinder Lock Switch Mux circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

RIGHT CYLINDER LOCK SWITCH INPUT SHORT — Continued

TEST	ACTION	APPLICABILITY
4	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
RIGHT CYLINDER LOCK SWITCH INPUT STUCK

When Monitored and Set Condition:

RIGHT CYLINDER LOCK SWITCH INPUT STUCK

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses voltage to the cylinder lock switch between 1.3 and 3.25 for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - RIGHT CYLINDER LOCK SWITCH VOLTAGE INCORRECT
RIGHT CYLINDER LOCK SWITCH GROUND OPEN
RIGHT CYLINDER LOCK SWITCH MUX OPEN
CYLINDER LOCK SWITCH STUCK

TEST	ACTION	APPLICABILITY
1	NOTE: When this code is present, the VTSS indicator will stay on solid during the arming process. With the DRBIII®, record and erase DTC's. With the DRBIII®, read DTCs. Remove the key and operate the door lock several times from the Right Cylinder Lock Switch while monitoring the DRBIII®. Wait 10 seconds. Does the DRBIII® display RIGHT CYL LOCK SW INPUT STUCK? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII® in Sensors, read the RIGHT CYL LOCK SW voltage. Does the DRBIII® display voltage between 1.3 and 3.25 volts? Yes → Go To 3 No → Disconnect the BCM harness connector(s). Check connectors - Clean/repair as necessary. If okay, replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Right Cylinder Lock Switch connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

RIGHT CYLINDER LOCK SWITCH INPUT STUCK — Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the Right Cylinder Lock Switch connector. Measure the voltage between Cylinder Lock Switch Mux circuit and ground. Is the voltage above 4.6 volts? Yes → Go To 5 No → Repair the Right Cylinder Lock Switch Mux circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the Cylinder Lock Switch. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

RIGHT UNLOCK OUTPUT FAILURE

When Monitored and Set Condition:

RIGHT UNLOCK OUTPUT FAILURE

When Monitored: At all times when battery power is supplied to the Body Control Module.

Set Condition: When the BCM senses a short condition on the right side door unlock circuits for over 125 milliseconds.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - RIGHT DOOR UNLOCK DRIVER SHORT TO GROUND
RIGHT FRONT DOOR UNLOCK DRIVER SHORT TO GROUND
RIGHT SLIDING DOOR UNLOCK DRIVER SHORT TO GROUND
RIGHT FRONT DOOR LOCK MOTOR - SHORT TO GROUND
RIGHT SLIDING DOOR LOCK MOTOR - SHORT TO GROUND

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Cycle the ignition ON to OFF. With the DRBIII®, read DTCs. Operate the door locks several times from the Right Door Lock Switch while monitoring the DRBIII®. Does the DRBIII® display RIGHT UNLOCK OUTPUT FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Body Control Module C2 connector. **NOTE: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Right Front Door Unlock Driver circuit and then the Right Sliding Door Unlock Driver circuit. Select the appropriate reading. Right Front Door Unlock under 1000.0 ohm Go To 3 Right Sliding Door Unlk under 1000.0 ohm Go To 4 Neither circuit under 1000.0 ohms. Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

RIGHT UNLOCK OUTPUT FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Body Control Module C2 connector. Disconnect the Right Front Door Lock Motor/Ajar Switch connector. Measure the resistance between ground and the Right Front Door Unlock Driver circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Right Front Door Unlock Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Door Lock Motor. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Body Control Module C2 connector. Disconnect the Right Sliding Door Lock Motor connector. Measure the resistance between ground and the Right Sliding Door Unlock Driver circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Right Sliding Door Unlock Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Sliding Door Lock Motor (latch assembly). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

RKE PROGRAM LINE OUTPUT OPEN

When Monitored and Set Condition:

RKE PROGRAM LINE OUTPUT OPEN

When Monitored: With ignition in the RUN position.

Set Condition: When the BCM senses an open or short to ground signal on the RKE Module Program Enable circuit for longer than 0.125 msec.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - RKE MODULE PROGRAM ENABLE CIRCUIT OPEN OR SHORT TO GROUND
RKE MODULE PROGRAM ENABLE WIRE OPEN
RKE MODULE PROGRAM ENABLE WIRE SHORT TO GROUND
RKE MODULE - PROGRAM ENABLE CIRCUIT OPEN

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, record and erase DTC's. With the DRBIII®, read DTCs. Operate the RKE transmitter while monitoring the DRBIII. Does the DRBIII® display RKE PROGRAM LINE OUTPUT OPEN? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Body Control Module C4 connector. Measure the voltage of the RKE Module Program Enable circuit between ground and the BCM C4 connector. Is the voltage between 10.2 and 11.8 volts? Yes → Disconnect the BCM harness connector(s). Check connectors - Clean/repair as necessary. If okay, replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

RKE PROGRAM LINE OUTPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Remote Keyless Entry Module connector. Disconnect the Body Control Module C4 connector. Measure the resistance of the RKE Module Program Enable circuit between the RKE Module connector and the BCM C4 connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the RKE Module Program Enable wire for an open Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Remote Keyless Entry Module connector. Disconnect the Body Control Module C4 connector. Measure the resistance of the RKE Module Program Enable circuit to ground. Is the resistance below 1000.0 ohms? Yes → Repair the RKE Module Program Enable wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	If there are no possible causes remaining, view repair. Repair Replace the Remote Keyless Entry Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

RKE PROGRAM LINE OUTPUT SHORT

When Monitored and Set Condition:

RKE PROGRAM LINE OUTPUT SHORT

When Monitored: With ignition in the RUN position.

Set Condition: When the BCM senses an over current on the RKE Module Program Enable circuit and the RKE is in PROGRAM or DIAGNOSTIC mode.

POSSIBLE CAUSES
DTC PRESENT
REMOTE KEYLESS ENTRY MODULE - RKE MODULE PROGRAM ENABLE CIRCUIT SHORT TO VOLTAGE
RKE MODULE PROGRAM ENABLE WIRE SHORT TO VOLTAGE
BODY CONTROL MODULE - SHORT TO VOLTAGE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, record and erase DTC's. With the DRBIII®, enter PROGRAM RKE. With the DRBIII®, read DTCs. Does the DRBIII® display RKE PROGRAM LINE OUTPUT SHORT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Remote Keyless Entry Module connector. With the DRBIII®, erase DTCs. Cycle the ignition key and wait 30 seconds. With the DRBIII®, read DTCs. Does the DRBIII® display RKE PROGRAM LINE OUTPUT OPEN? No → Go To 3 Yes → Replace the Remote Keyless Entry Module. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Remote Keyless Entry Module connector. Disconnect the Body Control Module C4 connector. Turn the ignition on. Measure the voltage between RKE Module Program Enable circuit and ground. Is there any voltage present? Yes → Repair the RKE Module Program Enable wire for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

*REMOTE KEYLESS ENTRY PROBLEM

POSSIBLE CAUSES
DTC PRESENT
SUBSTITUTE TRANSMITTER
FUSED B(+) CIRCUIT OPEN
GROUND CIRCUIT OPEN
REMOTE KEYLESS ENTRY INTERFACE WIRE OPEN
REMOTE KEYLESS ENTRY INTERFACE WIRE SHORT TO GROUND
BODY CONTROL MODULE - INTERFACE OPEN
REMOTE KEYLESS ENTRY MODULE - OPEN

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, read DTC's. Does the DRBIII® display any RKE related trouble codes? Yes → Refer to symptom list for problems related to POWER DOOR LOCKS/RKE. No → Go To 2	All
2	**NOTE: Before proceeding, ensure the original transmitter battery or batteries are approximately 3.2 volts each. If not, replace the battery or batteries as necessary.** Secure a known good ZB or RS transmitter. With the DRBIII®, enter BODY, BODY COMPUTER, MISCELLANEOUS then PROGRAM RKE and follow the instructions on the DRBIII®. Press the Lock or Unlock button on the transmitter. Did the RKE respond correctly? Yes → Replace the original transmitter and reprogram all transmitters used with this vehicle. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Gain access to the RKE module. Turn the ignition off and disconnect the RKE module connector. Measure the voltage between Fused B(+) circuit and ground. Is the voltage above 10.0 volts? Yes → Go To 4 No → Repair the Fused B(+) circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

*REMOTE KEYLESS ENTRY PROBLEM — Continued

TEST	ACTION	APPLICABILITY
4	Gain access to the RKE module. Turn the ignition off and disconnect the RKE module connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 5 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Gain access to the RKE module. Turn the ignition off and disconnect the RKE module connector. **NOTE: Ensure the transmission is in park position before proceeding.** Turn the ignition on. Measure the voltage between Remote Keyless Entry Interface circuit and ground. Is the voltage above 4.8 volts? Yes → Go To 6 No → Go To 7	All
6	If there are no possible causes remaining, view repair. Repair Replace the Remote Keyless Entry Module. Perform BODY VERIFICATION TEST - VER 1.	All
7	Gain access to the RKE module. Turn the ignition off and disconnect the RKE module connector. Disconnect the Body Control Module C4 connector. Measure the resistance of the Remote Keyless Entry Interface wire between the BCM C4 connector and the RKE module connector. Is the resistance below 5.0 ohms? Yes → Go To 8 No → Repair the Remote Keyless Entry Interface wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
8	Gain access to the RKE module. Turn the ignition off and disconnect the RKE module connector. Disconnect the Body Control Module C4 connector. Measure the resistance between ground and the Remote Keyless Entry Interface circuit. Is the resistance below 2000.0 ohms? Yes → Repair the Remote Keyless Entry Interface wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 9	All
9	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

AMBIENT TEMPERATURE SENSOR CIRCUIT OPEN

When Monitored and Set Condition:

AMBIENT TEMPERATURE SENSOR CIRCUIT OPEN

When Monitored: Whenever the Power Liftgate Module is awake.

Set Condition: If the module senses a resistance above 382K ohms on the Liftgate Temperature Sensor Signal circuit, this code will set. The normal range for the sensor is 1.2K to 382K ohms. At room temperature (68° F) the resistance will be between 11.2 K and 13.5K ohms.

POSSIBLE CAUSES
DTC PRESENT
POWER LIFTGATE MODULE - TEMPERATURE SENSE OPEN
LIFTGATE TEMPERATURE SENSOR SIGNAL WIRE OPEN
GROUND WIRE OPEN
LIFTGATE TEMPERATURE SENSOR

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the liftgate several times. With the DRBIII®, read DTCs. Does the DRBIII® display AMBIENT TEMPERATURE SENSOR CIRCUIT OPEN? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Remove the power liftgate motor trim panel. Disconnect the Power Liftgate Module C2 connector. Measure the resistance of the liftgate Temperature Sensor Signal circuit to the Ground circuit (cavity 20) in the PLG C2 connector. Is the resistance between 1.2k and 382K ohms? Yes → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

AMBIENT TEMPERATURE SENSOR CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Remove the power liftgate motor trim panel. Disconnect the Power Liftgate Module C2 connector. Disconnect the License Lamp (light bar) connector. Measure the resistance of the liftgate Temperature Sensor Signal circuit between the License Lamp connector and the PLG C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Liftgate Temperature Sensor Signal circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Remove the power liftgate motor trim panel. Disconnect the Power Liftgate Module C2 connector. Disconnect the License Lamp (light bar) connector. Measure the resistance of the Ground circuit between the PLG C2 connector (cavity 20) and the License Lamp connector (cavity 8). Is the resistance below 5.0 ohms Yes → Go To 5 No → Repair the Liftgate Temperature Sensor Ground wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the Liftgate Temperature Sensor (light bar). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

AMBIENT TEMPERATURE SENSOR CIRCUIT SHORT TO GROUND

When Monitored and Set Condition:

AMBIENT TEMPERATURE SENSOR CIRCUIT SHORT TO GROUND

When Monitored: Whenever the Power Liftgate Module is awake.

Set Condition: If the module senses a resistance below 1000 ohms on the Liftgate Temperature Sensor Signal circuit, this code will set. The normal range for the sensor is 1.2K to 382K ohms. At room temperature (68° F) the resistance will be between 11.2 K and 13.5K ohms.

POSSIBLE CAUSES
DTC PRESENT
LIFTGATE TEMPERATURE SENSOR SIGNAL CIRCUIT SHORT TO GROUND.
POWER LIFTGATE MODULE - TEMP SENSE SHORT TO GROUND
LIFTGATE TEMPERATURE SENSOR SIGNAL WIRE SHORT TO GROUND WIRE
LIFTGATE TEMPERATURE SENSOR

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the liftgate several times. With the DRBIII®, read DTCs. Does the DRBIII® display AMBIENT TEMPERATURE SENSOR CIRCUIT SHORT TO GROUND? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Remove the power liftgate motor trim panel. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between ground and the liftgate Temperature Sensor Signal circuit. Is the resistance below 5000.0 ohms? Yes → Repair the Liftgate Temperature Sensor Signal circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

AMBIENT TEMPERATURE SENSOR CIRCUIT SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
3	Remove the power liftgate motor trim panel. Disconnect the Power Liftgate Module C2 connector. Measure the resistance of the liftgate Temperature Sensor Signal circuit to the Ground circuit (cavity 20) in the PLG C2 connector. Is the resistance below 1000.0 ohms? Yes → Go To 4 No → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1.	All
4	Remove the power liftgate motor trim panel. Disconnect the Power Liftgate Module C2 connector. Disconnect the License Lamp (light bar) connector. Measure the resistance of the liftgate Temperature Sensor Signal circuit to the Ground circuit (cavity 20) in the PLG C2 connector. Is the resistance below 1000.0 ohms Yes → Repair the Liftgate Temperature Sensor Signal wire for a short to the Ground wire. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Liftgate Temperature Sensor (light bar). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
CONTROL MODULE FAILURE - INTERNAL FAILURE

When Monitored and Set Condition:

CONTROL MODULE FAILURE - INTERNAL FAILURE

When Monitored: Anytime the module is awake.

Set Condition: Whenever the module senses an internal failure (EEPROM, ROM, ADC) this code will set. The module must be replaced.

POSSIBLE CAUSES
POWER LIFTGATE MODULE - INTERNAL FAILURE

TEST	ACTION	APPLICABILITY
1	View repair. Repair Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE LATCH CINCH - NO PAWL TRANSITION

When Monitored and Set Condition:

INCOMPLETE LATCH CINCH - NO PAWL TRANSITION

When Monitored: Whenever the power liftgate in performing a cinching operation.

Set Condition: The pawl switch was not detected as returning to ground during the transition between secondary and primary cinch operation. NOTE: The liftgate may not be fully cinched during this condition. The liftgate may cinch to primary but not be fully seated and may pop off back to secondary.

POSSIBLE CAUSES
DTC PRESENT
BINDING LIFTGATE
GROUND WIRE OPEN
LIFTGATE PAWL SWITCH SENSE WIRE OPEN
LIFTGATE PAWL SWITCH SENSE WIRE SHORT TO GROUND
PAWL SWITCH

TEST	ACTION	APPLICABILITY
1	**NOTE: This DTC will only set after the cinching operation. This may make it difficult to reproduce.** With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE LATCH CINCH - NO PAWL TRANSITION? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the liftgate for proper fit and alignment, lose/hard or torn seals, misaligned latch striker or anything that would cause an obstruction to proper operation. Manually operate the liftgate of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled liftgate. Does it take more effort to operate the liftgate than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INCOMPLETE LATCH CINCH - NO PAWL TRANSITION — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Power Liftgate C2 connector. Disconnect the Liftgate Cinch/Release Motor connector. Measure the resistance of the Ground wire between the PLG C2 connector (cavity 20) and the Liftgate Cinch/Release Motor connector (cavity 1). Wiggle the harness while observing the ohmmeter. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Ground wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Power Liftgate Module C2 connector. Disconnect the Liftgate Cinch/Release Motor connector. Measure the resistance of the Liftgate Pawl Switch Sense wire between the PLG C2 connector and the Liftgate Cinch/Release Motor connector. Wiggle the harness while observing the ohmmeter. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Liftgate Pawl Switch Sense wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Power Liftgate Module C2 connector. Disconnect the Liftgate Cinch/Release Motor connector. Measure the resistance between ground and the Liftgate Pawl Switch Sense circuit. Wiggle the harness while observing the ohmmeter. Is the resistance below 1000.0 ohms? Yes → Repair the Liftgate Pawl Switch Sense wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Replace the Pawl Switch (latch assembly). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE LATCH CINCH - OVERCURRENT

When Monitored and Set Condition:

INCOMPLETE LATCH CINCH - OVERCURRENT

When Monitored: Whenever the power liftgate is performing a cinching operation.

Set Condition: The latch motor stall current of 6.2 amps has been detected, with no pawl or ratchet failure. This code is set during the first stage of the power cinching operation.

POSSIBLE CAUSES
DTC PRESENT
BINDING DOOR
LIFTGATE LATCH CINCH DRIVER WIRE OPEN
LIFTGATE LATCH RELEASE DRIVER OPEN
LIFTGATE LATCH CINCH DRIVER WIRE SHORT TO GROUND
LIFTGATE LATCH CINCH DRIVER WIRE SHORT TO HARNESS GROUND
LIFTGATE LATCH RELEASE DRIVER WIRE SHORT TO GROUND
LIFTGATE LATCH RELEASE DRIVER WIRE SHORT TO HARNESS GROUND
LATCH ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE LATCH CINCH - OVERCURRENT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the liftgate several times and check for any binding or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the liftgate for proper alignment, worn or binding hinges, weak liftgate prop assembly, loose/ hard weatherstrip, and gear teeth on the power liftgate motor assembly for wear or anything that would cause an obstruction to proper operation. If necessary manually operate the power liftgate on a known good vehicle and notice the effort needed to open and close for comparison. Especially notice the effort needed to unlatch and close the liftgate. Were there any mechanical problems found? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INCOMPLETE LATCH CINCH - OVERCURRENT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Power Liftgate Module C2 connector. Disconnect the Liftgate Cinch/Release Motor connector. Measure the resistance of the Liftgate Latch Cinch Driver circuit between the Power Liftgate Module C2 connector and the Liftgate Cinch/Release Motor connector. Wiggle the harness and check for an intermittent open condition. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Liftgate Latch Cinch Driver wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Power Liftgate Module C2 connector. Disconnect the Liftgate Cinch/Release Motor connector. Measure the resistance of the Liftgate Latch Release Driver circuit between the Power Liftgate Module C2 connector and the Liftgate Cinch/Release Motor connector. Wiggle the harness and check for an intermittent open condition. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Liftgate Latch Release Driver wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the Power Liftgate Module C2 connector. Disconnect the Liftgate Cinch/Release Motor connector. Measure the resistance between ground and the Liftgate Latch Cinch Driver circuit. Wiggle the harness and check for an intermittent short condition. Is the resistance below 1000.0 ohms? Yes → Go To 6 No → Repair the Liftgate Latch Cinch Driver wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the Power Liftgate Module C2 connector. Disconnect the Liftgate Cinch/Release Motor connector. Measure the resistance between the Ground circuit (cavity 20) and the Liftgate Latch Cinch Driver circuit. Wiggle the harness and check for an intermittent short condition. Is the resistance below 1000.0 ohms? Yes → Go To 7 No → Repair the Liftgate Latch Cinch Driver wire for a short to the Ground circuit. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE LATCH CINCH - OVERCURRENT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Disconnect the Power Liftgate Module C2 connector. Disconnect the Liftgate Cinch/Release Motor connector. Measure the resistance between ground and the Liftgate Latch Release Driver circuit. Wiggle the harness and check for an intermittent short condition. Is the resistance below 1000.0 ohms? Yes → Go To 8 No → Repair the Liftgate Latch Release Driver wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1.	All
8	Turn the ignition off. Disconnect the Power Liftgate Module C2 connector. Disconnect the Liftgate Cinch/Release Motor connector. Measure the resistance between the Ground circuit (cavity 20) and the Liftgate Latch Release Driver circuit. Wiggle the harness and check for an intermittent short condition. Is the resistance below 1000.0 ohms? Yes → Go To 9 No → Repair the Liftgate Latch Release Driver wire for a short to the Ground circuit. Perform BODY VERIFICATION TEST - VER 1.	All
9	If there are no possible causes remaining, view repair. Repair Replace the Latch Assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE LATCH RELEASE - RATCHET SWITCH FAILURE

When Monitored and Set Condition:

INCOMPLETE LATCH RELEASE - RATCHET SWITCH FAILURE

When Monitored: Whenever the power liftgate is performing a release operation.

Set Condition: The pawl switch was grounded but the ratchet switch remained open. This code will set only in the release operation.

POSSIBLE CAUSES
DTC PRESENT
BINDING DOOR
POWER LIFTGATE MODULE - RATCHET CIRCUIT
GROUND WIRE OPEN
LIFTGATE AJAR SWITCH SENSE WIRE OPEN
RATCHET SWITCH

TEST	ACTION	APPLICABILITY
1	**NOTE: This DTC will only set during the releasing operation after the 4 second time out. This may make it difficult to reproduce.** With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE LATCH RELEASE - RATCHET SWITCH FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the liftgate for proper fit and alignment, loose/ hard or torn seals, worn teeth on the gears or anything that would cause an obstruction to proper operation. Manually operate the liftgate of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled liftgate. Especially notice the effort needed to unlatch and close the liftgate. Does it take more effort to operate the liftgate than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INCOMPLETE LATCH RELEASE - RATCHET SWITCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII® in Inputs/Outputs, read the RATCHET state. Open the liftgate to full open position. Using a screwdriver, click the latch to the second detent while observing the DRBIII®. Unlatch the latch by pressing the handle switch or using the key and observe the DRBIII® for a state change. Repeat this step several times while moving the liftgate in different positions and wiggling the wiring harness to check for an intermittent short. Did the DRB111® show the switch state changes correctly every time? Yes → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Disconnect the Power Liftgate C2 connector. Disconnect the Liftgate Cinch/Release Motor connector. Measure the resistance of the Ground wire between the PLG C2 connector (cavity 20) and the Liftgate Cinch/Release Motor connector (cavity 1). Wiggle the harness while observing the ohmmeter. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Ground wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Power Liftgate Module C2 connector. Disconnect the Liftgate Cinch/Release Motor connector (latch assembly). Measure the resistance of the Liftgate Ajar Switch Sense wire between the PLG C2 connector and the Liftgate Cinch/Release Motor connector. Wiggle the harness and move the liftgate in different positions while observing the ohmmeter. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Liftgate Ajar Switch Sense wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	If there are no possible causes remaining, view repair. Repair Replace the Ratchet Switch (latch assembly). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE LATCH RELEASE- PAWL SWITCH FAILURE

When Monitored and Set Condition:

INCOMPLETE LATCH RELEASE- PAWL SWITCH FAILURE

When Monitored: Whenever the power liftgate is operating in an opening direction.

Set Condition: The release operation was not completed due to the non-transition of the pawl switch during the power release operation. The ratchet switch was detected as grounded but the pawl remained open. This code is set during the power releasing operation from a fully closed liftgate.

POSSIBLE CAUSES
DTC PRESENT
BINDING DOOR
POWER LIFTGATE MODULE - PAWL CIRCUIT
GROUND WIRE OPEN
PAWL SWITCH SENSE WIRE OPEN
PAWL SWITCH

TEST	ACTION	APPLICABILITY
1	**NOTE: This DTC will only set during the cinching operation after the 4 second time out. This may make it difficult to reproduce.** With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE LATCH RELEASE - PAWL SWITCH FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the liftgate for proper fit and alignment, loose/ hard or torn seals, worn teeth on the gears or anything that would cause an obstruction to proper operation. Manually operate the liftgate of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled liftgate. Especially notice the effort needed to unlatch and close the liftgate. Does it take more effort to operate the liftgate than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INCOMPLETE LATCH RELEASE- PAWL SWITCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII® in Inputs/Outputs, read the PAWL state. Open the liftgate to full open position. Using a screwdriver, click the latch to the first detent while observing the DRB111®. Unlatch the latch by pressing the handle switch or using the key and observe the DRB111® for a state change. Repeat this step several times while moving the liftgate in different positions and wiggling the wiring harness to check for an intermittent open.. Did the DRB111® show the switch state changes correctly every time? Yes → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Disconnect the Power Liftgate C2 connector. Disconnect the Liftgate Cinch/Release Motor connector. Measure the resistance of the Ground wire between the PLG C2 connector (cavity 20) and the Liftgate Cinch/Release Motor connector (cavity 1). Wiggle the harness while observing the ohmmeter. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Ground wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Liftgate Control Module C2 connector. Disconnect the Liftgate Cinch/Release Motor connector (latch assembly). Measure the resistance of the Liftgate Pawl Switch Sense circuit between the PLG C2 connector and the Liftgate Cinch/Release Motor connector. Wiggle the harness while observing the ohmmeter. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Liftgate Pawl Switch Sense wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	If there are no possible causes remaining, view repair. Repair Replace the Liftgate Pawl Switch (latch assembly). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE LATCH RELEASE- SECTOR GEAR RETURN FAILURE

When Monitored and Set Condition:

INCOMPLETE LATCH RELEASE- SECTOR GEAR RETURN FAILURE

When Monitored: Whenever the power liftgate is operating.

Set Condition: If the cinch release motor takes longer than 700 ms to perform a release operation this code will set. The main causes of this code setting is some type of sticking situation preventing the sector gear in the cinch release motor assembly to return to its neutral position.

POSSIBLE CAUSES
DTC PRESENT
BINDING LIFTGATE
LIFTGATE CINCH RELEASE MOTOR ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE LATCH RELEASE - SECTOR GEAR RETURN FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the liftgate for proper fit and alignment, loose/hard or torn seals, struts or anything that would cause an obstruction to proper operation. Manually operate the liftgate of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled liftgate. Especially notice the effort needed to unlatch and close the liftgate. Does it take more effort to operate the liftgate than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Replace the Liftgate Cinch Release Motor Assembly.. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER CLOSE - FULL OPEN SWITCH FAILURE/ NON ENGAGEMENT

When Monitored and Set Condition:

INCOMPLETE POWER CLOSE - FULL OPEN SWITCH FAILURE/NON ENGAGEMENT

When Monitored: Whenever the power liftgate is closing.

Set Condition: The Full Open Switch was detected as closed before 200 hall effect pulses were counted since the start of the close operation. May be triggered by an intermittent full open switch failure, or non gear engagement

POSSIBLE CAUSES
DTC PRESENT
OBSTRUCTION OR STICKING FULL OPEN SWITCH
FULL OPEN SWITCH SHORT TO GROUND
POWER LIFTGATE MOTOR ASSEMBLY - FULL OPEN SWITCH

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER CLOSE - FULL OPEN SWITCH FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the liftgate several times and check for any binding cables or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the liftgate for proper fit and alignment, foreign material in the drive unit or anything that would cause an obstruction to proper operation of the Full Open Switch. With the DRBIII® in Inputs/Outputs, read the FULL OPEN SWITCH state. Manually operate the liftgate while monitoring the DRBIII®. Does the switch status change smoothly as the liftgate is pulled down from the full open position. Yes → Go To 3 No → Replace the Full Open Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER CLOSE - FULL OPEN SWITCH FAILURE/NON ENGAGEMENT — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII® in Inputs/Outputs, read the FULL OPEN SWITCH state. Open the liftgate to mid position. While monitoring the DRBIII®, wiggle the wiring harness from the Power Liftgate Module to the Full Open Switch on the Power Liftgate Motor assembly. Did the switch status ever change? Yes → Repair the Liftgate Full Open Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	If there are no possible causes remaining, view repair. Repair Replace the Power Liftgate Motor assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER CLOSE - EXCESSIVE H.E. COUNTS/NON ENGAGEMENT

When Monitored and Set Condition:

INCOMPLETE POWER CLOSE - EXCESSIVE H.E. COUNTS/NON ENGAGEMENT

When Monitored: During Power Liftgate closing cycle.

Set Condition: If the PLG Module detects that the Power Liftgate Motor has generated more than 700 hall effect pulses during a full power cycle, this code will set.

POSSIBLE CAUSES
DTC PRESENT
POWER LIFTGATE MODULE - HALL EFFECT OPEN
BINDING LIFTGATE
LIFTGATE GEAR ENGAGE DRIVER WIRE OPEN
LIFTGATE GEAR ENGAGE DRIVER WIRE SHORT TO GROUND
LIFTGATE GEAR ENGAGE DRIVER WIRE SHORT TO THE LIFTGATE GEAR DISENGAGE WIRE.
LIFTGATE GEAR DISENGAGE DRIVER WIRE OPEN
LIFTGATE GEAR DISENGAGE DRIVER WIRE SHORT TO GROUND
POWER LIFTGATE MODULE - GEAR ENGAGE CIRCUIT OPEN
POWER LIFTGATE MOTOR
POWER LIFTGATE MOTOR - GEAR ENGAGE OPEN
POWER LIFTGATE MOTOR - GEAR ENGAGE SHORT TO GROUND
POWER LIFTGATE MOTOR - GEAR ENGAGE SHORTED

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the Power Liftgate several times from stop to stop if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER CLOSE - EXCESSIVE H.E. COUNTS/NON ENGAGEMENT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the liftgate several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER CLOSE - EXCESSIVE H.E. COUNTS/NON ENGAGEMENT — Continued

TEST	ACTION	APPLICABILITY
2	Examine the liftgate for proper alignment, worn or binding hinges, weak liftgate prop assembly, loose/ hard weatherstrip, and gear teeth on the Power Liftgate Motor assembly for wear or anything that would cause an obstruction to proper operation. If necessary manually operate the power liftgate on a known good vehicle and notice the effort needed to open and close for comparison. Especially notice the effort needed to unlatch and close the liftgate. Were there any mechanical problems found? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Operate the liftgate from the full closed position and put an obstacle in it's path to make it reverse. Did the door reverse back to the closed position? Yes → Go To 4 No → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Power Liftgate Module C2 connector. Measure the resistance between the Liftgate Gear Engage Driver circuit and the Liftgate Gear Disengage Driver circuit in the PLG Module connector. Select the resistance found. Below 5.0 ohms. Go To 5 Between 5.1 and 8.0 ohms. Go To 7 Above 8.1 ohms Go To 12	All
5	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Control Module C2 connector. Measure the resistance between the Liftgate Gear Engage Driver circuit and the Liftgate Gear Disengage Driver circuit in the PLG Module connector. Is the resistance below 10000.0 ohms? Yes → Repair the Liftgate Gear Engage Driver wire for a short to the Liftgate Gear Disengage Driver wire. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Replace the Power Liftgate Motor Assembly. Perform BODY VERIFICATION TEST - VER 1.	All
7	Disconnect the Power Liftgate Module C2 connector. Measure the resistance between Ground and the Liftgate Gear Engage Driver circuit. Is the resistance below 10000.0 ohms? Yes → Go To 8 No → Go To 11	All

INCOMPLETE POWER CLOSE - EXCESSIVE H.E. COUNTS/NON ENGAGEMENT — Continued

TEST	ACTION	APPLICABILITY
8	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between ground and the Liftgate Gear Engage Driver circuit. Is the resistance below 10000.0 ohms? Yes → Repair the Liftgate Gear Engage Driver wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 9	All
9	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between ground and the Liftgate Gear Disengage Driver circuit. Is the resistance below 10000.0 ohms? Yes → Repair the Liftgate Gear Disengage Driver wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 10	All
10	If there are no possible causes remaining, view repair. Repair Replace the Power Liftgate Motor Assembly. Perform BODY VERIFICATION TEST - VER 1.	All
11	**NOTE: Ensure all connectors are connected before proceeding.** While back probing, measure the Voltage between the Liftgate Gear Engage Driver circuit and the Liftgate Gear Disengage Driver circuit at the PLG Module connector.. Operate the Power liftgate and observe the voltmeter Did the voltmeter read above 11.0 volts for at least 1 second while the liftgate was operating? Yes → Test Complete. No → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1.	All
12	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance of the Liftgate Gear Engage Driver circuit between the Power Liftgate Motor connector and the Power Liftgate Module C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 13 No → Repair the Liftgate Gear Engage Driver wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
13	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance of Liftgate Gear Disengage Driver circuit from the Motor connector to the PLG Module connector. Is the resistance below 5.0 ohms? Yes → Go To 14 No → Repair the Liftgate Gear Disengage Driver wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER CLOSE - EXCESSIVE H.E. COUNTS/NON ENGAGEMENT — Continued

TEST	ACTION	APPLICABILITY
14	If there are no possible causes remaining, view repair. Repair Replace the Power Liftgate Motor Assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE POWER CLOSE - HALL EFFECT SIGNAL MISSING

When Monitored and Set Condition:

INCOMPLETE POWER CLOSE - HALL EFFECT SIGNAL MISSING

When Monitored: Whenever the power liftgate is performing a power close operation.

Set Condition: The PLG Module detects that the motor is rotating (monitors hall effect pulses) but no hall effect pulses are being detected. This code is set during the power close (2 second chime period, prior to liftgate movement) operation.

POSSIBLE CAUSES
DTC PRESENT
POWER LIFTGATE MODULE - HALL EFFECT OPEN
BINDING LIFTGATE
HALL EFFECT GROUND CIRCUIT OPEN
LIFTGATE HALL EFFECT SUPPLY WIRE OPEN
LIFTGATE HALL EFFECT SUPPLY WIRE SHORT TO GROUND
LIFTGATE HALL EFFECT SUPPLY WIRE SHORT TO HARNESS GROUND
LIFTGATE HALL EFFECT SIGNAL WIRE OPEN
LIFTGATE HALL EFFECT SIGNAL WIRE SHORT TO GROUND
LIFTGATE HALL EFFECT SIGNAL WIRE SHORT TO HARNESS GROUND
POWER LIFTGATE MOTOR ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times from stop to stop if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER CLOSE - HALL EFFECT SIGNAL MISSING? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the liftgate several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER CLOSE - HALL EFFECT SIGNAL MISSING — Continued

TEST	ACTION	APPLICABILITY
2	Examine the liftgate for proper alignment, worn or binding hinges, weak liftgate prop assembly, loose/ hard weatherstrip, and gear teeth on the power liftgate motor assembly for wear or anything that would cause an obstruction to proper operation. If necessary manually operate the power liftgate on a known good vehicle and notice the effort needed to open and close for comparison. Especially notice the effort needed to unlatch and close the liftgate. Does it take more effort to operate the liftgate than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Operate the liftgate from the full open position and put an obstacle in its path to make it reverse. Did the liftgate reverse back to the open position? Yes → Go To 4 No → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Power Liftgate Motor connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 5 No → Repair the hall effect ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance of the Liftgate Hall Effect Supply circuit between the Power Liftgate Motor connector and the Power Liftgate Module C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Liftgate Hall Effect Supply wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between ground and the Liftgate Hall Effect Supply circuit. Is the resistance below 100.0 ohms? Yes → Repair the Liftgate Hall Effect Supply wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between the Ground circuit (cavity 20) and the Liftgate Hall Effect Supply circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Liftgate Hall Effect Supply wire for a short to the Ground circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 8	All

INCOMPLETE POWER CLOSE - HALL EFFECT SIGNAL MISSING — Continued

TEST	ACTION	APPLICABILITY
8	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance of the Liftgate Hall Effect Signal circuit between the Power Liftgate Motor connector and the Power Liftgate Module C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the Liftgate Hall Effect Signal wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
9	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between ground and the Liftgate Hall Effect Signal circuit. Is the resistance below 100.0 ohms? Yes → Repair the Liftgate Hall Effect Signal wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 10	All
10	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between the Ground circuit (cavity 20) and the Liftgate Hall Effect Signal circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Liftgate Hall Effect Signal wire for a short to the Ground circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 11	All
11	If there are no possible causes remaining, view repair. Repair Replace the Power Liftgate Motor Assembly (hall effect switch). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER CLOSE - OVER CURRENT

When Monitored and Set Condition:

INCOMPLETE POWER CLOSE - OVER CURRENT

When Monitored: Anytime the liftgate is in a closing operation.

Set Condition: The drive motor stall current of over 24 amps has been detected for over 500 ms. or during the initial gear engagement the drive transistor is shorted, during a power close operation.

POSSIBLE CAUSES
DTC PRESENT
BINDING LIFTGATE
GROUND CIRCUIT OPEN
LIFTGATE CLOSE DRIVER CIRCUIT SHORT TO GROUND
LIFTGATE LATCH RELEASE DRIVER CIRCUIT SHORT TO GROUND
LIFTGATE LATCH RELEASE DRIVER CIRCUIT SHORT TO HARNESS GROUND
LIFTGATE GEAR ENGAGE DRIVER CIRCUIT SHORT TO GROUND
LIFTGATE GEAR ENGAGE DRIVER CIRCUIT SHORT TO HARNESS GROUND
LIFTGATE MODULE
POWER LIFTGATE MOTOR

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times (if possible). With the DRBIII®, read DTCs. Does the DRBIII® display INCOMPLETE POWER CLOSE- OVERCURRENT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the liftgate several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER CLOSE - OVER CURRENT — Continued

TEST	ACTION	APPLICABILITY
2	Examine the liftgate for proper alignment, worn or binding hinges, weak or binding liftgate prop rods, loose/ hard weatherstrip, and gear teeth on the power liftgate motor assembly for wear or anything that would cause an obstruction to proper operation. Compare the effort needed on the disabled vehicle. Especially notice the effort needed to unlatch and close the liftgate. Does it take more effort to operate the liftgate than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the Power Liftgate Module C1 connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Wiggle the harness and check for an intermittent open condition. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Power Liftgate Module C1 connector. Measure the resistance between ground and the Liftgate Close Driver circuit. Wiggle the harness and check for an intermittent short circuit condition. Is the resistance below 1000.0 ohms? Yes → Repair the Liftgate Close Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between ground and the Liftgate Latch Release Driver circuit. Wiggle the harness and check for an intermittent short condition. Is the resistance below 1000.0 ohms? Yes → Repair the Liftgate Latch Release Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between the Ground circuit (cavity 20) and the Liftgate Latch Release Driver circuit. Wiggle the harness and check for an intermittent short condition. Is the resistance below 1000.0 ohms? Yes → Repair the Liftgate Latch Release Driver circuit for a short to the Ground circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All

INCOMPLETE POWER CLOSE - OVER CURRENT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between ground and the Liftgate Gear Engage Driver circuit. Wiggle the harness and check for an intermittent short condition. Is the resistance below 1000.0 ohms? Yes → Repair the Liftgate Gear Engage Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between the Ground circuit (cavity 20) and the Liftgate Gear Engage Driver circuit. Wiggle the harness and check for an intermittent short condition. Is the resistance below 1000.0 ohms? Yes → Repair the Liftgate Gear Engage Driver circuit for a short to the Ground circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 9	All
9	Ensure all module and motor connectors are connected at this time. Try to operate the liftgate in the close position. Did the motor start to close the liftgate but was very slow and labored extensively? Yes → Replace the Power Liftgate Motor assembly. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Power Liftgate Module Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER CLOSE - TRANSISTOR SHORTED

When Monitored and Set Condition:

INCOMPLETE POWER CLOSE - TRANSISTOR SHORTED

When Monitored: Whenever the power liftgate is performing a power close operation.

Set Condition: The Power Liftgate Module detects that the motor is rotating (monitors hall effect pulses) even though the controlled PWM rate is 0 percent. This DTC is set during the power close (2 second chime period, prior to movement of the liftgate) operation.

POSSIBLE CAUSES
DTC PRESENT
POWER LIFTGATE MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER CLOSE - TRANSISTOR SHORTED? Yes → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1. No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the liftgate several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER CLOSE - VOLTAGE BELOW MINIMUM LEVEL

When Monitored and Set Condition:

INCOMPLETE POWER CLOSE - VOLTAGE BELOW MINIMUM LEVEL

When Monitored: Whenever the power liftgate is performing a power close operation.

Set Condition: The PLG Module detects that the voltage is below 9.5 volts during the power close operation.

POSSIBLE CAUSES
DTC PRESENT
MODULE VOLTAGE LOW
BINDING LIFTGATE
DRB OPERATING VOLTAGE LOW
PLG MODULE - HIGH RESISTANCE
POWER LIFTGATE MOTOR

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times if possible. With the DRBIII®, read DTCs. Does the DRBIII® display INCOMPLETE POWER CLOSE - VOLTAGE BELOW MINIMUM LEVEL? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the liftgate for proper fit and alignment, or anything that would cause an obstruction to proper operation. Check the prop rods to ensure liftgate will fall closed from the approximately 3/4 closed position. Does it take more effort to operate the liftgate than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INCOMPLETE POWER CLOSE - VOLTAGE BELOW MINIMUM LEVEL — Continued

TEST	ACTION	APPLICABILITY
3	**NOTE: Test the battery to ensure it is fully charged and in good condition before proceeding.** Turn the ignition off. Turn all lights and accessories off. With the DRBIII® in ″Power Liftgate″ ″Monitor Display″ ″PCI Bus Info″ read the ″Battery Voltage″ and compare it to the ″PLG Bat Volts Input″. **NOTE: If the difference is greater than 0.5 volts, backprobe the Fused B(+) at the module to verify.** Does the voltage vary more than 0.5 volts? Yes → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Locate and repair the reason for the voltage drop. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Turn all lights and accessories off. With the DRBIII® in ″Power Liftgate″″ ″Monitor Display″ ″PCI Bus Info″ read the ″Battery Voltage″ and compare it to the ″PLG Bat Volts Input″. Operate the power liftgate and observe the voltage difference. **NOTE: If the difference is greater than 1.6 volts, backprobe the Fused B(+) at the module to verify.** Does the voltage vary more than 1.6 volts when the liftgate is operating?? Yes → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Locate and repair the reason for the voltage drop. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Turn all lights and accessories off. Open the Liftgate. Remove the left rear trim panel to gain access to the Power Liftgate Module. Remove the PLG module but leave it connected. Backprobe voltmeter leads between the Fused B(+) and the Liftgate Close Driver circuits in the PLG C1 connector. Operate the power liftgate in the CLOSED position and observe the voltage difference. Does the voltage vary more than 0.2 volts when the liftgate is operating?? Yes → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Check the wiring and connections from the module to the motor for high resistance. If the wiring is okay, replace the Power Liftgate Motor assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER OPEN - FULL OPEN SWITCH FAILURE/ NON ENGAGEMENT

When Monitored and Set Condition:

INCOMPLETE POWER OPEN - FULL OPEN SWITCH FAILURE/NON ENGAGEMENT

When Monitored: During the Power Liftgate open cycle.

Set Condition: The Full Open Switch was detected as closed before 200 hall effect pulses were counted since the start of the open operation. May be triggered by an intermittent full open switch failure or a non gear engagement.

POSSIBLE CAUSES
DTC PRESENT
OBSTRUCTION OR STICKING FULL OPEN SWITCH
FULL OPEN SWITCH SHORT TO GROUND
POWER LIFTGATE MOTOR ASSEMBLY - FULL OPEN SWITCH

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER OPEN - FULL OPEN SWITCH FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the liftgate several times and check for any binding or obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the liftgate for proper fit and alignment, foreign material in the drive unit or anything that would cause an obstruction to proper operation of the Full Open Switch. With the DRBIII® in Inputs/Outputs, read the FULL OPEN SWITCH state. Manually operate the liftgate while monitoring the DRBIII®. Does the switch status change smoothly as the liftgate is pulled down from the full open position. Yes → Go To 3 No → Refer to Service information for the related symptom(S). Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER OPEN - FULL OPEN SWITCH FAILURE/NON ENGAGEMENT — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII® in Inputs/Outputs, read the FULL OPEN SWITCH state. Open the liftgate to mid position. While monitoring the DRBIII®, wiggle the wiring harness from the Power Liftgate Module to the Full Open Switch on the Power Liftgate Motor assembly. Did the switch status ever change? Yes → Repair the Full Open Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	If there are no possible causes remaining, view repair. Repair Replace the Power Liftgate Motor assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER OPEN - EXCESSIVE H.E. COUNTS/NON ENGAGEMENT

When Monitored and Set Condition:

INCOMPLETE POWER OPEN - EXCESSIVE H.E. COUNTS/NON ENGAGEMENT

When Monitored: During Power Liftgate opening cycle.

Set Condition: If the PLG Module detects that the Power Liftgate Motor has generated more than 700 hall effect pulses during a full power cycle, this code will set.

POSSIBLE CAUSES
DTC PRESENT
POWER LIFTGATE MODULE - HALL EFFECT OPEN
BINDING LIFTGATE
LIFTGATE GEAR ENGAGE DRIVER WIRE OPEN
LIFTGATE GEAR ENGAGE DRIVER WIRE SHORT TO GROUND
LIFTGATE GEAR ENGAGE DRIVER WIRE SHORT TO THE LIFTGATE GEAR DISENGAGE WIRE.
LIFTGATE GEAR DISENGAGE DRIVER WIRE OPEN
LIFTGATE GEAR DISENGAGE DRIVER WIRE SHORT TO GROUND
POWER LIFTGATE MODULE - GEAR ENGAGE CIRCUIT OPEN
POWER LIFTGATE MOTOR
POWER LIFTGATE MOTOR - GEAR ENGAGE OPEN
POWER LIFTGATE MOTOR - GEAR ENGAGE SHORT TO GROUND
POWER LIFTGATE MOTOR - GEAR ENGAGE SHORTED

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the Power Liftgate several times from stop to stop if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER OPEN - EXCESSIVE H.E. COUNTS/NON ENGAGEMENT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the liftgate several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER OPEN - EXCESSIVE H.E. COUNTS/NON ENGAGEMENT — Continued

TEST	ACTION	APPLICABILITY
2	Examine the liftgate for proper alignment, worn or binding hinges, weak liftgate prop assembly, loose/ hard weatherstrip, and gear teeth on the Power Liftgate Motor assembly for wear or anything that would cause an obstruction to proper operation. If necessary manually operate the power liftgate on a known good vehicle and notice the effort needed to open and close for comparison. Especially notice the effort needed to unlatch and close the liftgate. Were there any mechanical problems found? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Operate the liftgate from the full closed position and put an obstacle in it's path to make it reverse. Did the door reverse back to the closed position? Yes → Go To 4 No → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Power Liftgate Module C2 connector. Measure the resistance between the Liftgate Gear Engage Driver circuit and the Liftgate Gear Disengage Driver circuit in the PLG Module connector. Select the resistance found. Below 5.0 ohms. Go To 5 Between 5.1 and 8.0 ohms. Go To 7 Above 8.1 ohms Go To 12	All
5	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Control Module C2 connector. Measure the resistance between the Liftgate Gear Engage Driver circuit and the Liftgate Gear Disengage Driver circuit in the PLG Module connector. Is the resistance below 10000.0 ohms? Yes → Repair the Liftgate Gear Engage Driver wire for a short to the Liftgate Gear Disengage Driver wire. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Replace the Power Liftgate Motor Assembly. Perform BODY VERIFICATION TEST - VER 1.	All
7	Disconnect the Power Liftgate Module C2 connector. Measure the resistance between Ground and the Liftgate Gear Engage Driver circuit. Is the resistance below 10000.0 ohms? Yes → Go To 8 No → Go To 11	All

INCOMPLETE POWER OPEN - EXCESSIVE H.E. COUNTS/NON ENGAGEMENT — Continued

TEST	ACTION	APPLICABILITY
8	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between ground and the Liftgate Gear Engage Driver circuit. Is the resistance below 10000.0 ohms? Yes → Repair the Liftgate Gear Engage Driver wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 9	All
9	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between ground and the Liftgate Gear Disengage Driver circuit. Is the resistance below 10000.0 ohms? Yes → Repair the Liftgate Gear Disengage Driver wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 10	All
10	If there are no possible causes remaining, view repair. Repair Replace the Power Liftgate Motor Assembly. Perform BODY VERIFICATION TEST - VER 1.	All
11	**NOTE: Ensure all connectors are connected before proceeding.** While back probing, measure the Voltage between the Liftgate Gear Engage Driver circuit and the Liftgate Gear Disengage Driver circuit at the PLG Module connector.. Operate the Power liftgate and observe the voltmeter Did the voltmeter read above 11.0 volts for at least 1 second while the liftgate was operating? Yes → Replace the Power Liftgate Motor assembly. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1.	All
12	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance of the Liftgate Gear Engage Driver circuit between the Power Liftgate Motor connector and the Power Liftgate Module C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 13 No → Repair the Liftgate Gear Engage Driver wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
13	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance of Liftgate Gear Disengage Driver circuit from the Motor connector to the PLG Module connector. Is the resistance below 5.0 ohms? Yes → Go To 14 No → Repair the Liftgate Gear Disengage Driver wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER OPEN - EXCESSIVE H.E. COUNTS/NON ENGAGEMENT — Continued

TEST	ACTION	APPLICABILITY
14	If there are no possible causes remaining, view repair. Repair Replace the Power Liftgate Motor Assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER OPEN - HALL EFFECT SIGNAL MISSING

When Monitored and Set Condition:

INCOMPLETE POWER OPEN - HALL EFFECT SIGNAL MISSING

When Monitored: Whenever the power liftgate is performing a power open operation.

Set Condition: The PLG Module detects that the motor is rotating (monitors hall effect pulses) but no hall effect pulses are being detected. This code is set during the power open (2 second chime period, prior to liftgate movement) operation.

POSSIBLE CAUSES
DTC PRESENT
POWER LIFTGATE MODULE - HALL EFFECT OPEN
BINDING LIFTGATE
HALL EFFECT GROUND CIRCUIT OPEN
LIFTGATE HALL EFFECT SUPPLY WIRE OPEN
LIFTGATE HALL EFFECT SUPPLY WIRE SHORT TO GROUND
LIFTGATE HALL EFFECT SUPPLY WIRE SHORT TO HARNESS GROUND
LIFTGATE HALL EFFECT SIGNAL WIRE OPEN
LIFTGATE HALL EFFECT SIGNAL WIRE SHORT TO GROUND
LIFTGATE HALL EFFECT SIGNAL WIRE SHORT TO HARNESS GROUND
POWER LIFTGATE MOTOR

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the Power Liftgate several times from stop to stop if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER OPEN - HALL EFFECT SIGNAL MISSING? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the liftgate several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER OPEN - HALL EFFECT SIGNAL MISSING — Continued

TEST	ACTION	APPLICABILITY
2	Examine the liftgate for proper alignment, worn or binding hinges, weak liftgate prop assembly, loose/ hard weatherstrip, and gear teeth on the Power Liftgate Motor assembly for wear or anything that would cause an obstruction to proper operation. If necessary manually operate the power liftgate on a known good vehicle and notice the effort needed to open and close for comparison. Especially notice the effort needed to unlatch and close the liftgate. Were there any mechanical problems found? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Operate the liftgate from the full closed position and put an obstacle in it's path to make it reverse. Did the door reverse back to the closed position? Yes → Go To 4 No → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Power Liftgate Motor connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 5 No → Repair the hall effect ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance of the Liftgate Hall Effect Supply circuit between the Power Liftgate Motor connector and the Power Liftgate Module C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Liftgate Hall Effect Supply wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between ground and the Liftgate Hall Effect Supply circuit. Is the resistance below 100.0 ohms? Yes → Repair the Door Motor Hall Effect Supply wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All

INCOMPLETE POWER OPEN - HALL EFFECT SIGNAL MISSING — Continued

TEST	ACTION	APPLICABILITY
7	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between the Ground circuit (cavity 20) and the Liftgate Hall Effect Supply circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Door Motor Hall Effect Supply wire for a short to the Ground circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 8	All
8	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance of the Power Liftgate Hall Effect Signal circuit between the Power Liftgate Motor connector and the Power Liftgate Module C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the Liftgate Hall Effect Signal wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
9	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Control Module C2 connector. Measure the resistance between ground and the Liftgate Hall Effect Signal circuit. Is the resistance below 100.0 ohms? Yes → Repair the Liftgate Hall Effect Signal wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 10	All
10	Disconnect the Power Liftgate Motor connector. Disconnect the Power Liftgate Control Module C2 connector. Measure the resistance between the Ground circuit (cavity 20) and the Liftgate Hall Effect Signal circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Liftgate Hall Effect Signal wire for a short to the Ground circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 11	All
11	If there are no possible causes remaining, view repair. Repair Replace the Power Liftgate Motor assembly (hall effect sensor). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER OPEN - OVERCURRENT

When Monitored and Set Condition:

INCOMPLETE POWER OPEN - OVERCURRENT

When Monitored: Anytime the Power Liftgate is in a power open operation.

Set Condition: The drive motor stall current of over 24 amps has been detected for over 500 ms. or during the initial gear engagement the drive transistor is shorted, during a power opening operation.

POSSIBLE CAUSES
DTC PRESENT
BINDING LIFTGATE
GROUND CIRCUIT OPEN
LIFTGATE LATCH CINCH DRIVER CIRCUIT SHORT TO GROUND
LIFTGATE LATCH CINCH DRIVER CIRCUIT SHORT TO HARNESS GROUND
LIFTGATE GEAR ENGAGE DRIVER CIRCUIT SHORT TO GROUND
LIFTGATE OPEN DRIVER CIRCUIT SHORT TO GROUND
LIFTGATE GEAR ENGAGE DRIVER CIRCUIT SHORT TO HARNESS GROUND
LIFTGATE MODULE
POWER LIFTGATE MOTOR

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times if possible. With the DRBIII®, read DTCs. Does the DRBIII® display INCOMPLETE POWER OPEN - OVERCURRENT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the liftgate several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER OPEN - OVERCURRENT — Continued

TEST	ACTION	APPLICABILITY
2	Examine the liftgate for proper alignment, worn or binding hinges, weak liftgate prop assembly, loose/ hard weatherstrip, and gear teeth on the Power Liftgate Motor assembly for wear or anything that would cause an obstruction to proper operation. If necessary manually operate the liftgate of a known good vehicle and notice the effort needed. Compare the effort needed on the disabled vehicle. Were there any mechanical problems found? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the Power Liftgate Control Module C1 connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Wiggle the harness and check for an intermittent open condition. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between ground and the Liftgate Latch Cinch Driver circuit. Wiggle the harness and check for an intermittent shorted condition. Is the resistance below 100.0 ohms? Yes → Repair the Liftgate Latch Cinch Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between the Ground circuit and the Liftgate Latch Cinch Driver circuit. Wiggle the harness and check for an intermittent shorted condition. Is the resistance below 100.0 ohms? Yes → Repair the Liftgate Latch Cinch Driver circuit for a short to the Ground circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between ground and the Liftgate Gear Engage Driver circuit. Wiggle the harness and check for an intermittent short to ground condition. Is the resistance below 100.0 ohms? Yes → Repair the Liftgate Gear Engage Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All

INCOMPLETE POWER OPEN - OVERCURRENT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Disconnect the Power Liftgate Module C1 connector. Measure the resistance between ground and the Liftgate Open Driver circuit. Wiggle the harness and check for an intermittent short circuit condition. Is the resistance below 1000.0 ohms? Yes → Repair the Liftgate Open Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between the Ground circuit and the Liftgate Gear Engage Driver circuit. Wiggle the harness and check for an intermittent short to ground condition. Is the resistance below 100.0 ohms? Yes → Repair the Liftgate Gear Engage Driver circuit for a short to the Ground circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 9	All
9	Ensure all connections to the module and liftgate motor are connected at this time. Operate the Power Liftgate in both directions if possible. Does the motor start to lift the liftgate but is very slow and labors extensively? Yes → Replace the Power Liftgate Motor assembly. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Power Liftgate Module Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE POWER OPEN - TRANSISTOR SHORTED

When Monitored and Set Condition:

INCOMPLETE POWER OPEN - TRANSISTOR SHORTED

When Monitored: Whenever the power liftgate is performing a power open operation.

Set Condition: The Power Liftgate Module detects that the motor is rotating (monitors hall effect pulses) even though the controlled PWM rate is 0 percent. This DTC is set during the power open (2 second chime period, prior to movement of the liftgate) operation.

POSSIBLE CAUSES
DTC PRESENT
POWER LIFTGATE MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER OPEN - TRANSISTOR SHORTED? Yes → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1. No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the liftgate several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER OPEN - VOLTAGE BELOW MINIMUM LEVEL

When Monitored and Set Condition:

INCOMPLETE POWER OPEN - VOLTAGE BELOW MINIMUM LEVEL

When Monitored: Whenever the power liftgate is performing a power open operation.

Set Condition: The PLG Module detects that the voltage is below 9.5 volts during the power open operation.

POSSIBLE CAUSES
DTC PRESENT
MODULE VOLTAGE LOW
BINDING LIFTGATE
DRB OPERATING VOLTAGE LOW
PLG MODULE - HIGH RESISTANCE
POWER LIFTGATE MOTOR

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times if possible. With the DRBIII®, read DTCs. Does the DRBIII® display INCOMPLETE POWER OPEN - VOLTAGE BELOW MINIMUM LEVEL? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the liftgate for proper fit and alignment, or anything that would cause an obstruction to proper operation. Check the prop rods to ensure liftgate will self rise from approximately 1/4 open position. Does it take more effort to operate the liftgate than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INCOMPLETE POWER OPEN - VOLTAGE BELOW MINIMUM LEVEL — Continued

TEST	ACTION	APPLICABILITY
3	**NOTE: Test the battery to ensure it is fully charged and in good condition before proceeding.** Turn the ignition off. Turn all lights and accessories off. With the DRBIII® in ″Power Liftgate″ ″Monitor Display″ ″PCI Bus Info″ read the ″Battery Voltage″ and compare it to the ″PLG Bat Volts Input″. **NOTE: If the difference is greater than 0.5 volts, backprobe the Fused B(+) at the module to verify.** Does the voltage vary more than 0.5 volts? Yes → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Locate and repair the reason for the voltage drop. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Turn all lights and accessories off. With the DRBIII® in ″Power Liftgate″″ ″Monitor Display″ ″PCI Bus Info″ read the BATTERY VOLTAGE and compare it to the MODULE VOLTAGE. Operate the power liftgate and observe the voltage difference. **NOTE: If the difference is greater than 1.6 volts, backprobe the Fused B(+) at the module to verify.** Does the voltage vary more than 1.6 volts when the liftgate is operating?? Yes → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Locate and repair the reason for the voltage drop. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Turn all lights and accessories off. Open the Liftgate. Remove the left rear trim panel to gain access to the Power Liftgate Module. Remove the PLG module but leave it connected. Backprobe voltmeter leads between the Fused B(+) and the Liftgate Open Driver circuits in the PLG C1 connector. Close the Liftgate. Operate the power liftgate in the OPEN position and observe the voltage difference. Does the voltage vary more than 0.2 volts when the liftgate is operating?? Yes → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Check the wiring and connections from the module to the motor for high resistance. If the wiring is okay, replace the Power Liftgate Motor assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

IOD WAKE UP OPEN - PLG

When Monitored and Set Condition:

IOD WAKE UP OPEN - PLG

When Monitored: Anytime the Body Control Module is awake.

Set Condition: If the BCM does not sense a signal circuit from the Liftgate Module this code will set.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - IOD WAKE UP OPEN
LIFTGATE MODULE WAKE UP SIGNAL WIRE OPEN
LIFTGATE MODULE WAKE UP SIGNAL WIRE SHORT TO GROUND
POWER LIFTGATE MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Wait 10 seconds. With the DRBIII®, read DTCs. Does the DRBIII® display IOD WAKE UP OPEN? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the BCM C2 connector. Measure the voltage between the Liftgate Module Wake Up Signal circuit and ground. Is the voltage above 10.0 volts? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the Body Control Module C2 connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance of the Liftgate Module Wake Up Signal circuit between the BCM C2 connector and the Power Liftgate Module C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Liftgate Module Wake Up Signal wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All

IOD WAKE UP OPEN - PLG — Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the Body Control Module C2 connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between the Liftgate Module Wake Up Signal circuit and ground. Is the resistance below 100.0 ohms? Yes → Repair the Liftgate Module Wake Up Signal wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	If there are no possible causes remaining, view repair. Repair Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

LOOPBACK TEST FAILURE

When Monitored and Set Condition:

LOOPBACK TEST FAILURE

When Monitored: Anytime the Power Liftgate Module is awake.

Set Condition: The Power Liftgate Module did not receive its own transmitted message on the PCI bus back (loopback) for longer than 1 second.

POSSIBLE CAUSES
DTC PRESENT
POWER LIFTGATE MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power liftgate several times from stop to stop if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display LOOPBACK TEST FAILURE? Yes → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1. No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
LOSS OF BCM MESSAGES

When Monitored and Set Condition:

LOSS OF BCM MESSAGES

When Monitored: Whenever the ignition is on.

Set Condition: If the PLG Module losses communication with the BCM for over 5 seconds, this code will set.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE BODY CONTROL MODULE
POWER LIFTGATE MODULE - LOSS OF BCM MESSAGES

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, enter Body then Body Computer. Was the DRBIII® able to I/D or communicate with the BCM? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s).	All
2	With the DRBIII®, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRBIII®, read DTC's. Did this DTC reset? Yes → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

LOSS OF EATX MESSAGES

When Monitored and Set Condition:

LOSS OF EATX MESSAGES

When Monitored: Whenever the ignition is in the UNLOCK or RUN position.

Set Condition: If the PLG Module does not receive a PRNDL message for over 5 seconds, this code will set.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE TRANSMISSION CONTROL MODULE
POWER LIFTGATE MODULE - LOSS OF EATX MESSAGES

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII® select Transmission. Was the DRBIII® able to I/D or communicate with the Transmission? Yes → Go To 2 No → Refer to the Communication category for the related symptom(S).	All
2	With the DRBIII®, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRBIII®, read DTC's. Did this DTC reset? Yes → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

LOSS OF SBEC MESSAGES

When Monitored and Set Condition:

LOSS OF SBEC MESSAGES

When Monitored: Whenever the ignition is in the RUN position.

Set Condition: If the PLG Module does not receive a speed message from the Powertrain Control Module for over 5 seconds, this code will set.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE POWERTRAIN CONTROL MODULE
POWER LIFTGATE MODULE - LOSS OF SBEC MESSAGES

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, select Engine. Was the DRBIII® able to I/D or communicate with the Powertrain Control Module? Yes → Go To 2 No → Refer to the Communication category for the related symptom(S).	All
2	With the DRBIII®, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRBIII®, read DTC's. Did this DTC reset? Yes → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
OUTSIDE LIFTGATE HANDLE INPUT SHORT

When Monitored and Set Condition:

OUTSIDE LIFTGATE HANDLE INPUT SHORT

When Monitored: Whenever the Body Control Module is awake.

Set Condition: When the BCM senses a voltage of less than 1.0 volts on the Liftgate Handle Switch Sense circuit for longer than 10 seconds this code will set.

POSSIBLE CAUSES
LIFTGATE HANDLE SWITCH SHORTED
LIFTGATE HANDLE SWITCH SENSE CIRCUIT SHORT TO GROUND
BODY CONTROL MODULE - LIFTGATE HANDLE SWITCH SHORT TO GROUND

TEST	ACTION	APPLICABILITY
1	Disconnect the License Lamp connector (light bar). With the DRBIII®, read DTC's. Does the DRBIII® display Outside Liftgate Handle Input Short? Yes → Go To 2 No → Replace the Liftgate Handle Switch. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the License Lamp connector. Disconnect the Body Control Module C2 connector. Measure the resistance between ground and the Liftgate Handle Switch Sense circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Liftgate Handle Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
OUTSIDE LIFTGATE HANDLE INPUT STUCK

When Monitored and Set Condition:

OUTSIDE LIFTGATE HANDLE INPUT STUCK

When Monitored: Whenever the Body Control Module is awake.

Set Condition: When the BCM senses a liftgate handle input on the Liftgate Handle Switch Sense circuit for longer than 10 seconds this code will set.

POSSIBLE CAUSES
LIFTGATE HANDLE SWITCH STUCK
LIFTGATE HANDLE SWITCH SENSE CIRCUIT SHORT TO GROUND
BODY CONTROL MODULE - LIFTGATE HANDLE SWITCH SHORT TO GROUND

TEST	ACTION	APPLICABILITY
1	Disconnect the License Lamp connector (light bar). With the DRBIII®, erase DTCs. Turn the ignition off, wait 10 seconds, then turn the ignition on. Wait 10 seconds. With the DRBIII®, read DTCs. Does the DRBIII® display Outside Liftgate Handle Input Stuck? Yes → Go To 2 No → Replace the Liftgate Handle Switch. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the License Lamp connector. Disconnect the Body Control Module C2 connector. Measure the resistance between ground and the Liftgate Handle Switch Sense circuit. Is the resistance below 10000.0 ohms? Yes → Repair the Liftgate Handle Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
OVERHEAD LIFTGATE SWITCH INPUT STUCK

When Monitored and Set Condition:

OVERHEAD LIFTGATE SWITCH INPUT STUCK

When Monitored: Whenever the BCM is awake.

Set Condition: When the BCM senses a overhead liftgate switch input for over 10 seconds, this code will set.

POSSIBLE CAUSES
DTC PRESENT
OVERHEAD LIFTGATE SWITCH SHORTED
LIFTGATE SWITCH MUX WIRE SHORT TO GROUND
BODY CONTROL MODULE - OVERHEAD LIFTGATE SWITCH MUX SHORTED

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the Liftgate from the Overhead Console Switch. With the DRBIII®, read DTCs. Does the DRBIII® display OVERHEAD LIFTGATE SWITCH INPUT STUCK? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII®, erase DTCs. Disconnect the Overhead Console Switch connector. Turn the ignition off, wait 10 seconds, then turn the ignition on. Wait 10 seconds. With the DRBIII®, read DTCs. Does the DRBIII® display OVERHEAD LIFTGATE SWITCH INPUT STUCK? No → Replace the Power Sliding Door Button Module. Perform BODY VERIFICATION TEST - VER 1. Yes → Go To 3	All
3	Disconnect the Body Control Module C2 connector. Disconnect the Overhead Console Switch connector. Measure the resistance of the Liftgate Switch Mux circuit to ground. Is the resistance below 4000.0 ohms? Yes → Repair the Liftgate Switch Mux wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

OVERHEAD LIFTGATE/LOCKOUT SWITCHES OPEN OR SHT TO VOLTAGE

When Monitored and Set Condition:

OVERHEAD LIFTGATE/LOCKOUT SWITCHES OPEN OR SHT TO VOLTAGE

When Monitored: Whenever the BCM is awake.

Set Condition: When the BCM senses a overhead liftgate switch input that is greater than 4.8 volts for over 10 seconds, this code will set.

POSSIBLE CAUSES
DTC PRESENT
SLIDING DOORS OVERHEAD SWITCH MUX CIRCUIT SHORT TO VOLTAGE
LIFTGATE SWITCH MUX WIRE OPEN
BODY CONTROL MODULE - OVERHEAD SWITCH OPEN
OVERHEAD SWITCH OPEN
LIFTGATE SWITCH MUX SHORT TO VOLTAGE
POWER SLIDING DOOR BUTTON MODULE - SHORT TO VOLTAGE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door from the Overhead Console Switch. With the DRBIII®, read DTCs. Does the DRBIII® display OVERHEAD LIFTGATE/LOCKOUT SWITCHES OPEN OR SHT TO VOLTAGE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Body Control Module C3 connector. **NOTE: Check connectors - Clean/repair as necessary.** Measure the voltage of the Sliding Doors Overhead Switch Mux circuit to ground. Is there any voltage present? Yes → Repair the Sliding Doors Overhead Switch Mux circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

OVERHEAD LIFTGATE/LOCKOUT SWITCHES OPEN OR SHT TO VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Body Control Module C2 connector. **NOTE: Check connectors - Clean/repair as necessary.** Turn the ignition on. Turn the park lamps on. Measure the voltage between ground and the Liftgate Switch Mux circuit. Is there any voltage present? Yes → Go To 4 No → Go To 5	All
4	Disconnect the Overhead Console connector. Disconnect the Body Control Module C2 connector. **NOTE: Check connectors - Clean/repair as necessary.** Turn the ignition on. Turn the park lamps on. Measure the voltage between Liftgate Switch Mux circuit and ground. Is there any voltage present? Yes → Repair the Liftgate Switch Mux circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Power Sliding Door Button Module. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Body Control Module C2 connector. Measure the resistance between ground and the Liftgate Switch Mux circuit. Is the resistance below 25000.0 ohms? Yes → Go To 6 No → Go To 7	All
6	If there are no possible causes remaining, view repair. Repair Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
7	Disconnect the Body Control Module C2 connector. Disconnect the Overhead Console connector. Measure the resistance of the Liftgate Switch Mux circuit between the BCM connector and the Overhead Console connector. Is the resistance below 5.0 ohms? Yes → Replace the Power Sliding Door Button Module. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Liftgate Switch Mux circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
OVERHEAD LIFTGATE/LOCKOUT SWITCHES SHORT

When Monitored and Set Condition:

OVERHEAD LIFTGATE/LOCKOUT SWITCHES SHORT

When Monitored: Whenever the BCM is awake.

Set Condition: When the BCM senses a overhead liftgate switch input that drops to below 0.24 volts for over 10 seconds, this code will set.

POSSIBLE CAUSES
DTC PRESENT
OVERHEAD LIFTGATE SWITCH SHORTED
LIFTGATE SWITCH MUX WIRE SHORT TO GROUND
BODY CONTROL MODULE - OVERHEAD LIFTGATE SWITCH MUX SHORTED

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the Liftgate from the Overhead Console Switch. With the DRBIII®, read DTCs. Does the DRBIII® display OVERHEAD SWITCH #1 SHORT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	With the DRBIII®, erase DTCs. Disconnect the Overhead Console Switch connector. Turn the ignition off, wait 10 seconds, then turn the ignition on. Wait 10 seconds. With the DRBIII®, read DTCs. Does the DRBIII® display OVERHEAD SWITCH #1 SHORT? No → Replace the Power Sliding Door Button Module. Perform BODY VERIFICATION TEST - VER 1. Yes → Go To 3	All
3	Disconnect the Body Control Module C2 connector. Disconnect the Overhead Console Switch connector. Measure the resistance of the Liftgate Switch Mux circuit to ground. Is the resistance below 500.0 ohms? Yes → Repair the Liftgate Switch Mux wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

PINCH SENSOR CIRCUIT OPEN

When Monitored and Set Condition:

PINCH SENSOR CIRCUIT OPEN

When Monitored: Whenever the Power Liftgate is operating.

Set Condition: The power liftgate module has detected the pinch sensor circuit voltage is above 4.6 volts.

POSSIBLE CAUSES
DTC PRESENT
POWER LIFTGATE MODULE - PINCH SENSOR OPEN
RIGHT PINCH SENSOR SIGNAL WIRE OPEN
PINCH SENSOR GROUND OPEN
RIGHT PINCH SENSOR OPEN
LEFT PINCH SENSOR OPEN
RIGHT PINCH SENSOR SIGNAL WIRE OPEN

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the liftgate several times. With the DRBIII®, read DTCs. Does the DRBIII® display PINCH SENSOR CIRCUIT OPEN? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Power Liftgate Module C2 connector. Measure the resistance of the Pinch Sensor Signal circuit between the Pinch Sensor Signal and the Ground circuit (cavity 20) in the C2 connector. Is the resistance below 22000.0 ohms? No → Go To 3 Yes → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1.	All

PINCH SENSOR CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Remove the Liftgate trim panel. Disconnect the Liftgate Right Pinch Sensor connector. Disconnect the Liftgate Left Pinch Sensor connector. Measure the resistance of the Right Pinch Sensor Signal circuit between the Liftgate Left Pinch Sensor connector and the Liftgate Right Pinch Sensor connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Right Pinch Sensor Signal wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Remove the Power Liftgate Motor trim panel. Remove the Liftgate trim panel. Disconnect the Liftgate Right Pinch Sensor connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance of the Ground circuit between the Liftgate Right Pinch Sensor connector and the PLG C2 connector. Is the resistance below 20.0 ohms? Yes → Go To 5 No → Repair the ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Remove the Power Liftgate Motor trim panel. Remove the Liftgate trim panel. Disconnect the Power Liftgate Module C2 connector. Disconnect the Liftgate Right Pinch Sensor connector. Connect a jumper wire between the Right Pinch Sensor Signal circuit and the Ground circuit in the Liftgate Right Pinch Sensor connector. Measure the resistance of the Pinch Sensor Signal circuit between the Pinch Sensor Signal and the Ground circuit (cav 20) in the C2 connector. Is the resistance below 11000.0 ohms? Yes → Replace the Right Pinch Sensor. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Remove the Power Liftgate Motor trim panel. Remove the liftgate trim panel. Disconnect the Power Liftgate Module C2 connector. Disconnect the Liftgate Left Pinch Sensor connector. Connect a jumper wire between the Pinch Sensor Signal circuit and the Right Pinch Sensor Signal circuit in the Liftgate Left Pinch Sensor connector. Measure the resistance of the Pinch Sensor Signal circuit between the Pinch Sensor Signal and the Ground circuit (cav 20) in the C2 connector. Is the resistance below 11000.0 ohms? Yes → Replace the Left Pinch Sensor. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All

PINCH SENSOR CIRCUIT OPEN — Continued

TEST	ACTION	APPLICABILITY
7	Remove the Power Liftgate Motor trim panel. Remove the liftgate trim panel. Disconnect the Power Liftgate Module C2 connector. Disconnect the Liftgate Left Pinch Sensor connector. Measure the resistance of the Pinch Sensor Signal circuit between the PLG C2 connector and the Liftgate Left Pinch Sensor connector. Is the resistance below 5.0 ohms? Yes → Test Complete. No → Repair the Pinch Sensor Signal wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

PINCH SENSOR SIGNAL CIRCUIT SHORT TO GROUND

When Monitored and Set Condition:

PINCH SENSOR SIGNAL CIRCUIT SHORT TO GROUND

When Monitored: Whenever the Power Liftgate is operating.

Set Condition: The power liftgate module has detected the pinch sensor circuit voltage is shorted to ground.

POSSIBLE CAUSES
DTC PRESENT
PINCH SENSOR SIGNAL CIRCUIT SHORT TO GROUND CIRCUIT
POWER LIFTGATE MODULE - SHORT TO GROUND
RIGHT PINCH SENSOR - SHORT TO GROUND
RIGHT PINCH SENSOR SIGNAL WIRE - SHORT TO GROUND
LEFT PINCH SENSOR - SHORT TO GROUND
RIGHT PINCH SENSOR SIGNAL WIRE SHORT TO GROUND

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the liftgate several times. With the DRBIII®, read DTCs. Does the DRBIII® display PINCH SENSOR CIRCUIT SHORT TO GROUND? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Power Liftgate Module C2 connector. Measure the resistance of the Pinch Sensor Signal circuit between the Pinch Sensor Signal and the Ground circuits in the C2 connector. Is the resistance below 20.0 ohms? Yes → Repair the Pinch Sensor Signal circuit for a short to the Ground circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the Power Liftgate Module C2 connector. Measure the resistance between ground and the Pinch Sensor Signal circuit. Is the resistance below 100.0 ohms? Yes → Go To 4 No → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1.	All

PINCH SENSOR SIGNAL CIRCUIT SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
4	Remove the Power Liftgate Motor trim panel. Remove the Liftgate trim panel. Disconnect the Power Liftgate Module C2 connector. Disconnect the Right Pinch Sensor connector Measure the resistance between ground and the Pinch Sensor Signal circuit. Is the resistance below 100.0 ohms? Yes → Go To 5 No → Replace the Right Pinch Sensor. Perform BODY VERIFICATION TEST - VER 1.	All
5	Remove the Liftgate trim panel. Disconnect the Right Pinch Sensor connector. Disconnect the Left Pinch Sensor connector. Measure the resistance between ground and the Right Pinch Sensor Signal circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Right Pinch Sensor Signal wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Remove the Power Liftgate Motor trim panel. Remove the liftgate trim panel. Disconnect the Power Liftgate Module C2 connector. Disconnect the Left Pinch Sensor connector Measure the resistance between ground and the Pinch Sensor Signal circuit. Is the resistance below 100.0 ohms? Yes → Go To 7 No → Replace the Left Pinch Sensor. Perform BODY VERIFICATION TEST - VER 1.	All
7	If there are no possible causes remaining, view repair. Repair Repair the Pinch Sensor Signal wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***POWER LIFTGATE INOPERATIVE**

POSSIBLE CAUSES
DTC'S PRESENT
MODULE RESPONSE
INTERMITTENT PROBLEM
SYSTEM TESTS

TEST	ACTION	APPLICABILITY
1	With the DRBIII® check for response from the Body Computer and the Power Liftgate Modules Is there response from both modules? Yes → Go To 2 No → Refer to symptom list for problems related to COMMUNICATION.	All
2	With the DRBIII®, read DTCs in POWER LIFTGATE and BODY COMPUTER. Are any Power Liftgate related codes present? Yes → Refer to symptom list for problems related to POWER LIFTGATE. No → Go To 3	All
3	This test will determine what inhibited the Power Liftgate from operating properly. With the DRBIII®, select POWER LIFTGATE, MISCELLANEOUS, LAST INHIBIT MONITOR. Does the DRBIII® display any INHIBIT REASONS? Yes → Check for any binding conditions or other restrictions that may prevent proper operation. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. No → Go To 4	All
4	Ensure Liftgate is fully closed before proceeding. With the DRBIII® select SYSTEM TEST. Perform the Open, Close, Latch Cinch, Latch Release and Relay tests. Did any test fail? Yes → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. No → Test Complete.	All

Symptom:

AMBIENT TEMPERATURE SENSOR CIRCUIT OPEN

When Monitored and Set Condition:

AMBIENT TEMPERATURE SENSOR CIRCUIT OPEN

When Monitored: Anytime the Power Sliding Door Module is awake.

Set Condition: If the Power Sliding Door Modules internal thermistor becomes open, this code will set.

POSSIBLE CAUSES
DTC PRESENT
POWER SLIDING DOOR MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times from stop to stop if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display AMBIENT TEMPERATURE SENSOR CIRCUIT HIGH? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → No problem found at this time. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

AMBIENT TEMPERATURE SENSOR CIRCUIT SHORT TO GROUND

When Monitored and Set Condition:

AMBIENT TEMPERATURE SENSOR CIRCUIT SHORT TO GROUND

When Monitored: Anytime the Power Sliding Door Module is awake.

Set Condition: If the Power Sliding Door Modules internal thermistor is shorted, this code will set.

POSSIBLE CAUSES
DTC PRESENT
POWER SLIDING DOOR MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times from stop to stop if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display AMBIENT TEMPERATURE SENSOR CIRCUIT LOW? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → No problem found at this time. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
CONTROL MODULE FAILURE - INTERNAL FAILURE

When Monitored and Set Condition:

CONTROL MODULE FAILURE - INTERNAL FAILURE

When Monitored: Anytime the module is awake.

Set Condition: Whenever the module senses an internal failure (EEPROM, ROM, ADC) this code will set. The module must be replaced.

POSSIBLE CAUSES
SLIDING DOOR CONTROL MODULE - INTERNAL FAILURE

TEST	ACTION	APPLICABILITY
1	View repair. Repair Replace the Sliding Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE LATCH CINCH - NO PAWL TRANSITION

When Monitored and Set Condition:

INCOMPLETE LATCH CINCH - NO PAWL TRANSITION

When Monitored: Whenever the power sliding door in operating.

Set Condition: The pawl switch was not detected as returning to ground during the transition between secondary and primary cinch operation. NOTE: The door may not be fully cinched during this condition. The door may cinch to primary but not be fully seated and may pop off back to secondary.

POSSIBLE CAUSES
DTC PRESENT
BINDING DOOR
GROUND WIRE OPEN
PAWL SWITCH SENSE WIRE OPEN
PAWL SWITCH SENSE WIRE SHORT TO GROUND
PAWL SWITCH

TEST	ACTION	APPLICABILITY
1	**NOTE: This DTC will only set during the cinching operation after the 4 second time out. This may make it difficult to reproduce.** With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE LATCH CINCH - NO PAWL TRANSITION? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the door for proper fit and alignment, loose/ hard or torn seals, worn teeth on the rack and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the other sliding door or of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled door. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INCOMPLETE LATCH CINCH - NO PAWL TRANSITION — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Sliding Door Latch Sensing Switch connector (latch assembly). Measure the resistance of the Ground wires (both) between the PSD C2 connector (cavity 20) and the Sliding Door Latch Sensing Switch connector. Wiggle the harness while observing the ohmmeter. Is the resistance below 5.0 ohms on both ground wires? Yes → Go To 4 No → Repair the Ground wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Sliding Door Latch Sensing Switch connector (latch assembly). Measure the resistance of the Pawl Switch Sense wire between the PSD C2 connector and the Sliding Door Latch Sensing Switch connector. Wiggle the harness while observing the ohmmeter. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Pawl Switch Sense wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Sliding Door Latch Sensing Switch connector (latch assembly). Measure the resistance between ground and the Pawl Switch Sense circuit. Wiggle the harness while observing the ohmmeter. Is the resistance below 1000.0 ohms? Yes → Repair the Pawl Switch Sense wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Replace the Pawl Switch (latch assembly). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE LATCH CINCH - OVERCURRENT

When Monitored and Set Condition:

INCOMPLETE LATCH CINCH - OVERCURRENT

When Monitored: Whenever the power sliding door is operating in the closing direction.

Set Condition: The latch motor stall current of 6.2 amps has been detected, with no pawl or ratchet failure. This code is set during the first stage of the power cinching operation.

POSSIBLE CAUSES
DTC PRESENT
BINDING DOOR
CINCH/RELEASE MOTOR LATCH DRIVER WIRE OPEN
CINCH/RELEASE MOTOR UNLATCH DRIVER WIRE OPEN
CINCH/RELEASE MOTOR LATCH DRIVER WIRE SHORT TO GROUND
CINCH/RELEASE MOTOR UNLATCH DRIVER WIRE SHORT TO GROUND
LATCH ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE LATCH CINCH-OVERCURRENT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the door for proper fit and alignment, loose/ hard or torn seals, worn teeth on the rack and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the other sliding door or of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled door. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INCOMPLETE LATCH CINCH - OVERCURRENT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Disconnect the Cinch/Release Motor connector. Measure the resistance of the Cinch/Release Motor Latch Driver circuit between the Sliding Door Control Module C2 connector and the Cinch/Release Motor connector. Wiggle the harness and check for an intermittent open condition. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Cinch/Release Motor Latch Driver wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Disconnect the Cinch/Release Motor connector. Measure the resistance of the Cinch/Release Motor Unlatch Driver circuit between the Sliding Door Control Module C2 connector and the Cinch/Release Motor connector. Wiggle the harness and check for an intermittent open condition. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Cinch/Release Motor Unlatch Driver wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Disconnect the Cinch/Release Motor connector. Measure the resistance between ground and the Cinch/Release Motor Latch Driver circuit. Wiggle the harness and check for an intermittent open condition. Is the resistance below 1000.0 ohms? Yes → Go To 6 No → Repair the Cinch/Release Motor Latch Driver wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Disconnect the Cinch/Release Motor connector. Measure the resistance between ground and the Cinch/Release Motor Unlatch Driver circuit. Wiggle the harness and check for an intermittent open condition. Is the resistance below 1000.0 ohms? Yes → Go To 7 No → Repair the Cinch/Release Motor Unlatch Driver wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1.	All
7	If there are no possible causes remaining, view repair. Repair Replace the Latch Assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE LATCH RELEASE - FULL OPEN SWITCH FAILURE

When Monitored and Set Condition:

INCOMPLETE LATCH RELEASE - FULL OPEN SWITCH FAILURE

When Monitored: Whenever the power sliding door is operating in the closing direction.

Set Condition: The release operation had stalled or the current was exceeded before the full open switch had changed state during the release. This code will set only in power closing operation.

POSSIBLE CAUSES
DTC PRESENT
FULL OPEN SWITCH GROUND OPEN
STICKING CABLES OR LATCH
FULL OPEN SWITCH WIRE OPEN
FULL OPEN SWITCH WIRE SHORT TO GROUND
LATCH ASSEMBLY - HOLD OPEN RELEASE
POWER SLIDING DOOR MODULE - FULL OPEN SWITCH
FULL OPEN SW ITCH

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE LATCH RELEASE- FULL OPEN SWITCH FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding cables or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE LATCH RELEASE - FULL OPEN SWITCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
2	Examine the door for proper fit and alignment, foreign material in the lower drive unit or anything that would cause an obstruction to proper operation of the Full Open Switch. Open the sliding door to the full open position. Hold the door in the full open position and observe the hold open latch in the lower drive unit. Manually operate the door handle (pull and release) while observing the hold open latch. Repeat this step several times while observing the latch. Does the latch work smoothly as the handle is pulled and released? Yes → Go To 3 No → Determine if the problem is a sticking cable or hold open latch (lower drive unit). Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1.	All
3	Hold the door in the full open position and observe the hold open latch in the lower drive unit. With the DRBIII® in SYSTEM TEST, perform the SLIDING DOOR LATCH RELEASE TEST. Repeat this step several times while observing the latch. Does the latch work smoothly as the latch is activated? Yes → Go To 4 No → Replace the Latch Assembly (hold open release actuator). Perform BODY VERIFICATION TEST - VER 1.	All
4	With the DRBIII® in Inputs/Outputs, read the FULL OPEN SWITCH state. While observing the FULL OPEN switch state, manually move the door from full open to part open. The switch should toggle from CLOSED to OPEN. Did the switch status change as the door was moved from full open to part open? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Disconnect the Full Open Switch connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 6 No → Repair the ground wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	Disconnect the Power Sliding Door C2 connector. Disconnect the Full Open Switch connector. Measure the resistance of the Full Open Switch circuit from the Power Sliding Door Module C2 connector to the Full Open Switch connector on the lower drive unit. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the Full Open Switch Sense wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE LATCH RELEASE - FULL OPEN SWITCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
7	Disconnect the Power Sliding Door C2 connector. Disconnect the Full Open Switch connector. Measure the resistance between ground and the Full Open Switch circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Full Open Switch Sense wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 8	All
8	If there are no possible causes remaining, view repair. Repair Replace the Full Open Switch (Lower Drive Unit). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE LATCH RELEASE - RATCHET SWITCH FAILURE

When Monitored and Set Condition:

INCOMPLETE LATCH RELEASE - RATCHET SWITCH FAILURE

When Monitored: Whenever the power sliding door is operating in an opening direction.

Set Condition: The pawl switch was grounded but the ratchet switch remained open. This code will set only in the release operation.

POSSIBLE CAUSES
DTC PRESENT
BINDING DOOR
POWER SLIDING DOOR MODULE - RATCHET CIRCUIT
GROUND WIRE OPEN
SLIDING DOOR AJAR SWITCH SENSE WIRE OPEN
RATCHET SWITCH

TEST	ACTION	APPLICABILITY
1	**NOTE: This DTC will only set during the cinching operation after the 4 second time out. This may make it difficult to reproduce** With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE LATCH RELEASE - RATCHET SWITCH FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the door for proper fit and alignment, loose/ hard or torn seals, worn teeth on the rack and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the other sliding door or of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled door. Especially notice the effort needed to unlatch and close the door. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INCOMPLETE LATCH RELEASE - RATCHET SWITCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII® in Inputs/Outputs, read the RATCHET state. Open the sliding door to full open position. Using a screwdriver, click the latch to the second detent while observing the DRB111®. Unlatch the latch by pulling the handle switch and observe the DRB111® for a state change. Repeat this step several times while moving the door in different positions and wiggling the wiring harness to check for an intermittent short. Did the DRB111® show the switch state changes correctly every time? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Sliding Door Latch Sensing Switch connector (latch assembly). Measure the resistance of the Ground wires (both) between the PSD C2 connector (cavity 20) and the Sliding Door Latch Sensing Switch connector. Wiggle the harness while observing the ohmmeter. Is the resistance below 5.0 ohms on both ground wires? Yes → Go To 5 No → Repair the Ground wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Sliding Door Latch Sensing Switch connector (latch assembly). Measure the resistance of the Sliding Door Ajar Switch Sense wire between the PSD C2 connector and the Sliding Door Latch Sensing Switch connector. Wiggle the harness and move the door in different positions while observing the ohmmeter. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Sliding Door Ajar Switch Sense wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	If there are no possible causes remaining, view repair. Repair Replace the Ratchet Switch (latch assembly). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE LATCH RELEASE- NO REVERSE TO UNLOAD CLUTCH

When Monitored and Set Condition:

INCOMPLETE LATCH RELEASE- NO REVERSE TO UNLOAD CLUTCH

When Monitored: Whenever the power sliding door is operating.

Set Condition: If the cinch release motor takes longer than 700 ms to perform a release operation this code will set. The main causes of this code setting is some type of sticking situation preventing the sector gear in the cinch release motor assembly to return to its neutral position.

POSSIBLE CAUSES
DTC PRESENT
BINDING LATCH
CINCH RELEASE MOTOR ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE LATCH RELEASE - NO REVERSE TO UNLOAD CLUTCH? Yes → Go To 2 No → Operate the door several times and check for any binding or other obstructions. To test the reverse action, open the sliding door part way and continue holding the handle for 4 seconds. The motor should run for approximately 100ms. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the sliding door for proper fit and alignment, loose/hard or torn seals or anything that would cause an obstruction to proper operation. Manually operate the sliding door of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled sliding door. Especially notice the effort needed to unlatch and latch the door. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Replace the Cinch Release Motor Assembly.. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE LATCH RELEASE- OVERCURRENT

When Monitored and Set Condition:

INCOMPLETE LATCH RELEASE- OVERCURRENT

When Monitored: Whenever the power sliding door is operating in the closing direction.

Set Condition: The latch motor stall current of 6.2 amps was detected during a non-redundant release. The main causes of this code setting is some type of blockage during the release. This code is set during the power closing operation.

POSSIBLE CAUSES
DTC PRESENT
BINDING DOOR
FULL OPEN SWITCH STUCK
LATCH ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE LATCH RELEASE - OVER CURRENT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the door for proper fit and alignment, lose/ hard or torn seals, worn teeth on the rack and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the other sliding door or of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled door. Especially notice the effort needed to unlatch and close the door. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(S). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INCOMPLETE LATCH RELEASE- OVERCURRENT — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII® in Inputs/Outputs, read the FULL OPEN SWITCH state. Open and close the door manually and observe the Full Open Switch. Did the switch toggle from open to close? Yes → Replace the Latch Assembly. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Full Open Switch. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE LATCH RELEASE- PAWL SWITCH FAILURE

When Monitored and Set Condition:

INCOMPLETE LATCH RELEASE- PAWL SWITCH FAILURE

When Monitored: Whenever the power sliding door is operating in an opening direction.

Set Condition: The release operation was not completed due to non-transition of the pawl switch during the power release operation. The ratchet switch was detected as grounded but the pawl remained open. This code is set during the power releasing operation from a fully closed door.

POSSIBLE CAUSES
DTC PRESENT
BINDING DOOR
POWER SLIDING DOOR MODULE - PAWL CIRCUIT
GROUND WIRE OPEN
PAWL SWITCH SENSE WIRE OPEN
PAWL SWITCH

TEST	ACTION	APPLICABILITY
1	**NOTE: This DTC will only set during the cinching operation after the 4 second time out. This may make it difficult to reproduce.** With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE LATCH RELEASE - PAWL SWITCH FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE LATCH RELEASE- PAWL SWITCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
2	Examine the door for proper fit and alignment, loose/ hard or torn seals, worn teeth on the rack and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the other sliding door or of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled door. Especially notice the effort needed to unlatch and close the door. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII® in Inputs/Outputs, read the PAWL state. Open the sliding door to full open position. Using a screwdriver, click the latch to the first detent while observing the DRB111®. Unlatch the latch by pulling the handle switch and observe the DRB111® for a state change. Repeat this step several times while moving the door in different positions and wiggling the wiring harness to check for an intermittent open. Did the DRB111® show the switch state changes correctly every time? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Sliding Door Latch Sensing Switch connector (latch assembly). Measure the resistance of the Ground wires (both) between the PSD C2 connector (cavity 20) and the Sliding Door Latch Sensing Switch connector. Wiggle the harness while observing the ohmmeter. Is the resistance below 5.0 ohms on both ground wires? Yes → Go To 5 No → Repair the Ground wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Sliding Door Latch Sensing Switch connector (latch assembly). Measure the resistance of the Pawl Switch Sense circuit between the PSD C2 connector and the Sliding Door Latch Sensing Switch connector. Wiggle the harness while observing the ohmmeter. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Pawl Switch Sense wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	If there are no possible causes remaining, view repair. Repair Replace the Pawl Switch (latch assembly). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE LATCH RELEASE- SECTOR GEAR RETURN FAILURE

When Monitored and Set Condition:

INCOMPLETE LATCH RELEASE- SECTOR GEAR RETURN FAILURE

When Monitored: Whenever the power sliding door is operating.

Set Condition: If the cinch release motor takes longer than 700 ms to perform a release operation this code will set. The main causes of this code setting is some type of sticking situation preventing the sector gear in the cinch release motor assembly to return to its neutral position.

POSSIBLE CAUSES
DTC PRESENT
BINDING SLIDING DOOR
CINCH RELEASE MOTOR ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE LATCH RELEASE - SECTOR GEAR RETURN FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the sliding door for proper fit and alignment, loose/hard or torn seals or anything that would cause an obstruction to proper operation. Manually operate the sliding door of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled sliding door. Especially notice the effort needed to unlatch and close the door. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Replace the Cinch Release Motor Assembly.. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE POWER CLOSE - FULL OPEN SWITCH FAILURE

When Monitored and Set Condition:

INCOMPLETE POWER CLOSE - FULL OPEN SWITCH FAILURE

When Monitored: Whenever the power sliding door is operating in the closing direction.

Set Condition: The Full Open Switch was detected as closed before 100 hall effect pulses were counted since the start of the close operation.

POSSIBLE CAUSES
DTC PRESENT
STICKING CABLES OR SWITCH
FULL OPEN SWITCH SHORT TO GROUND
FULL OPEN SWITCH

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER CLOSE - FULL OPEN SWITCH FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding cables or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the door for proper fit and alignment, foreign material in the lower drive unit or anything that would cause an obstruction to proper operation of the Full Open Switch. With the DRBIII® in Inputs/Outputs, read the FULL OPEN SWITCH state. Manually operate the door handle while monitoring the DRBIII®. Does the switch status change smoothly as the handle is pulled and released? Yes → Go To 3 No → Refer to Service information for the related symptom(S). Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER CLOSE - FULL OPEN SWITCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII® in Inputs/Outputs, read the FULL OPEN SWITCH state. Open the Sliding Door to mid position. While monitoring the DRBIII®, wiggle the wiring harness from the Power Sliding Door Module to the Full Open Switch on the lower drive unit. Did the switch status ever change? Yes → Repair the Full Open Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	If there are no possible causes remaining, view repair. Repair Replace the Full Open Switch (lower drive unit). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER CLOSE - EXCESSIVE HALL EFFECT SIGNAL

When Monitored and Set Condition:

INCOMPLETE POWER CLOSE - EXCESSIVE HALL EFFECT SIGNAL

When Monitored: Anytime the power sliding door is in the closing cycle.

Set Condition: If during a closing operation the PSD module detects an excessive hall effect signal time period, this code will set. Code will also set if obstacle detection becomes inoperative due to a hall effect sensor failure or high effort on door during power up.

POSSIBLE CAUSES
DTC PRESENT
POWER SLIDING DOOR MODULE - HALL EFFECT OPEN
LOWER DRIVE UNIT
BINDING DOOR
HALL EFFECT GROUND CIRCUIT OPEN
DOOR MOTOR HALL EFFECT SUPPLY WIRE OPEN
DOOR MOTOR HALL EFFECT SUPPLY WIRE SHORT TO GROUND
DOOR MOTOR HALL EFFECT SIGNAL WIRE OPEN
DOOR MOTOR HALL EFFECT SIGNAL WIRE SHORT TO GROUND
DOOR MOTOR ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times from stop to stop if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER CLOSE - EXCESSIVE HALL EFFECT SIGNAL? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER CLOSE - EXCESSIVE HALL EFFECT SIGNAL — Continued

TEST	ACTION	APPLICABILITY
2	Examine the door for proper fit and alignment, loose/ hard or torn seals, worn teeth on the track and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the sliding door on the other side or of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled door. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Examine the Lower Drive Unit for alignment and gear condition. Manually operate the sliding door and observe the gear and track. Is the Lower Drive Unit and Track in good condition? Yes → Go To 4 No → Replace the Lower Drive Unit or Track as necessary.. Perform BODY VERIFICATION TEST - VER 1.	All
4	Operate the door from the full open position and put an obstacle in its path to make it reverse. Did the door reverse back to the open position? Yes → Go To 5 No → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Sliding Door Motor connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 6 No → Repair the hall effect ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	Disconnect the Sliding Door Motor connector. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance of the Door Motor Hall Effect Supply circuit between the Sliding Door Motor connector and the PSD Module C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the Door Motor Hall Effect Supply wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
7	Disconnect the Sliding Door Motor connector. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between ground and the Door Motor Hall Effect Supply circuit. Is the resistance below 100.0 ohms? Yes → Repair the Door Motor Hall Effect Supply wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 8	All

INCOMPLETE POWER CLOSE - EXCESSIVE HALL EFFECT SIGNAL — Continued

TEST	ACTION	APPLICABILITY
8	Disconnect the Sliding Door Motor connector. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance of the Door Motor Hall Effect Signal circuit between the Sliding Door Motor connector and the PSD Module C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the Door Motor Hall Effect Signal wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
9	Disconnect the Sliding Door Motor connector. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between ground and the Door Motor Hall Effect Signal circuit. Is the resistance below 100.0 ohms? Yes → Repair the Door Motor Hall Effect Signal wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 10	All
10	If there are no possible causes remaining, view repair. Repair Replace the Power Sliding Door Motor Assembly (hall effect sensor). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER CLOSE - LATCH FAILURE

When Monitored and Set Condition:

INCOMPLETE POWER CLOSE - LATCH FAILURE

When Monitored: Whenever the power sliding door is operating in the closing direction.

Set Condition: The power close operation was not completed due to latch failure. This DTC is set during a power close cycle.

POSSIBLE CAUSES
DTC PRESENT
BINDING DOOR
CINCH/RELEASE MOTOR LATCH DRIVER CIRCUIT SHORT TO GROUND
CINCH/RELEASE MOTOR LATCH DRIVER WIRE OPEN
CINCH/RELEASE MOTOR UNLATCH DRIVER WIRE OPEN
POWER SLIDING DOOR MODULE - FULL OPEN CIRCUIT OPEN
POWER SLIDING DOOR MODULE - PAWL CIRCUIT OPEN
POWER SLIDING DOOR MODULE - RATCHET CIRCUIT OPEN
GROUND WIRE OPEN - FULL OPEN SWITCH
GROUND WIRE OPEN - PAWL SWITCH
GROUND WIRE OPEN - RATCHET SWITCH
FULL OPEN SWITCH SENSE WIRE OPEN
PAWL SWITCH SENSE WIRE OPEN
SLIDING DOOR AJAR SWITCH SENSE WIRE OPEN
FULL OPEN SWITCH SENSE WIRE SHORT TO GROUND
FULL OPEN SWITCH
LATCH ASSEMBLY
LATCH ASSEMBLY
PAWL SWITCH
RATCHET SWITCH

INCOMPLETE POWER CLOSE - LATCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER OPEN - LATCH FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the door for proper fit and alignment, lose/ hard or torn seals, worn teeth on the rack and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the other sliding door or of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled door. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII® in Inputs/Outputs, read the PAWL, RATCHET and FULL OPEN switch state. While observing the FULL OPEN switch state, manually move the door from full open to part open. The switch should toggle from CLOSED to OPEN. Move the door to the full open position. While observing the PAWL switch state, click the latch with a screwdriver to the first detent. The PAWL should toggle from CLOSED to OPEN. Move the door to the full open position. While observing the RATCHET switch state, click the latch with a screwdriver to the second detent. The RATCHET should toggle from CLOSED to OPEN. Repeat the above steps several times. Select which switch failed: FULL OPEN Switch Go To 4 PAWL Switch Go To 9 RATCHET Switch Go To 13 All switches operated properly. Go To 17	All

INCOMPLETE POWER CLOSE - LATCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between the Ground circuit (cavity 20) and the Full Open Switch Sense circuit in the Sliding Door Module connector. Open the sliding door completely then partially close it. Repeat this step while observing the ohmmeter. Did the resistance change from below 15 ohms to above 1000.0 ohms when the door was moved. Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Full open Switch Sense wire at the lower drive unit. Measure the resistance of the Ground wires between the PSD C2 connector (cavity 20) and the Full Open Switch connector. Wiggle the harness while observing the ohmmeter. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Ground wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Full open Switch Sense wire at the lower drive unit. Measure the resistance of the Full Open Switch Sense wire between the PSD C2 connector and the Full Open Switch connector. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the Full Open Switch Sense wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
7	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Full open Switch Sense wire at the lower drive unit. Measure the resistance between ground and the Full Open Switch Sense circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Full Open Switch Sense wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 8	All
8	If there are no possible causes remaining, view repair. Repair Replace the Full Open Switch (lower drive unit). Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER CLOSE - LATCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
9	Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between ground and the Pawl Switch Sense circuit. Open the sliding door completely. Using a screwdriver, close the latch to the first detent while observing the ohmmeter. Release the latch with the handle. Repeat this step while observing the ohmmeter. Did the resistance change from below 15 ohms to above 1000.0 ohms when the latch was closed. Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 10	All
10	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Sliding Door Latch Sensing Switch connector. Measure the resistance of the both Ground wires between the PSD C2 connector (cavity 20) and the Sliding Door Latch Sensing Switch connector. Wiggle the harness while observing the ohmmeter. Is the resistance below 5.0 ohms in both ground wires at the switch connector? Yes → Go To 11 No → Repair the Ground wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
11	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Sliding Door Latch Sensing Switch connector (latch assembly). Measure the resistance of the Pawl Switch Sense wire between the PSD C2 connector and the Sliding Door Latch Sensing Switch connector. Is the resistance below 5.0 ohms? Yes → Go To 12 No → Repair the Pawl Switch Sense wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
12	If there are no possible causes remaining, view repair. Repair Replace the Pawl Switch (latch assembly). Perform BODY VERIFICATION TEST - VER 1.	All
13	Disconnect the Sliding Door Control Module C2 connector. **NOTE: The Sliding Door Ajar Switch Sense circuit is also the Ratchet Switch Sense circuit on power doors.** Disconnect the Sliding Door Latch Sensing Switch connector. Measure the resistance between the Ground circuit (cavity 20) and the Sliding Door Ajar Switch Sense circuit. Open the sliding door completely. Using a screwdriver, close the latch to the second detent while observing the ohmmeter. Release the latch with the handle. Repeat this step while observing the ohmmeter. Did the resistance change from below 15 ohms to above 1000.0 ohms when the latch was closed. Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 14	All

INCOMPLETE POWER CLOSE - LATCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
14	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Sliding Door Latch Sensing Switch connector. Measure the resistance of the both Ground wires between the PSD C2 connector (cavity 20) and the Sliding Door Latch Sensing Switch connector. Wiggle the harness while observing the ohmmeter. Is the resistance below 5.0 ohms in both ground wires at the switch connector? Yes → Go To 15 No → Repair the Ground wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
15	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Sliding Door Latch Sensing Switch connector (latch assembly). Measure the resistance of the Sliding Door Ajar Switch Sense wire between the PSD C2 connector and the Sliding Door Latch Sensing Switch connector. Is the resistance below 5.0 ohms? Yes → Go To 16 No → Repair the Sliding Door Ajar Switch Sense wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
16	If there are no possible causes remaining, view repair. Repair Replace the Ratchet Switch (latch assembly). Perform BODY VERIFICATION TEST - VER 1.	All
17	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between the Cinch/Release Motor Latch Driver circuit and the Cinch/Release Motor Unlatch Driver circuit in the Sliding Door Module connector. Wiggle the harness and check for an intermittent open condition. Is the resistance below 2.0 ohms? Yes → Go To 18 No → Go To 19	All
18	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between ground and the Cinch/Release Motor Latch Driver circuit. Wiggle the harness and check for an intermittent open condition. Is the resistance below 100.0 ohms? Yes → Repair the Cinch/Release Motor Latch Driver circuit for a short to ground. This could be the Cinch/Release Motor Latch Driver or Unlatch Driver or the motor itself. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

INCOMPLETE POWER CLOSE - LATCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
19	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Disconnect the Cinch/Release Motor connector. Measure the resistance of the Cinch/Release Motor Latch Driver circuit between the Sliding Door Control Module C2 connector and the Cinch/Release Motor connector. Wiggle the harness and check for an intermittent open condition. Is the resistance below 5.0 ohms? Yes → Go To 20 No → Repair the Cinch/Release Motor Latch Driver wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
20	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Disconnect the Cinch/Release Motor connector. Measure the resistance of the Cinch/Release Motor Unlatch Driver circuit between the Sliding Door Control Module C2 connector and the Cinch/Release Motor connector. Wiggle the harness and check for an intermittent open condition. Is the resistance below 5.0 ohms? Yes → Go To 21 No → Repair the Cinch/Release Motor Unlatch Driver wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
21	If there are no possible causes remaining, view repair. Repair Replace the Latch Assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE POWER CLOSE - OVERCURRENT

When Monitored and Set Condition:

INCOMPLETE POWER CLOSE - OVERCURRENT

When Monitored: Anytime the Power Sliding Door is operating in the closing direction.

Set Condition: The drive motor stall current of over 16 amps has been detected for over 500 ms. during a close operation.

POSSIBLE CAUSES
DTC PRESENT
BINDING DOOR
GROUND CIRCUIT OPEN
SLIDING DOOR CLOSE DRIVER CIRCUIT SHORT TO GROUND
CINCH/RELEASE MOTOR UNLATCH DRIVER CIRCUIT SHORT TO GROUND
DOOR MOTOR CLUTCH DRIVER CIRCUIT SHORT TO GROUND
POWER SLIDING DOOR MOTOR/CLUTCH

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read DTCs. Does the DRBIII® display INCOMPLETE POWER CLOSE - OVERCURRENT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the door for proper fit and alignment, loose/ hard or torn seals, worn teeth on the rack and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the other sliding door or one of a known good vehicle and notice the effort needed. Compare the effort needed on the disabled vehicle. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INCOMPLETE POWER CLOSE - OVERCURRENT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Sliding Door Control Module C1 connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Wiggle the harness and check for an intermittent open condition. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Sliding Door Control Module C1 connector. Measure the resistance between ground and the Sliding Door Close Driver circuit. Wiggle the harness and check for an intermittent short circuit condition. Is the resistance below 1000.0 ohms? Yes → Repair the Sliding Door Close Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between ground and the Cinch/Release Motor Unlatch Driver circuit. Wiggle the harness and check for an intermittent open condition. Is the resistance below 1000.0 ohms? Yes → Repair the Cinch/Release Motor Unlatch Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between ground and the Door Motor Clutch Driver circuit. Wiggle the harness and check for an intermittent open condition. Is the resistance below 5.0 ohms? Yes → Repair the Door Motor Clutch Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Power Sliding Door Motor/Clutch assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE POWER CLOSE - TIME OUT

When Monitored and Set Condition:

INCOMPLETE POWER CLOSE - TIME OUT

When Monitored: Anytime the Power Sliding Door is operating in the closing direction.

Set Condition: The power close operation was not completed within 20 seconds. This may be caused by very high opening effort. A weak hall effect signal, low motor output or defective clutch could also set this code.

POSSIBLE CAUSES
DTC PRESENT
BINDING DOOR
MOTOR/CLUTCH ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times from stop to stop - if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER CLOSE - TIME-OUT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the door for proper fit and alignment, loose/ hard or torn seals, worn teeth on the rack and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the sliding door of a known good vehicle or the other sliding door and notice the effort needed. Compare the effort needed on the disabled door. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Replace the Motor/Clutch Assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER CLOSE- VOLTAGE BELOW MINIMUM LEVEL

When Monitored and Set Condition:

INCOMPLETE POWER CLOSE- VOLTAGE BELOW MINIMUM LEVEL

When Monitored: Whenever the power sliding door is performing a power close operation.

Set Condition: The PSD Module detects that the voltage is below 9.5 volts during the power close operation.

POSSIBLE CAUSES
DTC PRESENT
MODULE VOLTAGE LOW
BINDING SLIDING DOOR
DRB OPERATING VOLTAGE LOW
POWER SLIDING DOOR MODULE - HIGH RESISTANCE
POWER SLIDING DOOR MOTOR

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read DTCs. Does the DRBIII® display INCOMPLETE POWER CLOSE - VOLTAGE BELOW MINIMUM LEVEL? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the door for proper fit and alignment, loose/ hard or torn seals, worn teeth on the track and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the other sliding door or of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled door. Does it take more effort to operate the sliding door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INCOMPLETE POWER CLOSE- VOLTAGE BELOW MINIMUM LEVEL — Continued

TEST	ACTION	APPLICABILITY
3	**NOTE: Test the battery to ensure it is fully charged and in good condition before proceeding.** Turn the ignition off. Turn all lights and accessories off. With the DRBIII® in ″Sliding Door″ ″Monitor Display″ ″PCI Bus Info″ read the ″Battery Voltage″ and compare it to the ″PSD Bat Volts Input″. **NOTE: If the difference is greater than 0.5 volts, backprobe the Fused B(+) at the module to verify.** Does the voltage vary more than 0.5 volts? Yes → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Locate and repair the reason for the voltage drop. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Turn all lights and accessories off. With the DRBIII® in ″Sliding Door″ ″Monitor Display″ ″PCI Bus Info″ read the ″Battery Voltage″ and compare it to the ″PSD Bat Volts Input″. Operate the power sliding door and observe the voltage difference. **NOTE: If the difference is greater than 1.6 volts, backprobe the Fused B(+) at the module to verify.** Does the voltage vary more than 1.6 volts when the liftgate is operating?? Yes → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Locate and repair the reason for the voltage drop. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Turn all lights and accessories off. Remove the sliding door trim panel to gain access to the Power Sliding Door Module. Backprobe voltmeter leads between the Fused B(+) and the Sliding Door Close Driver circuits in the PSD C1 connector. Open the sliding door. Operate the power sliding door in the CLOSE position and observe the voltage difference. Does the voltage vary more than 0.2 volts when the sliding door is closing? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Check the wiring and connections from the module to the motor for high resistance. If the wiring is okay, replace the Power Sliding Door Motor assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE POWER OPEN - FULL OPEN SWITCH FAILURE

When Monitored and Set Condition:

INCOMPLETE POWER OPEN - FULL OPEN SWITCH FAILURE

When Monitored: Whenever the power sliding door is operating in the opening direction.

Set Condition: The Full Open Switch was detected as closed before 200 hall effect pulses were counted since the start of the open operation.

POSSIBLE CAUSES
DTC PRESENT
STICKING CABLES OR SWITCH
FULL OPEN SWITCH SENSE CIRCUIT SHORT TO GROUND
FULL OPEN SWITCH

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER OPEN - FULL OPEN SWITCH FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding cables or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the door for proper fit and alignment, foreign material in the lower drive unit or anything that would cause an obstruction to proper operation of the Full Open Switch. With the DRBIII® in Inputs/Outputs, read the FULL OPEN SWITCH state. Manually operate the door handle while monitoring the DRBIII®. Does the switch status change smoothly as the handle is pulled and released? Yes → Go To 3 No → Refer to Service information for the related symptom(S). Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER OPEN - FULL OPEN SWITCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII® in Inputs/Outputs, read the FULL OPEN SWITCH state. Open the Sliding Door to mid position. While monitoring the DRBIII®, wiggle the wiring harness from the Power Sliding Door Module to the Full Open Switch on the lower drive unit. Did the switch status ever change? Yes → Repair the Full Open Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	If there are no possible causes remaining, view repair. Repair Replace the Full Open Switch (lower drive unit). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER OPEN - EXCESSIVE HALL EFFECT SIGNAL

When Monitored and Set Condition:

INCOMPLETE POWER OPEN - EXCESSIVE HALL EFFECT SIGNAL

When Monitored: Anytime the power sliding door is in the opening cycle.

Set Condition: If during an opening operation the PSD module detects an excessive hall effect signal time period, this code will set. Code will also set if obstacle detection becomes inoperative due to a hall effect sensor failure or high effort on door during power up.

POSSIBLE CAUSES
DTC PRESENT
POWER SLIDING DOOR MODULE - HALL EFFECT OPEN
LOWER DRIVE UNIT
BINDING DOOR
HALL EFFECT GROUND CIRCUIT OPEN
DOOR MOTOR HALL EFFECT SUPPLY WIRE OPEN
DOOR MOTOR HALL EFFECT SUPPLY WIRE SHORT TO GROUND
DOOR MOTOR HALL EFFECT SIGNAL WIRE OPEN
DOOR MOTOR HALL EFFECT SIGNAL WIRE SHORT TO GROUND
DOOR MOTOR ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times from stop to stop if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER OPEN - EXCESSIVE HALL EFFECT SIGNAL? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER OPEN - EXCESSIVE HALL EFFECT SIGNAL — Continued

TEST	ACTION	APPLICABILITY
2	Examine the door for proper fit and alignment, loose/ hard or torn seals, worn teeth on the track and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the sliding door on the other side or of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled door. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Examine the Lower Drive Unit for alignment and gear condition. Manually operate the sliding door and observe the gear and track. Is the Lower Drive Unit and Track in good condition? Yes → Go To 4 No → Replace the Lower Drive Unit and Track as necessary. Perform BODY VERIFICATION TEST - VER 1.	All
4	Operate the door from the full closed position and put an obstacle in it's path to make it reverse. Did the door reverse back to the closed position? Yes → Go To 5 No → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Sliding Door Motor connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Does the test light illuminate brightly? Yes → Go To 6 No → Repair the hall effect ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	Disconnect the Sliding Door Motor connector. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance of the Door Motor Hall Effect Supply circuit between the Sliding Door Motor connector and the PSD Module C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 7 No → Repair the Door Motor Hall Effect Supply wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
7	Disconnect the Sliding Door Motor connector. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between ground and the Door Motor Hall Effect Supply circuit. Is the resistance below 100.0 ohms? Yes → Repair the Door Motor Hall Effect Supply wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 8	All

INCOMPLETE POWER OPEN - EXCESSIVE HALL EFFECT SIGNAL — Continued

TEST	ACTION	APPLICABILITY
8	Disconnect the Sliding Door Motor connector. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance of the Door Motor Hall Effect Signal circuit between the Sliding Door Motor connector and the PSD Module C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 9 No → Repair the Door Motor Hall Effect Signal wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
9	Disconnect the Sliding Door Motor connector. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between ground and the Door Motor Hall Effect Signal circuit. Is the resistance below 100.0 ohms? Yes → Repair the Door Motor Hall Effect Signal wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 10	All
10	If there are no possible causes remaining, view repair. Repair Replace the Power Sliding Door Motor Assembly (hall effect sensor). Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE POWER OPEN - LATCH FAILURE

When Monitored and Set Condition:

INCOMPLETE POWER OPEN - LATCH FAILURE

When Monitored: Whenever the power sliding door is operating in the opening direction.

Set Condition: The power open operation was not completed due to latch failure. This DTC is set during a power open cycle.

POSSIBLE CAUSES
DTC PRESENT
BINDING DOOR
CINCH/RELEASE MOTOR LATCH DRIVER CIRCUIT SHORT TO GROUND
CINCH/RELEASE MOTOR LATCH DRIVER WIRE OPEN
CINCH/RELEASE MOTOR UNLATCH DRIVER WIRE OPEN
POWER SLIDING DOOR MODULE - FULL OPEN CIRCUIT OPEN
POWER SLIDING DOOR MODULE - PAWL CIRCUIT OPEN
POWER SLIDING DOOR MODULE - RATCHET CIRCUIT OPEN
FULL OPEN SWITCH SENSE WIRE OPEN
PAWL SWITCH SENSE WIRE OPEN
SLIDING DOOR AJAR SWITCH SENSE WIRE OPEN
FULL OPEN SWITCH SENSE WIRE SHORT TO GROUND
FULL OPEN SWITCH
LATCH ASSEMBLY
LATCH ASSEMBLY
PAWL SWITCH
RATCHET SWITCH

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER OPEN - LATCH FAILURE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding or other obstructions. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER OPEN - LATCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
2	Examine the door for proper fit and alignment, loose/ hard or torn seals, worn teeth on the rack and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the other sliding door or of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled door. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII® in Inputs/Outputs, read the PAWL, RATCHET and FULL OPEN switch state. While observing the FULL OPEN switch state, manually move the door from full open to part open. The switch should toggle from CLOSED to OPEN. Move the door to the full open position. While observing the PAWL switch state, click the latch with a screwdriver to the first detent. The PAWL should toggle from CLOSED to OPEN. Move the door to the full open position. While observing the RATCHET switch state, click the latch with a screwdriver to the second detent. The RATCHET should toggle from CLOSED to OPEN. Repeat the above steps several times. Select which switch failed: FULL OPEN Switch Go To 4 PAWL Switch Go To 8 RATCHET Switch Go To 11 All switches operated properly. Go To 14	All
4	Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between ground and the Full Open Switch Sense circuit. Open the sliding door completely then partially close it. Repeat this step while observing the ohmmeter. Did the resistance change from below 15 ohms to above 1000.0 ohms while moving the door? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Full open Switch Sense wire at the lower drive unit. Measure the resistance of the Full Open Switch Sense wire between the PSD C2 connector and the Full Open Switch connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Full Open Switch Sense wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER OPEN - LATCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
6	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Full open Switch Sense wire at the lower drive unit. Measure the resistance between ground and the Full Open Switch Sense circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Full Open Switch Sense wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Full Open Switch (lower drive unit). Perform BODY VERIFICATION TEST - VER 1.	All
8	Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between ground and the Pawl Switch Sense circuit. Open the sliding door completely. Using a screwdriver, close the latch to the first detent while observing the ohmmeter. Release the latch with the handle. Repeat this step while observing the ohmmeter. Did the resistance change from below 15 ohms to above 1000.0 ohms while moving the door? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 9	All
9	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Sliding Door Latch Sensing Switch connector (latch assembly). Measure the resistance of the Pawl Switch Sense wire between the PSD C2 connector and the Sliding Door Latch Sensing Switch connector. Is the resistance below 5.0 ohms? Yes → Go To 10 No → Repair the Pawl Switch Sense wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
10	If there are no possible causes remaining, view repair. Repair Replace the Pawl Switch (latch assembly). Perform BODY VERIFICATION TEST - VER 1.	All
11	Disconnect the Sliding Door Control Module C2 connector. **NOTE: The Sliding Door Ajar Switch Sense circuit is also the Ratchet Switch Sense circuit on power doors.** Measure the resistance between ground and the Sliding Door Ajar Switch Sense circuit. Open the sliding door completely. Using a screwdriver, close the latch to the second detent while observing the ohmmeter. Release the latch with the handle. Repeat this step while observing the ohmmeter. Did the resistance change from below 15 ohms to above 1000.0 ohms when the latch changed states? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 12	All

INCOMPLETE POWER OPEN - LATCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
12	Disconnect the Sliding Door Control Module C2 connector. Disconnect the Sliding Door Latch Sensing Switch connector (latch assembly). Measure the resistance of the Sliding Door Ajar Switch Sense wire between the PSD C2 connector and the Sliding Door Latch Sensing Switch connector. Is the resistance below 5.0 ohms? Yes → Go To 13 No → Repair the Sliding Door Ajar Switch Sense wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
13	If there are no possible causes remaining, view repair. Repair Replace the Ratchet Switch (latch assembly). Perform BODY VERIFICATION TEST - VER 1.	All
14	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between the Cinch/Release Motor Latch Driver circuit and the Cinch/Release Motor Unlatch Driver circuit. Wiggle the harness and check for an intermittent open condition. Is the resistance below 2.0 ohms? Yes → Go To 15 No → Go To 16	All
15	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between ground and the Cinch/Release Motor Latch Driver circuit. Wiggle the harness and check for an intermittent open condition. Is the resistance below 100.0 ohms? Yes → Repair the Cinch/Release Motor Latch Driver circuit for a short to ground. This could be the Cinch/Release Motor Latch Driver or Unlatch Driver or the motor itself. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Latch Assembly. Perform BODY VERIFICATION TEST - VER 1.	All
16	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Disconnect the Cinch/Release Motor connector. Measure the resistance of the Cinch/Release Motor Latch Driver circuit between the Sliding Door Control Module C2 connector and the Cinch/Release Motor connector. Wiggle the harness and check for an intermittent open condition. Is the resistance below 5.0 ohms? Yes → Go To 17 No → Repair the Cinch/Release Motor Latch Driver wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All

INCOMPLETE POWER OPEN - LATCH FAILURE — Continued

TEST	ACTION	APPLICABILITY
17	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Disconnect the Cinch/Release Motor connector. Measure the resistance of the Cinch/Release Motor Unlatch Driver circuit between the Sliding Door Control Module C2 connector and the Cinch/Release Motor connector. Wiggle the harness and check for an intermittent open condition. Is the resistance below 5.0 ohms? Yes → Go To 18 No → Repair the Cinch/Release Motor Unlatch Driver wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
18	If there are no possible causes remaining, view repair. Repair Replace the Latch Assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
INCOMPLETE POWER OPEN - OVERCURRENT

When Monitored and Set Condition:

INCOMPLETE POWER OPEN - OVERCURRENT

When Monitored: Anytime the Power Sliding Door is in a power open operation.

Set Condition: The drive motor stall current of over 16 amps has been detected for over 500 ms. during an open operation.

POSSIBLE CAUSES
DTC PRESENT
BINDING DOOR
GROUND CIRCUIT OPEN
SLIDING DOOR OPEN DRIVER CIRCUIT SHORT TO GROUND
CINCH/RELEASE MOTOR LATCH DRIVER CIRCUIT OPEN
CINCH/RELEASE MOTOR LATCH DRIVER CIRCUIT SHORT TO GROUND
DOOR MOTOR CLUTCH DRIVER CIRCUIT SHORT TO GROUND
POWER SLIDING DOOR MOTOR/CLUTCH

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read DTCs. Does the DRBIII® display INCOMPLETE POWER OPEN - OVERCURRENT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the door for proper fit and alignment, loose/ hard or torn seals, worn teeth on the rack and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the sliding door of a known good vehicle and notice the effort needed. Compare the effort needed on the disabled vehicle. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INCOMPLETE POWER OPEN - OVERCURRENT — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the Sliding Door Control Module C1 connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit. Wiggle the harness and check for an intermittent open condition. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Sliding Door Control Module C1 connector. Measure the resistance between ground and the Sliding Door Open Driver circuit. Wiggle the harness and check for an intermittent short circuit condition. Is the resistance below 1000.0 ohms? Yes → Repair the Sliding Door Open Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between the Cinch/Release Motor Latch Driver circuit and the Cinch/Release Motor Unlatch Driver circuit. Wiggle the harness and check for an intermittent open condition. Is the resistance below 2.0 ohms? Yes → Go To 6 No → Repair the Cinch/Release Motor Latch Driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between ground and the Cinch/Release Motor Latch Driver circuit. Wiggle the harness and check for an intermittent short condition. Is the resistance below 100.0 ohms? Yes → Repair the Cinch/Release Motor Latch Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off. Disconnect the Sliding Door Control Module C2 connector. Measure the resistance between ground and the Door Motor Clutch Driver circuit. Wiggle the harness and check for an intermittent short condition. Is the resistance below 100.0 ohms? Yes → Repair the Door Motor Clutch Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 8	All
8	If there are no possible causes remaining, view repair. Repair Replace the Power Sliding Door Motor/Clutch assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER OPEN - TIME OUT

When Monitored and Set Condition:

INCOMPLETE POWER OPEN - TIME OUT

When Monitored: Anytime the Power Sliding Door is operating in an opening operation.

Set Condition: The power open operation was not completed within 20 seconds. This may be caused by very high opening effort. A weak hall effect signal, low motor output or defective clutch could also set this code.

POSSIBLE CAUSES
DTC PRESENT
BINDING DOOR
MOTOR/CLUTCH ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display INCOMPLETE POWER OPEN - TIME-OUT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the door for proper fit and alignment, loose/ hard or torn seals, worn teeth on the rack and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the sliding door of a known good vehicle and notice the effort needed. Compare the effort needed on the disabled vehicle. Does it take more effort to operate the door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Replace the Motor/Clutch Assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

INCOMPLETE POWER OPEN - VOLTAGE BELOW MINIMUM LEVEL

When Monitored and Set Condition:

INCOMPLETE POWER OPEN - VOLTAGE BELOW MINIMUM LEVEL

When Monitored: Whenever the power sliding door is performing a power open operation.

Set Condition: The PSD Module detects that the voltage is below 9.5 volts during the power open operation.

POSSIBLE CAUSES
DTC PRESENT
MODULE VOLTAGE LOW
BINDING SLIDING DOOR
DRB OPERATING VOLTAGE LOW
POWER SLIDING DOOR MODULE - HIGH RESISTANCE
POWER SLIDING DOOR MOTOR

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times if possible. With the DRBIII®, read DTCs. Does the DRBIII® display INCOMPLETE POWER OPEN - VOLTAGE BELOW MINIMUM LEVEL? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All
2	Examine the door for proper fit and alignment, loose/ hard or torn seals, worn teeth on the track and gear (lower drive unit) or anything that would cause an obstruction to proper operation. Manually operate the other sliding door or of a known good vehicle and notice the effort needed to open and close. Compare the effort needed on the disabled door. Does it take more effort to operate the sliding door than it should? Yes → Refer to Service information for the related symptom(s). Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

INCOMPLETE POWER OPEN - VOLTAGE BELOW MINIMUM LEVEL — Continued

TEST	ACTION	APPLICABILITY
3	**NOTE: Test the battery to ensure it is fully charged and in good condition before proceeding.** Turn the ignition off. Turn all lights and accessories off. With the DRBIII® in ″Sliding Door″ ″Monitor Display″ ″PCI Bus Info″ read the ″Battery Voltage″ and compare it to the ″PSD Bat Volts Input″. **NOTE: If the difference is greater than 0.5 volts, backprobe the Fused B(+) at the module to verify.** Does the voltage vary more than 0.5 volts? Yes → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Locate and repair the reason for the voltage drop. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Turn all lights and accessories off. With the DRBIII® in ″Sliding Door″ ″Monitor Display″ ″PCI Bus Info″ read the ″Battery Voltage″ and compare it to the ″PSD Bat Volts Input″. Operate the power sliding door and observe the voltage difference. **NOTE: If the difference is greater than 1.6 volts, backprobe the Fused B(+) at the module to verify.** Does the voltage vary more than 1.6 volts when the liftgate is operating?? Yes → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Locate and repair the reason for the voltage drop. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Turn all lights and accessories off. Remove the sliding door trim panel to gain access to the Power Sliding Door Module. Backprobe voltmeter leads between the Fused B(+) and the Sliding Door Open Driver circuits in the PSD C1 connector. Close the sliding door. Operate the power sliding door in the OPEN position and observe the voltage difference. Does the voltage vary more than 0.2 volts when the sliding door is opening? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Check the wiring and connections from the module to the motor for high resistance. If the wiring is okay, replace the Power Sliding Door Motor assembly. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

IOD WAKE UP OPEN - PSD

When Monitored and Set Condition:

IOD WAKE UP OPEN - PSD

When Monitored: Anytime the Body Control Module is awake.

Set Condition: If the BCM does not sense a signal circuit from the Sliding Door Module this code will set.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - IOD WAKE UP OPEN
SLIDING DOOR WAKE UP SIGNAL WIRE OPEN
LIFTGATE MODULE WAKE UP SIGNAL WIRE SHORT TO GROUND
SLIDING DOOR WAKE UP SIGNAL WIRE SHORT TO GROUND
SLIDING DOOR MODULE - IOD WAKE UP OPEN

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Wait 10 seconds. With the DRBIII®, read DTCs. Does the DRBIII® display IOD WAKE UP OPEN? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the BCM C3 connector. Measure the voltage between the appropriate Sliding Door Wake Up Signal circuit and ground. Is the voltage above 10.0 volts? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All

IOD WAKE UP OPEN - PSD — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Body Control Module C3 connector. Disconnect the appropriate Sliding Door Control Module C2 connector. Measure the resistance of the appropriate Sliding Door Wake Up Signal circuit between the BCM C3 connector and the Sliding Door Control Module C2 connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the appropriate Sliding Door Wake Up Signal wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Body Control Module C2 connector. Disconnect the Power Liftgate Module C2 connector. Measure the resistance between the Liftgate Module Wake Up Signal circuit and ground. Is the resistance below 100.0 ohms? Yes → Repair the Liftgate Module Wake Up Signal wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	**NOTE: If this vehicle is equipped with 2 power sliding doors, this test must be repeated for each door.** Disconnect the Body Control Module C3 connector. Disconnect the appropriate Sliding Door Control Module C2 connector. Measure the resistance between the appropriate Sliding Door Wake Up Signal circuit and ground. Is the resistance below 100.0 ohms? Yes → Repair the appropriate Sliding Door Wake Up Signal wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Replace the Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

IOD WAKE UP PSD & PLG SHORT

When Monitored and Set Condition:

IOD WAKE UP PSD & PLG SHORT

When Monitored: Anytime the Body Control Module is awake.

Set Condition: If the BCM senses an over current signal on any of the Wake Up Signal circuits this code will set.

POSSIBLE CAUSES
DTC PRESENT
BODY CONTROL MODULE - IOD WAKE UP SHORT
LEFT SLIDING DOOR WAKE UP SIGNAL WIRE SHORT TO VOLTAGE
LIFTGATE MODULE WAKE UP SIGNAL WIRE SHORT TO VOLTAGE
RIGHT SLIDING DOOR WAKE UP SIGNAL WIRE SHORT TO VOLTAGE
LEFT SLIDING DOOR MODULE - IOD WAKE UP SHORT TO VOLTAGE
POWER LIFTGATE MODULE - IOD WAKE UP SHORT TO VOLTAGE
RIGHT SLIDING DOOR MODULE - IOD WAKE UP SHORT TO VOLTAGE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 1 minute then turn the ignition on. Wait 10 seconds. With the DRBIII®, read DTCs. Does the DRBIII® display IOD WAKE UP SHORT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the BCM C2 and C3 connectors. Using a 12-volt test light connected to ground, check each Wake Up Signal circuit. On which circuit did the test light illuminate? Left Sliding Door Wake Up Signal. Go To 3 Right Sliding Door Wake Up Signal. Go To 4 Liftgate Module Wake Up Signal. Go To 5 Did not illuminate. Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

IOD WAKE UP PSD & PLG SHORT — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Body Control Module C3 connector. Disconnect the Left Sliding Door Control Module C2 connector. Measure the voltage between the Left Sliding Door Wake Up Signal circuit and ground. Is there any voltage present? Yes → Repair the Left Sliding Door Wake Up Signal wire for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Body Control Module C3 connector. Disconnect the Right Sliding Door Control Module C2 connector. Measure the voltage between the Right Sliding Door Wake Up Signal circuit and ground. Is there any voltage present? Yes → Repair the Right Sliding Door Wake Up Signal wire for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Body Control Module C2 connector. Disconnect the Power Liftgate Module C2 connector. Measure the voltage between the Liftgate Module Wake Up Signal circuit and ground. Is there any voltage present? Yes → Repair the Liftgate Module Wake Up Signal wire for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Power Liftgate Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

LEFT B-PILLAR SWITCH INPUT OPEN OR SHORT TO VOLTAGE

When Monitored and Set Condition:

LEFT B-PILLAR SWITCH INPUT OPEN OR SHORT TO VOLTAGE

When Monitored: Continuously when the BCM is awake.

Set Condition: When the BCM senses an input greater than 4.8 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
LEFT SLIDING DOOR PILLAR SWITCH MUX CIRCUIT SHORT TO VOLTAGE
GROUND CIRCUIT OPEN
LEFT SLIDING DOOR PILLAR SWITCH MUX WIRE OPEN
LEFT B-PILLAR SWITCH OPEN
BODY CONTROL MODULE - LEFT SLIDING DOOR PILLAR SWITCH OPEN

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the left power sliding door from the Left B-Pillar Switch. With the DRBIII®, read DTCs. Does the DRBIII® display LEFT B-PILLAR SWITCH INPUT OPEN OR SHORT TO VOLTAGE? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Body Control Module C3 connector. Measure the voltage between Left Sliding Door Pillar Switch Mux circuit and ground. Is there any voltage present? Yes → Repair the Left Sliding Door Pillar Switch Mux circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the Body Control Module C3 connector. Measure the resistance between Left Sliding Door Pillar Switch Mux circuit and ground. Is the resistance below 20500.0 ohms? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

LEFT B-PILLAR SWITCH INPUT OPEN OR SHORT TO VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the B-Pillar Switch connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit in the B-Pillar Switch connector. Does the test light illuminate brightly? Yes → Go To 5 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Body Control Module C3 connector. Disconnect the Left B-Pillar Switch connector. Measure the resistance of the Left Sliding Door Pillar Switch Mux circuit between the BCM C3 connector and the Left B-Pillar Switch connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Left Sliding Door Pillar Switch Mux wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	If there are no possible causes remaining, view repair. Repair Replace the B-Pillar Switch. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

LEFT B-PILLAR SWITCH INPUT SHORT

When Monitored and Set Condition:

LEFT B-PILLAR SWITCH INPUT SHORT

When Monitored: Continuously when the BCM is awake.

Set Condition: When the BCM senses a B-pillar switch input less than .24 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
LEFT B-PILLAR SWITCH SHORTED
LEFT SLIDING DOOR PILLAR SWITCH MUX WIRE SHORT TO GROUND
BODY CONTROL MODULE - LEFT SLIDING DOOR PILLAR SWITCH CIRCUIT SHORTED

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the left power sliding door from the Left B-Pillar Switch. With the DRBIII®, read DTCs. Does the DRBIII® display LEFT B-PILLAR SWITCH INPUT SHORT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Left B-Pillar Switch connector. With the DRBIII®, erase DTCs. Turn the ignition off, wait 10 seconds, then turn the ignition on. Wait 10 seconds. With the DRBIII®, read DTCs. Does the DRBIII® display LEFT B-PILLAR SWITCH INPUT OPEN? Yes → Replace the B-Pillar Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the Body Control Module C3 connector. Disconnect the Left B-Pillar Switch connector. Measure the resistance of the Left Sliding Door Pillar Switch Mux circuit to ground. Is the resistance below 1000.0 ohms? Yes → Repair the Left Sliding Door Pillar Switch Mux wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
LEFT B-PILLAR SWITCH INPUT STUCK

When Monitored and Set Condition:

LEFT B-PILLAR SWITCH INPUT STUCK

When Monitored: Continuously when the BCM is awake.

Set Condition: When the BCM senses an active B-pillar switch input for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
LEFT B-PILLAR SWITCH SHORTED
LEFT SLIDING DOOR PILLAR SWITCH MUX WIRE SHORT TO GROUND
BODY CONTROL MODULE - LEFT SLIDING DOOR PILLAR SWITCH CIRCUIT SHORTED

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the left power sliding door from the Left B-Pillar Switch. With the DRBIII®, read DTCs. Does the DRBIII® display LEFT B-PILLAR SWITCH INPUT STUCK? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Left B-Pillar Switch connector. With the DRBIII®, erase DTCs. Turn the ignition off, wait 10 seconds, then turn the ignition on. Wait 10 seconds. With the DRBIII®, read DTCs. Does the DRBIII® display LEFT B-PILLAR SWITCH INPUT OPEN? Yes → Replace the B-Pillar Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the Body Control Module C3 connector. Disconnect the Left B-Pillar Switch connector. Measure the resistance of the Left Sliding Door Pillar Switch Mux circuit to ground. Is the resistance below 10000.0 ohms? Yes → Repair the Left Sliding Door Pillar Switch Mux wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

LOOPBACK TEST FAILURE

When Monitored and Set Condition:

LOOPBACK TEST FAILURE

When Monitored: Anytime the Power Sliding Door Module is awake.

Set Condition: The Power Sliding Door Module did not receive its own transmitted message on the PCI bus back (loopback) for longer than 1 second.

POSSIBLE CAUSES
DTC PRESENT
POWER SLIDING DOOR MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door several times from stop to stop if possible. With the DRBIII®, read ACTIVE DTCs. Does the DRBIII® display LOOPBACK TEST FAILURE? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Operate the door several times and check for any binding conditions. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
LOSS OF BCM MESSAGES

When Monitored and Set Condition:

LOSS OF BCM MESSAGES

When Monitored: Whenever the ignition is on.

Set Condition: If the PSD Module losses communication with the BCM for over 5 seconds, this code will set.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE BODY CONTROL MODULE
POWER SLIDING DOOR MODULE - LOSS OF BCM MESSAGES

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, enter Body then Body Computer. Was the DRBIII® able to I/D or communicate with the BCM? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s).	All
2	With the DRBIII®, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRBIII®, read DTC's. Did this DTC reset? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
LOSS OF EATX MESSAGES

When Monitored and Set Condition:

LOSS OF EATX MESSAGES

When Monitored: Whenever the ignition is on.

Set Condition: If the PSD Module does not receive a PRNDL message for over 5 seconds, this code will set.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE TRANSMISSION CONTROL MODULE
POWER SLIDING DOOR MODULE - LOSS OF EATX MESSAGES

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, select Transmission. Was the DRBIII® able to I/D or communicate with the Transmission? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s).	All
2	With the DRBIII®, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRBIII®, read DTC's. Did this DTC reset? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

LOSS OF FCM MESSAGES

When Monitored and Set Condition:

LOSS OF FCM MESSAGES

When Monitored: Whenever the ignition is in the RUN position and the PRNDL is not in PARK position.

Set Condition: If the PSD Module does not receive a temperature message from the Front Control Module for over 5 seconds, this code will set.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE FRONT CONTROL MODULE
POWER SLIDING DOOR MODULE - LOSS OF FCM MESSAGES

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, enter Body then Front Control Module. Was the DRBIII® able to I/D or communicate with the FCM? Yes → Go To 2 No → Refer to the Communication category for the related symptom(S).	All
2	With the DRBIII®, erase DTC's. Cycle the ignition switch from off to on and wait approximately 1 minute. With the DRBIII®, read DTC's. Did this DTC reset? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

LOSS OF SBEC MESSAGES

When Monitored and Set Condition:

LOSS OF SBEC MESSAGES

When Monitored: Whenever the ignition is in RUN position and the PRNDL is not in PARK position.

Set Condition: If the PSD Module does not receive a speed message from the Powertrain Control Module for over 5 seconds, this code will set.

POSSIBLE CAUSES
ATTEMPT TO COMMUNICATE WITH THE POWERTRAIN CONTROL MODULE
POWER SLIDING DOOR MODULE - LOSS OF SBEC MESSAGES

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, select Engine. Was the DRBIII® able to I/D or communicate with the Transmission? Yes → Go To 2 No → Refer to the Communication category for the related symptom(s).	All
2	With the DRBIII®, erase DTC's. Cycle the ignition switch from OFF to RUN and wait approximately 1 minute. With the DRBIII®, read DTC's. Did this DTC reset? Yes → Replace the Power Sliding Door Module. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
OVERHEAD LEFT SWITCH INPUT STUCK

When Monitored and Set Condition:

OVERHEAD LEFT SWITCH INPUT STUCK

When Monitored: Continuously when the BCM is awake.

Set Condition: When the BCM senses an active switch input for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
OVERHEAD LEFT SWITCH SHORTED
SLIDING DOORS OVERHEAD SWITCH MUX WIRE SHORT TO GROUND
BODY CONTROL MODULE - SLIDING DOORS OVERHEAD SWITCH CIRCUIT SHORTED

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the left power sliding door from the Overhead Console Switch. With the DRBIII®, read DTCs. Does the DRBIII® display OVERHEAD LEFT SWITCH INPUT STUCK? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Overhead Console connector. With the DRBIII®, erase DTCs. Turn the ignition off, wait 10 seconds, then turn the ignition on. Wait 10 seconds. With the DRBIII®, read DTCs. Does the DRBIII® display OVERHEAD LEFT SWITCH INPUT STUCK? Yes → Go To 3 No → Replace the Power Sliding Door Button Module. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Body Control Module C3 connector. Disconnect the Overhead Console Switch connector. Measure the resistance of the Sliding Doors Overhead Switch Mux circuit to ground. Is the resistance below 10000.0 ohms? Yes → Repair the Sliding Doors Overhead Switch Mux wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
OVERHEAD RIGHT SWITCH INPUT STUCK

When Monitored and Set Condition:

OVERHEAD RIGHT SWITCH INPUT STUCK

When Monitored: Continuously when the BCM is awake.

Set Condition: When the BCM senses an active switch input for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
OVERHEAD RIGHT SWITCH SHORTED
SLIDING DOORS OVERHEAD SWITCH MUX WIRE SHORT TO GROUND
BODY CONTROL MODULE - SLIDING DOORS OVERHEAD SWITCH CIRCUIT SHORTED

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the right power sliding door from the Overhead Console Switch. With the DRBIII®, read DTCs. Does the DRBIII® display OVERHEAD RIGHT SWITCH INPUT STUCK? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Overhead Console Switch connector. Turn the ignition off, wait 10 seconds, then turn the ignition on. Wait 10 seconds. With the DRBIII®, read DTCs. Does the DRBIII® display OVERHEAD RIGHT SWITCH INPUT STUCK? No → Replace the Power Sliding Door Button Module. Perform BODY VERIFICATION TEST - VER 1. Yes → Go To 3	All
3	Disconnect the Body Control Module C3 connector. Disconnect the Overhead Console Switch connector. Measure the resistance of the Sliding Doors Overhead Switch Mux circuit to ground. Is the resistance below 2000.0 ohms? Yes → Repair the Sliding Doors Overhead Switch Mux wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
OVERHEAD RIGHT/LEFT SWITCHES SHORT

When Monitored and Set Condition:

OVERHEAD RIGHT/LEFT SWITCHES SHORT

When Monitored: Continuously when the BCM is awake.

Set Condition: When the BCM senses less than 1.0 volts on the Sliding Doors Overhead Switch Mux circuit for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
OVERHEAD SWITCH SHORTED
SLIDING DOORS OVERHEAD SWITCH MUX WIRE SHORT TO GROUND
BODY CONTROL MODULE - SLIDING DOORS OVERHEAD SWITCH INPUT SHORTED

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the power sliding door from the Overhead Console Switch. With the DRBIII®, read DTCs. Does the DRBIII® display OVERHEAD RIGHT/LEFT SWITCHES SHORT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Overhead Console Switch connector. Turn the ignition off, wait 10 seconds, then turn the ignition on. Wait 10 seconds. With the DRBIII®, read DTCs. Does the DRBIII® display OVERHEAD SWITCH #2 INPUT SHORT? No → Replace the Power Sliding Door Button Module. Perform BODY VERIFICATION TEST - VER 1. Yes → Go To 3	All
3	Disconnect the Body Control Module C3 connector. Disconnect the Overhead Console Switch connector. Measure the resistance of the Sliding Doors Overhead Switch Mux circuit to ground. Is the resistance below 100.0 ohms? Yes → Repair the Sliding Doors Overhead Switch Mux wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

RIGHT B-PILLAR SWITCH INPUT OPEN OR SHORT TO VOLTAGE

When Monitored and Set Condition:

RIGHT B-PILLAR SWITCH INPUT OPEN OR SHORT TO VOLTAGE

When Monitored: Continuously when the BCM is awake.

Set Condition: When the BCM senses an input greater than 4.8 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
RIGHT SLIDING DOOR PILLAR SWITCH MUX CIRCUIT SHORT TO VOLTAGE
GROUND CIRCUIT OPEN
RIGHT SLIDING DOOR PILLAR SWITCH MUX WIRE OPEN
RIGHT B-PILLAR SWITCH OPEN
BODY CONTROL MODULE - RIGHT SLIDING DOOR PILLAR SWITCH OPEN

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the right power sliding door from the Right B-Pillar Switch. With the DRBIII®, read DTCs. Does the DRBIII® display RIGHT B-PILLAR SWITCH INPUT OPEN? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Body Control Module C3 connector. Measure the voltage between Right Sliding Door Pillar Switch Mux circuit and ground. Is there any voltage present? Yes → Repair the Right Sliding Door Pillar Switch Mux circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the B-Pillar Switch connector. Using a 12-volt test light connected to 12-volts, check the Ground circuit in the B-Pillar Switch connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

RIGHT B-PILLAR SWITCH INPUT OPEN OR SHORT TO VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the Body Control Module C3 connector. Disconnect the Right B-Pillar Switch connector. Measure the resistance of the Right Sliding Door Pillar Switch Mux circuit between the BCM C3 connector and the Right B-Pillar Switch connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Right Sliding Door Pillar Switch Mux wire for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Body Control Module C3 connector. Measure the resistance between Right Sliding Door Pillar Switch Mux circuit and ground. Is the resistance below 20500.0 ohms? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Replace the B-Pillar Switch. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

RIGHT B-PILLAR SWITCH INPUT SHORT

When Monitored and Set Condition:

RIGHT B-PILLAR SWITCH INPUT SHORT

When Monitored: Continuously when the BCM is awake.

Set Condition: When the BCM senses a switch input less than .24 volts for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
RIGHT B-PILLAR SWITCH SHORTED
RIGHT SLIDING DOOR PILLAR SWITCH MUX WIRE SHORT TO GROUND
BODY CONTROL MODULE - RIGHT SLIDING DOOR PILLAR SWITCH CIRCUIT SHORTED

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the right power sliding door from the Right B-Pillar Switch. With the DRBIII®, read DTCs. Does the DRBIII® display RIGHT B-PILLAR SWITCH INPUT SHORT? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Right B-Pillar Switch connector. With the DRBIII®, erase DTCs. Turn the ignition off, wait 10 seconds, then turn the ignition on. Wait 10 seconds. With the DRBIII®, read DTCs. Does the DRBIII® display RIGHT B-PILLAR SWITCH INPUT OPEN? Yes → Replace the B-Pillar Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the Body Control Module C3 connector. Disconnect the Right B-Pillar Switch connector. Measure the resistance of the Right Sliding Door Pillar Switch Mux circuit to ground. Is the resistance below 1000.0 ohms? Yes → Repair the Right Sliding Door Pillar Switch Mux wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

RIGHT B-PILLAR SWITCH INPUT STUCK

When Monitored and Set Condition:

RIGHT B-PILLAR SWITCH INPUT STUCK

When Monitored: Continuously when the BCM is awake.

Set Condition: When the BCM senses an active switch input for over 10 seconds.

POSSIBLE CAUSES
DTC PRESENT
RIGHT B-PILLAR SWITCH SHORTED
RIGHT SLIDING DOOR PILLAR SWITCH MUX WIRE SHORT TO GROUND
BODY CONTROL MODULE - RIGHT SLIDING DOOR PILLAR SWITCH CIRCUIT SHORTED

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Turn the ignition off, wait 10 seconds, then turn the ignition on. Operate the right power sliding door from the Right B-Pillar Switch. With the DRBIII®, read DTCs. Does the DRBIII® display RIGHT B-PILLAR SWITCH INPUT STUCK? Yes → Go To 2 No → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors for an intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Right B-Pillar Switch connector. With the DRBIII®, read DTCs. Does the DRBIII® display RIGHT B-PILLAR SWITCH INPUT OPEN? Yes → Replace the B-Pillar Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the Body Control Module C3 connector. Disconnect the Right B-Pillar Switch connector. Measure the resistance of the Right Sliding Door Pillar Switch Mux circuit to ground. Is the resistance below 10000.0 ohms? Yes → Repair the Right Sliding Door Pillar Switch Mux wire for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***POWER SLIDING DOOR INOPERATIVE**

POSSIBLE CAUSES
DTC'S PRESENT
MODULE RESPONSE
INTERMITTENT PROBLEM
SYSTEM TESTS

TEST	ACTION	APPLICABILITY
1	With the DRBIII® check for response from the Body Computer and the Power Sliding Door Modules Is there response from both modules? Yes → Go To 2 No → Refer to symptom list for problems related to COMMUNICATION.	All
2	With the DRBIII®, read DTCs in POWER SLIDING DOOR and BODY COMPUTER. Are any Power Sliding Door related codes present? Yes → Refer to symptom list for problems related to POWER SLIDING DOORS. No → Go To 3	All
3	This test will determine what inhibited the Power Sliding Door from operating properly. With the DRBIII®, select POWER SLIDING DOOR, MISCELLANEOUS, LAST INHIBIT MONITOR. Does the DRBIII® display any INHIBIT REASONS? Yes → Check for any binding conditions or other restrictions that may prevent proper operation. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. No → Go To 4	All
4	Ensure the sliding door is fully closed before proceeding. With the DRBIII® select SYSTEM TEST. Perform the Open, Close, Latch Cinch, Latch Release and Relay tests. Did any test fail? Yes → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. No → Test Complete.	All

Symptom:

FOLD MIRROR OUTPUT FAILURE (EXPORT ONLY)

POSSIBLE CAUSES
INTERMITTENT CONDITION
LEFT POWER MIRROR
RIGHT POWER MIRROR
LEFT FOLDING MIRROR UNFOLD DRIVER SHORT TO VOLTAGE
RIGHT FOLDING MIRROR UNFOLD DRIVER SHORT TO VOLTAGE
LEFT FOLDING MIRROR UNFOLD DRIVER SHORT TO GROUND
RIGHT FOLDING MIRROR UNFOLD DRIVER SHORT TO GROUND
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. NOTE: Doors must be closed to allow the mirrors to fold with the power folding mirror switch. Attempt to operate the power folding mirror system with the power folding mirror switch and by opening and closing both front doors with mirrors folded. With the DRBIII®, read DTCs. Does the same DTC reset? Yes → Go To 2 No → The condition that caused this DTC is currently not present. Use the wiring diagram/schematic as a guide, and inspect the related wiring harness for a possible intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Left Power Mirror connector. NOTE: Check connectors - Clean/repair as necessary. With the DRBIII®, erase DTC's. Operate the Power Folding Mirror switch. With the DRBIII®, read DTCs. Does the same DTC reset? Yes → Go To 3 No → Replace the Left Power Mirror. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Right Power Mirror connector. NOTE: Check connectors - Clean/repair as necessary. With the DRBIII®, erase DTC's. Operate the Power Folding Mirror switch. With the DRBIII®, read DTCs. Does the same DTC reset? Yes → Go To 4 No → Replace the Right Power Mirror. Perform BODY VERIFICATION TEST - VER 1.	All

FOLD MIRROR OUTPUT FAILURE (EXPORT ONLY) — Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the Left and Right Power Mirror connectors. Disconnect the Body Control Module C2 connector. NOTE: Check connectors - Clean/repair as necessary. Measure for unwanted voltage on the Left Folding Mirror Unfold Driver circuit in the BCM C2 connector. Is there any voltage present? Yes → Repair the Left Folding Mirror Unfold Driver circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Disconnect the Left and Right Power Mirror connectors. Disconnect the Body Control Module C2 connector. NOTE: Check connectors - Clean/repair as necessary. Measure for unwanted voltage on the Right Folding Mirror Unfold Driver circuit in the relay connector. Is there any voltage present? Yes → Repair the Right Folding Mirror Unfold Driver circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Disconnect the Left and Right Power Mirror connectors. Disconnect the Body Control Module C2 connector. NOTE: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the Left Folding Mirror Unfold Driver circuit in the BCM C2 connector. Is the resistance below 5.0 ohms? Yes → Repair the Left Folding Mirror Unfold Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	Disconnect the Left and Right Power Mirror connectors. Disconnect the Body Control Module C2 connector. NOTE: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the Right Folding Mirror Unfold Driver circuit in the relay connector. Is the resistance below 5.0 ohms? Yes → Repair the Right Folding Mirror Unfold Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

PASSENGER MIRROR RELAY OUTPUT OPEN (EXPORT ONLY)

POSSIBLE CAUSES
INTERMITTENT CONDITION
FUSED B+ CIRCUIT OPEN
PASSENGER FOLDING MIRROR RELAY
PASSENGER FOLDING MIRROR RELAY CONTROL CIRCUIT SHORTED TO GROUND
PASSENGER FOLDING MIRROR RELAY CONTROL CIRCUIT OPEN
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. NOTE: Doors must be closed to allow the mirrors to fold with the power folding mirror switch. Attempt to operate the power folding mirror system with the power folding mirror switch and by opening and closing both front doors with mirrors folded. With the DRBIII®, read DTCs. Does the same DTC reset? Yes → Go To 2 No → The condition that caused this DTC is currently not present. Use the wiring diagram/schematic as a guide, and inspect the related wiring harness for a possible intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Disconnect the Passenger Folding Mirror Relay connector. NOTE: Check connectors - Clean/repair as necessary. Using a 12-volt test light connected to ground, check the Fused B+ circuit in the relay connector. The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery. Does the test light illuminate brightly? Yes → Go To 3 No → Repair the Fused B+ circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Remove the Passenger Folding Mirror Relay. Check connectors - Clean/repair as necessary. Install a substitute relay in place of the Passenger Folding Mirror Relay. With the DRBIII®, erase DTC's. NOTE: Doors must be closed to allow the mirrors to fold with the power folding mirror switch. Attempt to operate the power folding mirror system with the power folding mirror switch and by opening and closing both front doors with mirrors folded. With the DRBIII®, read DTCs. Does the same DTC reset? Yes → Go To 4 No → Replace the Passenger Folding Mirror Relay. Perform BODY VERIFICATION TEST - VER 1.	All

PASSENGER MIRROR RELAY OUTPUT OPEN (EXPORT ONLY) — Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the Passenger Folding Mirror Relay connector. Disconnect the Body Control Module C4 connector. NOTE: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the Passenger Folding Mirror Relay Control circuit in the relay connector. Is the resistance below 5.0 ohms? Yes → Repair the Passenger Folding Mirror Relay Control circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Disconnect the Passenger Folding Mirror Relay connector. Disconnect the Body Control Module C4 connector. NOTE: Check connectors - Clean/repair as necessary. Measure the resistance of the Passenger Folding Mirror Relay Control circuit between the relay connector and the BCM C4 connector. Is the resistance below 5.0 ohms? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Passenger Folding Mirror Relay Control circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
PASSENGER MIRROR RELAY OUTPUT SHORT (EXPORT ONLY)

POSSIBLE CAUSES
INTERMITTENT CONDITION
PASSENGER FOLDING MIRROR RELAY
PASSENGER FOLDING MIRROR RELAY CONTROL CIRCUIT SHORTED TO VOLTAGE
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. NOTE: Doors must be closed to allow the mirrors to fold with the power folding mirror switch. Attempt to operate the power folding mirror system with the power folding mirror switch and by opening and closing both front doors with mirrors folded. With the DRBIII®, read DTCs. Does the same DTC reset? Yes → Go To 2 No → The condition that caused this DTC is currently not present. Use the wiring diagram/schematic as a guide, and inspect the related wiring harness for a possible intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Remove the Passenger Folding Mirror Relay. Check connectors - Clean/repair as necessary. Install a substitute relay in place of the Passenger Folding Mirror Relay. With the DRBIII®, erase DTC's. NOTE: Doors must be closed to allow the mirrors to fold with the power folding mirror switch. Attempt to operate the power folding mirror system with the power folding mirror switch and by opening and closing both front doors with mirrors folded. With the DRBIII®, read DTCs. Does the same DTC reset? Yes → Go To 3 No → Replace the Passenger Folding Mirror Relay. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Passenger Folding Mirror Relay connector. Disconnect the Body Control Module C4 connector. NOTE: Check connectors - Clean/repair as necessary. Measure the voltage of the Passenger Folding Mirror Relay Control circuit in the relay connector. Is the voltage above 1.0 volts? Yes → Repair the Passenger Folding Mirror Relay Control circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

UNFOLD MIRROR OUTPUT FAILURE (EXPORT ONLY)

POSSIBLE CAUSES
INTERMITTENT CONDITION
PASSENGER FOLDING MIRROR RELAY
LEFT POWER MIRROR
RIGHT POWER MIRROR
DRIVER FOLDING MIRROR FOLD DRIVER SHORT TO VOLTAGE
PASSENGER FOLDING MIRROR RELAY OUTPUT SHORT TO VOLTAGE
PASSENGER FOLDING MIRROR RELAY INPUT SHORT TO VOLTAGE
DRIVER FOLDING MIRROR FOLD DRIVER SHORT TO GROUND
PASSENGER FOLDING MIRROR RELAY OUTPUT SHORT TO GROUND
PASSENGER FOLDING MIRROR RELAY INPUT SHORT TO GROUND
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. NOTE: Doors must be closed to allow the mirrors to fold with the power folding mirror switch. Attempt to operate the power folding mirror system with the power folding mirror switch and by opening and closing both front doors with mirrors folded. With the DRBIII®, read DTCs. Does the same DTC reset? Yes → Go To 2 No → The condition that caused this DTC is currently not present. Use the wiring diagram/schematic as a guide, and inspect the related wiring harness for a possible intermittent condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Install a substitute relay in place of the Passenger Folding Mirror Relay. With the DRBIII®, erase DTC's. NOTE: Doors must be closed to allow the mirrors to fold with the power folding mirror switch. Attempt to operate the power folding mirror system with the power folding mirror switch and by opening and closing both front doors with mirrors folded. With the DRBIII®, read DTCs. Does the same DTC reset? Yes → Go To 3 No → Replace the Passenger Folding Mirror Relay. Perform BODY VERIFICATION TEST - VER 1.	All

UNFOLD MIRROR OUTPUT FAILURE (EXPORT ONLY) — Continued

TEST	ACTION	APPLICABILITY
3	Disconnect the Left Power Mirror connector. NOTE: Check connectors - Clean/repair as necessary. With the DRBIII®, erase DTC's. Operate the Power Folding Mirror switch. With the DRBIII®, read DTCs. Does the same DTC reset? Yes → Go To 4 No → Replace the Left Power Mirror. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Right Power Mirror connector. NOTE: Check connectors - Clean/repair as necessary. With the DRBIII®, erase DTC's. Operate the Power Folding Mirror switch. With the DRBIII®, read DTCs. Does the same DTC reset? Yes → Go To 5 No → Replace the Right Power Mirror. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the Left and Right Power Mirror connectors. Disconnect the Body Control Module C2 connector. NOTE: Check connectors - Clean/repair as necessary. Measure for unwanted voltage on the Driver Folding Mirror Fold Driver circuit in the BCM C2 connector. Is there any voltage present? Yes → Repair the Driver Folding Mirror Fold Driver circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Disconnect the Left and Right Power Mirror connectors. Disconnect the Passenger Folding Mirror Relay. NOTE: Check connectors - Clean/repair as necessary. Measure for unwanted voltage on the Passenger Folding Mirror Relay Output circuit in the relay connector. Is there any voltage present? Yes → Repair the Passenger Folding Mirror Relay Output circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 7	All
7	Disconnect the Body Control Module C2 connector. Disconnect the Passenger Folding Mirror Relay. NOTE: Check connectors - Clean/repair as necessary. Measure for unwanted voltage on the Passenger Folding Mirror Relay Input circuit in the relay connector. Is there any voltage present? Yes → Repair the Passenger Folding Mirror Relay Input circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 8	All

UNFOLD MIRROR OUTPUT FAILURE (EXPORT ONLY) — Continued

TEST	ACTION	APPLICABILITY
8	Disconnect the Left and Right Power Mirror connectors. Disconnect the Body Control Module C2 connector. NOTE: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the Driver Folding Mirror Fold Driver circuit in the BCM C2 connector. Is the resistance below 5.0 ohms? Yes → Repair the Driver Folding Mirror Fold Driver circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 9	All
9	Disconnect the Left and Right Power Mirror connectors. Disconnect the Passenger Folding Mirror Relay. NOTE: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the Passenger Folding Mirror Relay Output circuit in the relay connector. Is the resistance below 5.0 ohms? Yes → Repair the Passenger Folding Mirror Relay Output circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 10	All
10	Disconnect the Body Control Module C2 connector. Disconnect the Passenger Folding Mirror Relay. NOTE: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the Passenger Folding Mirror Relay Input circuit in the relay connector. Is the resistance below 5.0 ohms? Yes → Repair the Passenger Folding Mirror Relay Input circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***BOTH MIRRORS DO NOT UNFOLD EXCEPT WITH EITHER FRONT DOOR (EXPORT ONLY)**

POSSIBLE CAUSES
RELATED DIAGNOSTIC TROUBLE CODES
POWER FOLDING MIRROR SWITCH
FOLDING MIRROR SWITCH SIGNAL SHORT TO GROUND
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, read DTCs. Does the DRBIII® display any related DTC's? Yes → Refer to symptom list for problems related to Power Folding Mirrors. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Disconnect the Power Folding Mirror Switch connector. Check connectors - Clean/repair as necessary. Did the mirrors unfold? Yes → Replace the Power Folding Mirror Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the Power Folding Mirror Switch connector. Disconnect the BCM C4 harness connector. Check connectors - Clean/repair as necessary. Measure the resistance of the Folding Mirror Switch Signal circuit at the Power Folding Mirror Switch connector to ground. Is the resistance below 5.0 ohms? Yes → Repair the Folding Mirror Switch Signal circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***BOTH POWER FOLDING MIRRORS DO NOT FOLD (EXPORT ONLY)**

POSSIBLE CAUSES
RELATED DIAGNOSTIC TROUBLE CODES
GROUND CIRCUIT OPEN
POWER FOLDING MIRROR SWITCH
FOLDING MIRROR SWITCH SIGNAL OPEN
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, read DTCs. Does the DRBIII® display any related DTC's? Yes → Refer to symptom list for problems related to Power Folding Mirrors. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Disconnect the Power Folding Mirror switch connector Check connectors - Clean/repair as necessary. Measure the resistance of the ground circuit. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Repair the ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Disconnect the Power Folding Mirror Switch connector. Check connectors - Clean/repair as necessary. With the DRBIII® in Inputs/Outputs, read the Foldaway Switch state. Connect a jumper wire between the Folding Mirror Switch Signal circuit and ground. Does the DRBIII® display change? Yes → Replace the Power Folding Mirror Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Disconnect the Power Folding Mirror Switch connector. Disconnect the BCM C4 harness connector. Check connectors - Clean/repair as necessary. Measure the resistance of the Folding Mirror Switch Signal circuit between the BCM C4 connector and the Power Folding Mirror Switch connector. Is the resistance below 5.0 ohms? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Folding Mirror Switch Signal circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
*DRIVER FOLDING MIRROR DOES NOT FOLD (EXPORT ONLY)

POSSIBLE CAUSES
RELATED DIAGNOSTIC TROUBLE CODES
POWER MIRROR
FOLDING MIRROR UNFOLD DRIVER CIRCUIT OPEN
DRIVER FOLDING MIRROR FOLD DRIVER CIRCUIT OPEN
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, read Body Computer DTCs. Does the DRBIII® display any related DTC's? Yes → Refer to symptom list for problems related to Power Folding Mirrors. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Disconnect the inoperative Power Mirror connector. NOTE: Check connectors - Clean/repair as necessary. Connect one lead of a test light to the Passenger Folding Mirror Relay Output circuit and the other lead to the appropriate Folding Mirror Unfold Driver in the power mirror harness connector. With the DRBIII®, actuate the Folding Mirrors. Does the test light illuminate brightly? Yes → Replace the appropriate Power Mirror. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Disconnect the inoperative Power Mirror connector. Disconnect the Body Control Module C2 connector. NOTE: Check connectors - Clean/repair as necessary. Measure the appropriate Folding Mirror Unfold Driver circuit from the BCM C2 connector to the power mirror harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the appropriate Folding Mirror Unfold Driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

*DRIVER FOLDING MIRROR DOES NOT FOLD (EXPORT ONLY) — Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the inoperative Power Mirror connector. Disconnect the Body Control Module C2 connector. NOTE: Check connectors - Clean/repair as necessary. Measure the Driver Folding Mirror Fold Driver circuit from the BCM C2 connector to the mirror harness connector. Is the resistance below 5.0 ohms? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Driver Folding Mirror Fold Driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

***PASSENGER FOLDING MIRROR DOES NOT FOLD (EXPORT ONLY)**

POSSIBLE CAUSES
RELATED DIAGNOSTIC TROUBLE CODES
PASSENGER FOLDING MIRROR RELAY
POWER MIRROR
FOLDING MIRROR UNFOLD DRIVER CIRCUIT OPEN
PASSENGER FOLDING MIRROR RELAY OUTPUT CIRCUIT OPEN
PASSENGER FOLDING MIRROR RELAY INPUT CIRCUIT OPEN
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, read Body Computer DTCs. Does the DRBIII® display any related DTC's? Yes → Refer to symptom list for problems related to Power Folding Mirrors. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Disconnect the Passenger Folding Mirror Relay. Check connectors - Clean/repair as necessary. Connect a substitute relay in place of the Passenger Folding Mirror Relay. NOTE: Doors must be closed to allow the mirrors to fold with the power folding mirror switch. Attempt to operate the power folding mirror system with the power folding mirror switch and by opening and closing both front doors with mirrors folded. Does the system now operate properly? Yes → Replace the Passenger Folding Mirror Relay. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Connect Passenger Folding Mirror Relay if disconnected in previous step. Disconnect the inoperative Power Mirror connector. NOTE: Check connectors - Clean/repair as necessary. Connect one lead of a test light to the Passenger Folding Mirror Relay Output circuit and the other lead to the appropriate Folding Mirror Unfold Driver in the power mirror harness connector. With the DRBIII®, actuate the Folding Mirrors. Does the test light illuminate brightly? Yes → Replace the appropriate Power Mirror. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

*PASSENGER FOLDING MIRROR DOES NOT FOLD (EXPORT ONLY) — Continued

TEST	ACTION	APPLICABILITY
4	Disconnect the inoperative Power Mirror connector. Disconnect the Body Control Module C2 connector. NOTE: Check connectors - Clean/repair as necessary. Measure the appropriate Folding Mirror Unfold Driver circuit from the BCM C2 connector to the power mirror harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the appropriate Folding Mirror Unfold Driver circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Disconnect the inoperative Power Mirror connector. Disconnect the Passenger Folding Mirror Relay. NOTE: Check connectors - Clean/repair as necessary. Measure the Passenger Folding Mirror Relay Output circuit from the relay connector to the mirror harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Passenger Folding Mirror Relay Output circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
6	Disconnect the Body Control Module C2 connector. Disconnect the Passenger Folding Mirror Relay. NOTE: Check connectors - Clean/repair as necessary. Measure the Passenger Folding Mirror Relay Input circuit from the relay connector to the BCM C2 connector. Is the resistance below 5.0 ohms? Yes → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Passenger Folding Mirror Relay Input circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom List:

LF TIRE PRESSURE SENSOR BATTERY LOW
LF TIRE PRESSURE SENSOR FAILURE
LR TIRE PRESSURE SENSOR BATTERY LOW
LR TIRE PRESSURE SENSOR FAILURE
RF TIRE PRESSURE SENSOR BATTERY LOW
RF TIRE PRESSURE SENSOR FAILURE
RR TIRE PRESSURE SENSOR BATTERY LOW
RR TIRE PRESSURE SENSOR FAILURE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be LF TIRE PRESSURE SENSOR BATTERY LOW.

When Monitored and Set Condition:

LF TIRE PRESSURE SENSOR BATTERY LOW

When Monitored: Key ON.

Set Condition: When the EVICT detects a low battery condition from the LF Sensor/ Transmitter.

LF TIRE PRESSURE SENSOR FAILURE

When Monitored: Key ON.

Set Condition: When the EVIC detects a no-transmit condition from the LF Sensor/ Transmitter.

LR TIRE PRESSURE SENSOR BATTERY LOW

When Monitored: Key ON.

Set Condition: When the EVIC detects a low battery condition from the LR Sensor/ Transmitter.

LR TIRE PRESSURE SENSOR FAILURE

When Monitored: Key ON.

Set Condition: When the EVIC detects a no transmit condition from the LR Sensor/ Transmitter.

RF TIRE PRESSURE SENSOR BATTERY LOW

When Monitored: Key ON.

Set Condition: When the EVIC detects a low battery condition from the RF Sensor/ Transmitter.

LF TIRE PRESSURE SENSOR BATTERY LOW — Continued

RF TIRE PRESSURE SENSOR FAILURE

When Monitored: Key ON.

Set Condition: When the EVIC detects a no transmit condition from the RF Sensor/Transmitter.

RR TIRE PRESSURE SENSOR BATTERY LOW

When Monitored: Key ON.

Set Condition: When the EVIC detects a low battery condition from the RR Sensor/Transmitter.

RR TIRE PRESSURE SENSOR FAILURE

When Monitored: Key ON.

Set Condition: When the EVIC detects a no transmit condition from the RR Sensor/Transmitter.

POSSIBLE CAUSES
EVIC INTERNAL FAULT
SENSOR/TRANSMITTER INTERNAL FAULT

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, record and erase DTC's. Drive the vehicle for 10 minutes at 32 km/h (20 mph). With the DRBIII®, read DTCs. Does the DRBIII® display a Sensor Failure or Sensor Low Battery message? Yes → Replace the indicated Tire Pressure Sensor/Transmitter. Perform TIRE PRESSURE VERIFICATION TEST. No → Go To 2	All
2	Observe the EVIC display. Does the EVIC display SERVICE TIRE PRESS. SYSTEM? Yes → Replace the EVIC in accordance with the Service Information. Perform TIRE PRESSURE VERIFICATION TEST. No → Test Complete.	All

Symptom:
BCM MESSAGES NOT RECEIVED (EXPORT ONLY)

When Monitored and Set Condition:

BCM MESSAGES NOT RECEIVED (EXPORT ONLY)

When Monitored: Continuously with the ignition on.

Set Condition: The RKE/Thatcham Alarm Module does not receive any messages from the BCM for at least 5 seconds.

POSSIBLE CAUSES
INTERMITTENT CONDITION
BCM COMMUNICATION FAILURE
PCI BUS CIRCUIT OPEN
RKE/THATCHAM ALARM MODULE - INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, attempt to communicate with the BCM. Was the DRBIII® able to communicate with the BCM? Yes → Go To 2 No → Refer to the Communication category and perform the appropriate symptom. Perform VTSS VERIFICATION TEST - 1A.	All
2	Turn the ignition on. With the DRBIII®, attempt to communicate with the RKE/Thatcham Alarm Module. Was the DRBIII® able to communicate with the RKE/Thatcham Alarm Module? Yes → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Perform VTSS VERIFICATION TEST - 1A. No → Go To 3	All
3	Turn the ignition off. Disconnect the negative battery cable. Disconnect the Thatcham Alarm Module 16-way harness connector. Disconnect the DRBIII® from the data link connector. Measure the resistance of the PCI Bus circuit between the data link connector and the Thatcham Alarm Module connector. Is the resistance below 5.0 ohms? Yes → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A. No → Repair the PCI Bus circuit for an open. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:
INTERNAL EEPROM WRITE ERROR (EXPORT ONLY)

When Monitored and Set Condition:

INTERNAL EEPROM WRITE ERROR (EXPORT ONLY)

When Monitored: During a EEPROM write event.

Set Condition: If the EEPROM write time exceeds 16ms.

POSSIBLE CAUSES
INTERMITTENT CONDITION
RKE/THATCHAM ALARM MODULE - INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current RKE/Thatcham Alarm Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current RKE/Thatcham Alarm Module DTC's. Does the DRBIII® display: INTERNAL EEPROM WRITE ERROR? Yes → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A. No → The condition that caused this symptom is currently not present. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:
INTERNAL TRANSMIT FAILURE (EXPORT ONLY)

When Monitored and Set Condition:

INTERNAL TRANSMIT FAILURE (EXPORT ONLY)

When Monitored: Continuously with the ignition on during a message transmission.

Set Condition: After 8 internal attempts to transmit the RKE/Thatcham Alarm Module Bus messages.

POSSIBLE CAUSES
INTERMITTENT CONDITION
RKE/THATCHAM ALARM MODULE - INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current RKE/Thatcham Alarm Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current RKE/Thatcham Alarm Module DTC's. Does the DRBIII® display: INTERNAL TRANSMIT FAILURE? Yes → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A. No → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:
INTERNAL ULTRASONIC FAULT (EXPORT ONLY)

When Monitored and Set Condition:

INTERNAL ULTRASONIC FAULT (EXPORT ONLY)

When Monitored: During the initial 6 seconds of an ignition on cycle.

Set Condition: After 5 consecutive ignition cycles without detecting any ultrasonic movement.

POSSIBLE CAUSES
FRONT INTRUSION SENSOR
FRONT INTRUSION SENSOR SIGNAL CIRCUIT OPEN
FRONT SENSOR GROUND CIRCUIT OPEN
INTRUSION SENSOR DETECTION
REAR INTRUSION SENSOR
REAR INTRUSION SENSOR SIGNAL CIRCUIT OPEN
REAR SENSOR GROUND CIRCUIT OPEN
RKE/THATCHAM ALARM MODULE - FRONT SENSOR GROUND
RKE/THATCHAM ALARM MODULE - FRONT SENSOR SIGNAL
RKE/THATCHAM ALARM MODULE - INTERNAL
RKE/THATCHAM ALARM MODULE - REAR SENSOR GROUND
RKE/THATCHAM ALARM MODULE - REAR SENSOR SIGNAL

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current RKE/Thatcham Alarm Module DTC's. Perform the following step 5 times. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current RKE/Thatcham Alarm Module DTC's. Does the DRBIII® display: INTERNAL ULTRASONIC FAULT? Yes → Go To 3 No → Go To 2	All

INTERNAL ULTRASONIC FAULT (EXPORT ONLY) — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. **NOTE: The Intrusion Sensors will only detect movement during initial ignition on.** With the DRBIII®, select Intrusion Sensor Test. Turn the ignition on then wave arm inside the vehicle to simulate an intrusion. Does the DRBIII® show INTRUSION DETECTED when the ignition is initially turned on? Yes → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Perform VTSS VERIFICATION TEST - 1A. No → Go To 3	All
3	Turn the ignition off. Disconnect the Front Intrusion Sensor connector. Connect a voltmeter to the Front Intrusion Sensor Signal circuit at the Intrusion Sensor connector. Turn the ignition on while observing the voltmeter. **NOTE: Voltage will only be present during the first 6 seconds when the ignition is turned on.** Is the voltage above 10.0 volts when the ignition is initially turned on? Yes → Go To 4 No → Go To 12	All
4	Turn the ignition off. Measure the resistance of the Sensor Ground circuit at the Front Intrusion Sensor connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Go To 11	All
5	Replace the Front Intrusion Sensor with a known good sensor. With the DRBIII®, select Intrusion Sensor Test. Turn the ignition on then wave arm inside the vehicle to simulate an intrusion. Does the DRBIII® show INTRUSION DETECTED? Yes → Replace the Front Intrusion Sensor. Perform VTSS VERIFICATION TEST - 1A. No → Go To 6	All
6	Turn the ignition off. Disconnect the Rear Intrusion Sensor connector. Connect a voltmeter to the Rear Intrusion Sensor Signal circuit at the Intrusion Sensor connector. Turn the ignition on while observing the voltmeter. **NOTE: Voltage will only be present during the first 6 seconds when the ignition is turned on.** Is the voltage above 10.0 volts when the ignition is initially turned on? Yes → Go To 7 No → Go To 10	All

INTERNAL ULTRASONIC FAULT (EXPORT ONLY) — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Measure the resistance of the Sensor Ground circuit at the Rear Intrusion Sensor connector. Is the resistance below 5.0 ohms? Yes → Go To 8 No → Go To 9	All
8	Replace the Rear Intrusion Sensor with a known good sensor. With the DRBIII®, select Intrusion Sensor Test. Turn the ignition on then wave arm inside the vehicle to simulate an intrusion. Does the DRBIII® show INTRUSION DETECTED? Yes → Replace the Rear Intrusion Sensor. Perform VTSS VERIFICATION TEST - 1A. No → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A.	All
9	Gain access to the RKE/Thatcham Alarm Module. Disconnect the Thatcham Alarm Module 16-way connector. Measure the resistance of the Sensor Ground circuit between the Thatcham Alarm Module connector and the Intrusion Sensor connector. Is the resistance below 5.0 ohms? Yes → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A. No → Repair the Rear Sensor Ground circuit for an open. Perform VTSS VERIFICATION TEST - 1A.	All
10	Turn the ignition off. Gain access to the RKE/Thatcham Alarm Module 16-way connector. While back probing, measure the voltage of the Rear Intrusion Sensor Signal circuit at the Thatchem Alarm Module 16-way connector. Turn the ignition on while observing the voltmeter. **NOTE: Voltage will only be present during the first 6 seconds when the ignition is turned on.** Is the voltage above 10.0 volts when the ignition is initially turned on? Yes → Repair the Rear Intrusion Sensor Signal circuit for an open. Perform VTSS VERIFICATION TEST - 1A. No → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A.	All
11	Gain access to the RKE/Thatcham Alarm Module. Disconnect the Thatcham Alarm Module 16-way connector. Measure the resistance of the Sensor Ground circuit between the Thatcham Alarm Module connector and the Front Intrusion Sensor connector. Is the resistance below 5.0 ohms? Yes → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A. No → Repair the Front Sensor Ground circuit for an open. Perform VTSS VERIFICATION TEST - 1A.	All

INTERNAL ULTRASONIC FAULT (EXPORT ONLY) — Continued

TEST	ACTION	APPLICABILITY
12	Turn the ignition off. Gain access to the RKE/Thatcham Alarm Module 16-way connector. While back probing, measure the voltage of the Front Intrusion Sensor Signal circuit at the Thatcham Alarm Module 16-way connector. Turn the ignition on while observing the voltmeter. **NOTE: Voltage will only be present during the first 6 seconds when the ignition is turned on.** Is the voltage above 10.0 volts when the ignition is initially turned on? Yes → Repair the Front Intrusion Sensor Signal circuit for an open. Perform VTSS VERIFICATION TEST - 1A. No → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:
LOOPBACK ERROR (EXPORT ONLY)

When Monitored and Set Condition:

LOOPBACK ERROR (EXPORT ONLY)

When Monitored: During power up, following detection of any other Bus errors.

Set Condition: Internally transmitted message on the PCI Bus is not received correctly.

POSSIBLE CAUSES
INTERMITTENT CONDITION
RKE/THATCHAM ALARM MODULE - INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current RKE/Thatcham Alarm Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current RKE/Thatcham Alarm Module DTC's. Does the DRBIII® display: LOOPBACK ERROR? Yes → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A. No → The condition that caused this symptom is currently not present. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:
NO VALID MESSAGES RECEIVED (EXPORT ONLY)

When Monitored and Set Condition:

NO VALID MESSAGES RECEIVED (EXPORT ONLY)

When Monitored: Continuously with the ignition on.

Set Condition: The RKE/Thatcham Alarm Module does not receive any valid messages on the PCI Bus for a minimum of 5 seconds.

POSSIBLE CAUSES
INTERMITTENT CONDITION
RKE/THATCHAM ALARM MODULE - INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, erase the current RKE/Thatcham Alarm Module DTC's. Turn the ignition off, wait 10 seconds then turn the ignition on. With the DRBIII®, read the current RKE/Thatcham Alarm Module DTC's. Does the DRBIII® display: NO VALID MESSAGES RECEIVED? Yes → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A. No → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:
PCI BUS SHORTED TO BATTERY (EXPORT ONLY)

When Monitored and Set Condition:

PCI BUS SHORTED TO BATTERY (EXPORT ONLY)

When Monitored: Continuously with the ignition on.

Set Condition: The RKE/Thatcham Alarm Module has detected a short to battery voltage on the PCI Bus.

POSSIBLE CAUSES
PCI BUS MALFUNCTION
INTERMITTENT CONDITION

TEST	ACTION	APPLICABILITY
1	**NOTE: If this code is set and active it will be necessary to perform the PCI Bus Communication Failure symptom.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary. Perform VTSS VERIFICATION TEST - 1A. No → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Look for any chafed, pierced, pinched or partially broken wires. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:
PCI BUS SHORTED TO GROUND (EXPORT ONLY)

When Monitored and Set Condition:

PCI BUS SHORTED TO GROUND (EXPORT ONLY)

When Monitored: Continuously with the ignition on.

Set Condition: The RKE/Thatcham Alarm Module has detected a short to ground on the PCI Bus.

POSSIBLE CAUSES
PCI BUS MALFUNCTION
INTERMITTENT CONDITION

TEST	ACTION	APPLICABILITY
1	**NOTE: If this code is set and active it will be necessary to perform the PCI Bus Communication Failure symptom.** **NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.** Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary. Perform VTSS VERIFICATION TEST - 1A. No → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Look for any chafed, pierced, pinched or partially broken wires. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:
PCM MESSAGES NOT RECEIVED (EXPORT ONLY)

When Monitored and Set Condition:

PCM MESSAGES NOT RECEIVED (EXPORT ONLY)

When Monitored: Continuously with the ignition on.

Set Condition: The RKE/Thatcham Alarm Module does not receive any messages from the PCM for at least 5 seconds.

POSSIBLE CAUSES
INTERMITTENT CONDITION
PCM COMMUNICATION FAILURE
PCI BUS CIRCUIT OPEN
RKE/THATCHAM ALARM MODULE - INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, attempt to communicate with the PCM. Was the DRBIII® able to communicate with the PCM? Yes → Go To 2 No → Refer to the Communication category and perform the appropriate symptom. Perform VTSS VERIFICATION TEST - 1A.	All
2	Turn the ignition on. With the DRBIII®, attempt to communicate with the RKE/Thatcham Alarm Module. Was the DRBIII® able to communicate with the RKE/Thatcham Alarm Module? Yes → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Perform VTSS VERIFICATION TEST - 1A. No → Go To 3	All
3	Turn the ignition off. Disconnect the negative battery cable. Disconnect the RKE/Thatcham Alarm Module 16-way harness connector. Disconnect the DRBIII® from the data link connector. Measure the resistance of the PCI Bus circuit between the data link connector and the Thatcham Alarm Module connector. Is the resistance below 5.0 ohms? Yes → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A. No → Repair the PCI Bus circuit for an open. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:

***ALARM TRIPS ON ITS OWN**

POSSIBLE CAUSES
LAST VTSS CAUSE
ATTEMPT TO TRIP ALARM
INTERMITTENT CONDITION

TEST	ACTION	APPLICABILITY
1	With the DRBIII® in Inputs/Outputs, read the Last VTSS Cause state. Were there any causes displayed? Yes → Check for a possible intermittent condition with the circuit indicated by the DRBIII®. Perform VTSS VERIFICATION TEST - 1A. No → Go To 2	All
2	Is this an export vehicle equipped with a hood ajar switch? Yes → Go To 3 No → Go To 4	All
3	Remove the ignition key (but keep in hand). Lock the vehicle and close all the doors, liftgate and hood. Allow the VTSS to arm. Lightly tap on hood near ajar switch to simulate wind and noise vibration. Did the VTSS trip to the alarming state? Yes → Replace the hood ajar switch. Perform VTSS VERIFICATION TEST - 1A. No → Go To 4	All
4	**NOTE: The condition that caused the alarm is not present at this time. The following list may help in indentifying the intermittent condition.** Refer to any Technical Service Bulletins (TSB) that may apply. Visually inspect related wiring harnesses. Look for chafed, pierced, pinched, or partially broken wires. Visually inspect the related wiring harness connectors. Look for loose connections, broken, bent, pushed out, or corroded terminals. Were any of the above conditions present? Yes → Repair as necessary Perform VTSS VERIFICATION TEST - 1A. No → Test Complete.	All

Symptom:
*HOOD DOES NOT TRIP VTSS (EXPORT ONLY)

POSSIBLE CAUSES
CHECK DRBIII® FOR HOOD AJAR SWITCH RESPONSE
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**NOTE: For the results of this test to be valid, the security system must arm and flash the VTSS indicator properly.** With the DRBIII®, read the HOOD AJAR SW status. Open the hood. Does the DRBIII® display CLOSED? Yes → Replace the Body Control Module. Perform VTSS VERIFICATION TEST - 1A. No → Refer to symptom HOOD AJAR CKT OPEN in the DOOR AJAR category. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:

***LEFT FRONT DOOR DOES NOT TRIP VTSS**

POSSIBLE CAUSES
BODY CONTROL MODULE
CHECK DRBIII® FOR DRIVER DOOR AJAR RESPONSE

TEST	ACTION	APPLICABILITY
1	**NOTE: For the results of this test to be valid, the security system must arm and flash the VTSS indicator properly.** With the DRBIII®, read the DRVR DOOR AJAR SW status. Open the driver door. Does the DRBIII® display CLOSED? Yes → Replace the Body Control Module. Perform VTSS VERIFICATION TEST - 1A. No → Refer to symptom DRIVER DOOR AJAR CKT OPEN in the DOOR AJAR category. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:
*LEFT SLIDING DOOR DOES NOT TRIP VTSS

POSSIBLE CAUSES
MONITOR DRBIII® FOR LEFT SLIDING DOOR AJAR STATUS
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**NOTE: For the results of this test to be valid, the security system must arm and flash the VTSS indicator properly.** With the DRBIII®, read the LSLIDE DR AJAR SW status. Open the left sliding door. Does the DRBIII® display the switch state as CLOSED? Yes → Replace the Body Control Module. Perform VTSS VERIFICATION TEST - 1A. No → Refer to symptom LEFT SLIDING DOOR AJAR CKT OPEN in the DOOR AJAR category. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:
*LIFTGATE DOES NOT TRIP VTSS (EXPORT ONLY)

POSSIBLE CAUSES
CHECK DRBIII® FOR LIFTGATE SW RESPONSE
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**NOTE: For the results of this test to be valid, the security system must arm and flash the VTSS indicator properly.** With the DRBIII®, read the LIFTGATE AJAR SW status. Open the liftgate. Does the DRBIII® display CLOSED? Yes → Replace the Body Control Module. Perform VTSS VERIFICATION TEST - 1A. No → Refer to symptom LIFTGATE AJAR CKT OPEN in the DOOR AJAR category. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:
*REPEATER LAMPS INOPERATIVE WITH ALARM (EXPORT ONLY)

POSSIBLE CAUSES
HAZARD SWITCH SENSE CIRCUIT OPEN
REPEATER LAMPS INOPERATIVE
HAZARD SWITCH SENSE CIRCUIT OPEN
RKE/THATCHAM ALARM MODULE - INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, actuate the Hazard Lamps. Do the Hazard Lamps light while actuating? Yes → Go To 2 No → Refer to the appropriate Service Information to repair the Hazard Lamps. Perform VTSS VERIFICATION TEST - 1A.	All
2	Turn the hazard lamp switch on. Do the Hazard Lamps operate? Yes → Go To 3 No → Repair the Hazard Switch Sense circuit for an open between the BCM and the splice. Perform VTSS VERIFICATION TEST - 1A.	All
3	Gain access to the RKE/Thatcham Alarm Module. Disconnect the Thatcham Alarm Module 16-way harness connector. Connect a jumper wire between the Hazard Switch Sense of the Thatcham Alarm Module connector and ground. Do the hazard lamps light with the jumper wire connected? Yes → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A. No → Repair the Hazard Switch Sense circuit for an open between the RKE/Thatcham Alarm Module and the splice. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:

***RIGHT FRONT DOOR DOES NOT TRIP VTSS**

POSSIBLE CAUSES
CHECK DRBIII® FOR PASSENGER DOOR AJAR RESPONSE
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**NOTE: For the results of this test to be valid, the security system must arm and flash the VTSS indicator properly.** With the DRBIII®, read the PASS DOOR AJAR SW status. Open the passenger door. Does the DRBIII® display CLOSED? Yes → Replace the Body Control Module. Perform VTSS VERIFICATION TEST - 1A. No → Refer to symptom PASSENGER DOOR AJAR CKT OPEN in the DOOR AJAR category. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:

***RIGHT SLIDING DOOR DOES NOT TRIP VTSS**

POSSIBLE CAUSES
CHECK DRBIII® FOR RIGHT REAR DOOR AJAR RESPONSE
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**NOTE: For the results of this test to be valid, the security system must arm and flash the VTSS indicator properly.** With the DRBIII®, read the RSLIDE DR AJAR SW status. Open the right sliding door. Does the DRBIII® display CLOSED? Yes → Replace the Body Control Module. Perform VTSS VERIFICATION TEST - 1A. No → Refer to symptom RIGHT SLIDING DOOR AJAR CKT OPEN in the DOOR AJAR category. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:

***VTSS SIREN INOP (EXPORT ONLY)**

POSSIBLE CAUSES
INTERMITTENT CONDITION
SIREN SIGNAL CONTROL CIRCUIT OPEN
SIREN SIGNAL RETURN CIRCUIT OPEN
SIREN SUPPLY CIRCUIT OPEN
VTSS SIREN
RKE/THATCHAM ALARM MODULE - INTERNAL MALFUNCTION
RKE/THATCHAM ALARM MODULE - INTERNAL MALFUNCTION
RKE/THATCHAM ALARM MODULE - INTERNAL MALFUNCTON
VTSS SIREN - INTERNAL MALFUNCTION
VTSS SIREN - INTERNAL MALFUNCTION
VTSS SIREN - INTERNAL MALFUNCTION

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, actuate the VTSS Siren. Does the Siren sound while actuating? Yes → The condition that caused this symptom is currently not present. Inspect the related wiring harness for a possible intermittent condition. Look for any chafed, pierced, pinched or partially broken wires. Perform VTSS VERIFICATION TEST - 1A. No → Go To 2	All
2	Gain access to the VTSS Siren. Disconnect the VTSS Siren connector. Turn the ignition on. Measure the voltage of the Siren Supply circuit (cavity 3) in the VTSS Siren connector. Is the voltage above 10.0 volts? Yes → Go To 3 No → Go To 9	All
3	With the VTSS Siren connector disconnected. Measure the resistance of the Siren Signal Return circuit to ground. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Go To 7	All

*VTSS SIREN INOP (EXPORT ONLY) — Continued

TEST	ACTION	APPLICABILITY
4	With the VTSS Siren connector disconnected. Turn the ignition on. Measure the voltage of the Siren Signal Control circuit (cavity 2) in the VTSS Siren connector. Is the voltage approximately 5.0 volts +/- 1.0 volt? Yes → Replace the VTSS Siren. Perform VTSS VERIFICATION TEST - 1A. No → Go To 5	All
5	Gain access to the Thatcham Alarm Module 16-way harness connector. While back probing, measure the voltage of the Siren Signal Control circuit. Turn the ignition on. Is the voltage approximately 5.0 volts? Yes → Go To 6 No → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A.	All
6	Disconnect the Thatcham Alarm Module 16-way harness connector. Measure the resistance of the Siren Signal Control circuit between the Thatcham Alarm Module and the VTSS Siren connectors. Is the resistance below 5.0 ohms? Yes → Replace the VTSS Siren. Perform VTSS VERIFICATION TEST - 1A. No → Repair the Siren Signal Control circuit for an open. Perform VTSS VERIFICATION TEST - 1A.	All
7	Gain access to the RKE/Thatcham Alarm Module. While back probing, measure the resistance of the Siren Signal Return circuit in the Thatcham Alarm Module 16-way connector. Is the resistance below 5.0 ohms? Yes → Go To 8 No → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A.	All
8	Disconnect the Thatcham Alarm Module 16-way harness connector. Measure the resistance of the Siren Signal Return circuit between the Thatcham Alarm Module and the VTSS Siren connector. Is the resistance below 5.0 ohms? Yes → Replace the VTSS Siren. Perform VTSS VERIFICATION TEST - 1A. No → Repair the Siren Signal Return circuit for an open. Perform VTSS VERIFICATION TEST - 1A.	All
9	Gain access to the RKE/Thatcham Alarm Module. While back probing, measure the voltage of the Siren Supply circuit in the Thatcham Alarm Module 16-way connector. Turn the ignition on. Is the voltage above 10.0 volts? Yes → Go To 10 No → Replace the RKE/Thatcham Alarm Module. Perform VTSS VERIFICATION TEST - 1A.	All

*VTSS SIREN INOP (EXPORT ONLY) — Continued

TEST	ACTION	APPLICABILITY
10	Disconnect the Thatcham Alarm Module 16-way harness connector. Measure the resistance of the Siren Supply circuit between the Thatcham Alarm Module and the VTSS Siren connector. Is the resistance below 5.0 ohms? Yes → Replace the VTSS Siren. Perform VTSS VERIFICATION TEST - 1A. No → Repair the Siren Supply circuit for an open. Perform VTSS VERIFICATION TEST - 1A.	All

Symptom:

***VTSS WILL NOT ARM**

POSSIBLE CAUSES
CHECK THE VTSS STATUS
CHECK FOR BCM DTCS AND VTSS ARMING INHIBITORS
CHECK FOR PCI BUS COMMUNICATION OF INSTRUMENT CLUSTER AND SKIM
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII® in BCM, select Miscellaneous Function and check that the Theft Alarm is enabled. Was the Theft Alarm enabled? Yes → Go To 2 No → With the DRBIII®, enable the Vehicle Theft Security System (VTSS). Perform VTSS VERIFICATION TEST - 1A.	All
2	With the DRBIII®, attempt to read the Module Display of the Instrument Cluster and also the Sentry Key Immobilizer Module. Was the DRBIII® able to display the module information of the MIC and SKIM? Yes → Go To 3 No → Refer to the Symptom List and diagnose the appropriate symptom in the Communication category. Perform VTSS VERIFICATION TEST - 1A.	All
3	Ensure all doors and hood (export only) are closed. With the DRBIII®, read the active DTC's and the ajar switch states. Does the DRBIII® display any closed switches or VTSS related DTC's? Yes → Refer to the Symptom List and diagnose the appropriate symptom in the DOOR AJAR or VTSS category. Perform VTSS VERIFICATION TEST - 1A. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

FR WIPER HI-LO RELAY OPEN

POSSIBLE CAUSES
FUSED B(+) CIRCUIT
COMMON CIRCUIT OPEN
WIPER HI/LOW RELAY
WIPER ON/OFF RELAY
WIPER HI/LOW RELAY CONTROL CIRCUIT OPEN
FCM-ON/OFF RELAY DRIVER OPEN

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Remove the Wiper On/Off Relay from the PDC. Using a 12-volt test light connected to ground, probe both Fused B(+) circuits in the PDC. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly at each terminal? Yes → Go To 2 No → Repair the Fused B(+) circuit(s) for an open. Perform BODY VERIFICATION TEST - VER 1.	All
2	Install a substitute relay in place of the Wiper On/Off Relay. Turn the ignition on. Turn the wipers on. Does the system operate correctly? Yes → Replace the Wiper On/Off Relay. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Remove the wiper High/Low Relay from the PDC. Remove the wiper On/Off Relay from the PDC. Measure the resistance of the Common circuit between the High/Low Relay and the On/Off relay in the PDC. Is the resistance below 10.0 ohms? Yes → Go To 4 No → Repair the Common circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Install a substitute relay in place of the Wiper Hi/Low Relay. Turn the ignition on. Turn the wipers on. Does the system operate correctly? Yes → Replace the Wiper Hi/Low Relay. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All

FR WIPER HI-LO RELAY OPEN — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Remove the Wiper Hi/Low Relay from the PDC. Disconnect the FCM from the IPM. Connect a jumper wire between the Wiper Hi/Low Relay Control circuit at the IPM connector to ground. Measure the resistance between ground and the Wiper Hi/Low Relay Control circuit in the PDC. Is the resistance below 5.0 ohms? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Wiper Hi/Low Relay Control circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

FR WIPER HI-LO RELAY SHORT TO BATT

POSSIBLE CAUSES
WIPER HI/LOW RELAY
WIPER HI/LOW RELAY CONTROL CIRCUIT SHORTED TO VOLTAGE
FCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Remove the Wiper Hi/Low Relay from the PDC. Disconnect the FCM from the IPM. Turn the ignition on. Measure the voltage of the Wiper Hi/Low Relay Control circuit at the PDC connector. Is the voltage above 1.0 volt? Yes → Repair the Wiper Hi/Low Relay Control circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Install a substitute relay in place of the Wiper Hi/Low Relay. Turn the ignition on. Turn the wipers on. Does the system operate correctly? Yes → Replace the Wiper Hi/Low Relay. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
FRONT WASH SWITCH INPUT STUCK

POSSIBLE CAUSES
HIGH BEAM/FRONT WASHER SWITCH MUX CIRCUIT SHORTED TO GROUND
MULTI-FUNCTION SWITCH
WIRING HARNESS INSPECTION
FCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, select Body, Front Control Module and read the F Washer Switch state. Does the DRB display switch state as Closed? Yes → Go To 2 No → Go To 4	All
2	Turn the ignition off. Disconnect the Multi-Function Switch harness connector. Turn the ignition on. With the DRB, select Body, Front Control Module and read the F Washer Switch state. Does the DRB display switch state as Open? Yes → Replace the Multi-Function Switch. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the Multi-Function Switch harness connector. Disconnect the BCM C5 harness connector. Measure the resistance between ground and the High Beam/Front Washer Switch MUX circuit. Is the resistance below 1000.0 ohms? Yes → Repair the High Beam/Front Washer Switch MUX circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

FRONT WASH SWITCH INPUT STUCK — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition on. With the DRBIII®, erase all BCM and FCM DTCs. Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
FRONT WASHER OUTPUT OPEN

POSSIBLE CAUSES
INTERMITTENT WIRING AND CONNECTORS
FRONT WASHER MOTOR CONTROL CIRCUIT OPEN
FUSED ACCESSORY RELAY OUTPUT CIRCUIT
FRONT WASHER MOTOR CONTROL CIRCUIT SHORT TO VOLTAGE
FRONT WASHER PUMP MOTOR
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Ignition on, engine off. Press the Front Washer Switch. Does the Front Washer Motor Function? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition on. With the DRBIII®, erase all BCM and FCM DTCs. Turn the ignition off. The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All
3	Turn the ignition off to the lock position. Disconnect the Front Washer Pump Motor harness connector. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine off. Using a 12-volt test light connected to ground, check the Fused Accessory Relay Output circuit in the Front Washer Pump Motor harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused Accessory Relay Output circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

FRONT WASHER OUTPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off to the lock position. Disconnect the Front Washer Pump Motor harness connector. Ignition on, engine off. Using a 12-volt test light connected to 12 Volts, check the Front Washer Pump Motor Control circuit in the Front Washer Pump Motor harness connector while pressing the Front Washer Switch. Does the test light illuminate brightly? Yes → Replace the Front Washer Pump Motor in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off to the lock position. Disconnect the Front Control Module harness connector. Disconnect the Front Washer Pump Motor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Rear Washer Pump Motor Control Circuit from the Front Control Module connector to the Rear Washer Pump Motor harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Front Washer Pump Motor Control Circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the Front Control Module connector. Disconnect the Front Washer Pump Motor harness connector. **Note: Check connectors - Clean/repair as necessary.** Turn the ignition on. Using a 12-volt test light connected to ground, check the Front Washer Pump Motor Control circuit. Does the test light illuminate brightly? Yes → Repair the Front Washer Pump Motor Control Circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
FRONT WIPER NOT PARKED

POSSIBLE CAUSES
FRONT CONTROL MODULE
FRONT WIPER MODULE
MECHANICAL PROBLEM
WIRING HARNESS INSPECTION
FRONT WIPER PARK SWITCH SENSE CIRCUIT OPEN

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, select Body, Front Control Module, Inputs/Outputs and read the Wiper Park Sw state. Does the DRB display Closed? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition on. With the DRBIII®, erase all BCM and FCM DTCs. Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All
3	Turn the ignition off. Inspect all of the moving components associated with the Front Wiper system. Look for broken or damaged components which may prevent the wipers from parking properly. Are the any mechanical problems? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

FRONT WIPER NOT PARKED — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Front Wiper Module harness connector. Turn the ignition on. With the DRB, select Body, Body Computer then Inputs/Outputs and read the Wiper Park Sw state. Connect one end of a jumper wire to the Front Wiper Park Switch Sense circuit at the Front Wiper Module harness connector. Momentarily connect the other end of the jumper wire to ground. Repeat this several times. Did the Switch state change between Open and Closed when connecting and disconnecting the jumper? Yes → Replace the Front Wiper Module. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Front Wiper Module harness connector. Disconnect the FCM from the IPM. Measure the resistance of the Front Wiper Park Switch Sense circuit. Is the resistance below 10.0 ohms? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Front Wiper Park Switch Sense circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
FRONT WIPER ON RELAY OPEN

POSSIBLE CAUSES
FUSED B(+) CIRCUIT
WIPER ON/OFF RELAY
WIPER ON/OFF RELAY CONTROL CIRCUIT OPEN
FCM-ON/OFF RELAY DRIVER OPEN

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Remove the Wiper On/Off Relay from the PDC. Using a 12-volt test light connected to ground, probe both Fused B(+) circuits in the PDC. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly at each terminal? Yes → Go To 2 No → Repair the Fused B(+) circuit(s) for an open. Perform BODY VERIFICATION TEST - VER 1.	All
2	Install a substitute relay in place of the Wiper On/Off Relay. Turn the ignition on. Turn the wipers on. Does the system operate correctly? Yes → Replace the Wiper On/Off Relay. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Remove the Wiper On/Off Relay from the PDC. Disconnect the FCM from the IPM. Connect a jumper wire between the Wiper On/Off Relay Control circuit at the IPM connector to ground. Measure the resistance between ground and the Wiper On/Off Relay Control circuit in the PDC. Is the resistance below 5.0 ohms? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Wiper On/Off Relay Control circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

FRONT WIPER ON RELAY SHORT TO BATT

POSSIBLE CAUSES
WIPER ON/OFF RELAY
WIPER ON/OFF RELAY CONTROL CIRCUIT SHORTED TO VOLTAGE
FCM

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Remove the Wiper On/Off Relay from the PDC. Disconnect the FCM from the IPM. Turn the ignition on. Measure the voltage of the Wiper On/Off Relay Control circuit at the PDC connector. Is the voltage above 1.0 volt? Yes → Repair the Wiper On/Off Relay Control circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 2	All
2	Install a substitute relay in place of the Wiper On/Off Relay. Turn the ignition on. Turn the wipers on. Does the system operate correctly? Yes → Replace the Wiper On/Off Relay. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:
FRONT WIPER PARK SWITCH SHORT TO GND

POSSIBLE CAUSES
FRONT CONTROL MODULE
FRONT WIPER MODULE
WIRING HARNESS INSPECTION
FRONT WIPER PARK SWITCH SENSE CIRCUIT SHORTED TO GROUND

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Turn the Wipers on one of the intermittent settings. With the DRB, select Body, Front Control Module, Inputs/Outputs and read the Wiper Park Sw state. Does the switch state change from Open to Closed during wiper operation? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition on. With the DRBIII®, erase all BCM and FCM DTCs. Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All
3	Turn the ignition off. Disconnect the Front Wiper Module harness connector. Disconnect the FCM from the IPM. Measure the resistance between ground and the Front Wiper Park Switch Sense circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Front Wiper Park Switch Sense circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

FRONT WIPER PARK SWITCH SHORT TO GND — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition on. Turn the front wipers to an intermittent setting. Using a 12-volt test light connected to 12-volts, back probe the Front Wiper Park Switch Sense circuit at the Front Wiper Module harness connector. **NOTE: The test light should illuminate when the wipers are parked, then turn off when the wipers move off of the parked position.** Does the test light turn on and off properly? Yes → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Wiper Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

FRONT WIPER SWITCH MUX INPUT OPEN

POSSIBLE CAUSES
WIRING HARNESS INSPECTION
WINDSHIELD WIPER SWITCH MUX CIRCUIT OPEN
MULTIFUNCTION SWITCH MUX RETURN CIRCUIT OPEN
WIPER MUX CIRCUIT SHORTED TO VOLTAGE
BCM
MULTI-FUNCTION SWITCH

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, select Body, Body Controller and read the Front Wiper Sw volts. Is the voltage above 4.8 volts? Yes → Go To 2 No → Go To 6	All
2	Turn the ignition off. Disconnect the Multi-Function Switch harness connector. Disconnect the BCM C5 harness connector. Measure the resistance of the Front Wiper Switch MUX circuit between the BCM C5 harness connector and the Multi-Function Switch harness connector. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Repair the Front Wiper Switch MUX circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Multi-Function Switch harness connector. Disconnect the BCM C4 harness connector. Measure the resistance of the Multi-Function Switch MUX Return circuit between the BCM C4 harness connector and the Multi-Function Switch harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Multi-Function Switch MUX Return circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the Multi-Function Switch harness connector. Disconnect the BCM C5 harness connector. Turn the ignition on. Measure the voltage of the Front Wiper MUX Switch Signal circuit. Is the voltage above 1.0 volt? Yes → Repair the Front Wiper Switch MUX circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All

FRONT WIPER SWITCH MUX INPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect the Multi-Function Switch harness connector. Turn the ignition on. Connect a jumper wire between the Front Wiper Switch MUX circuit and the Mulit-Function Switch MUX Return circuit. With the DRB, read the Front Wiper Sw volts? Is the voltage below 0.5 volt? Yes → Replace the Multi-Function Switch. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition on. With the DRBIII®, erase all BCM and FCM DTCs. Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
FRONT WIPER SWITCH MUX INPUT SHORT TO GROUND

POSSIBLE CAUSES
BCM
WIRING HARNESS INSPECTION
FRONT WIPER SWITCH MUX CIRCUIT SHORTED TO GROUND
FRONT WIPER SWITCH MUX CIRCUIT SHORTED TO M/F MUX RETURN CIRCUIT
MULTI-FUNCTION SWITCH

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, select Body, Body Controller and read the Front Wiper Sw volts? Is the voltage above 0.3 volt? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition on. With the DRBIII®, erase all BCM and FCM DTCs. Turn the ignition off. **NOTE: Visually inspect the related wiring harness and circuits. Look for any chafed, pierced, pinched, or partially broken wires.** **NOTE: Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.** **Note: Refer to any Technical Service Bulletins (TSB) that may apply.** Were any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All
3	Turn the ignition off. Disconnect the Multi-Function Switch harness connector. Disconnect the BCM C5 harness connector. Measure the resistance of the Front Wiper Switch MUX circuit between the BCM C5 harness connector and ground. Is the resistance below 1000.0 ohms? Yes → Repair the Front Wiper Switch MUX circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

FRONT WIPER SWITCH MUX INPUT SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the Multi-Function Switch harness connector. Disconnect the BCM C5 harness connector. Measure the between the Front Wiper Switch MUX circuit and the Multi-Function Switch MUX Return circuit. Is the resistance below 1000.0 ohms? Yes → Repair the Front Wiper Switch MUX circuit for a short to the Multi-Function Switch MUX Return circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the Multi-Function Switch harness connector. Turn the ignition on. With the DRB, read the Front Wiper Sw volts? Is the voltage above 4.5 volts? Yes → Replace the Multi-Function Switch. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

HEADLAMP WASHER RELAY OPEN

POSSIBLE CAUSES
OPEN GROUND CIRCUIT
FUSED B+ CIRCUIT OPEN
HEADLAMP WASHER RELAY CONTROL CIRCUIT OPEN
HEADLAMP WASHER RELAY OUTPUT CIRCUIT OPEN
HEADLAMP WASHER PUMP MOTOR
HEADLAMP WASHER RELAY
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Washer Pump connector. Measure the resistance of the Washer Pump ground circuit. Is the resistance below 5.0 ohms? Yes → Go To 2 No → Repair the open Washer Pump ground circuit. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition on. Disconnect the Headlamp Washer Relay. Measure the voltage of the Fused B+ Circuit. Is the voltage above 10.0 volts? Yes → Go To 3 No → Repair the Fused B+ Circuit for an open condition. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the Headlamp Washer Relay. Disconnect the FCM harness connector. Measure the resistance of the Headlamp Washer Relay Control Circuit. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Headlamp Washer Relay Control Circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Disconnect the Headlamp Washer Relay. Disconnect the Headlamp Washer Pump Motor. Measure the resistance of the Headlamp Washer Relay Output Circuit. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the Headlamp Washer Relay Output Circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All

HEADLAMP WASHER RELAY OPEN — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition on. Disconnect the Headlamp Washer Pump Motor connector. Actuate the washers. Measure the voltage of the Washer Pump Output Circuit. Is the voltage above 10.0 volts? Yes → Replace the Headlamp Washer Pump Motor. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off. Install a known good relay in place of the Headlamp Washer Relay. Turn the Washers on. Do the Headlamp Washers operate normally? Yes → Replace the Headlamp Washer Relay. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

HEADLAMP WASHER RELAY SHORT TO BATT

POSSIBLE CAUSES
FUSED B+ CIRCUIT OPEN
HEADLAMP WASHER RELAY CONTROL CIRCUIT OPEN
HEADLAMP WASHER PUMP MOTOR
HEADLAMP WASHER RELAY
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. Disconnect the Headlamp Washer Relay. Measure the voltage of the Fused B+ Circuit. Is the voltage above 10.0 volts? Yes → Go To 2 No → Repair the Fused B+ Circuit for an open condition. Perform BODY VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the Headlamp Washer Relay. Disconnect the FCM harness connector. Measure the resistance of the Headlamp Washer Relay Control Circuit. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Repair the Headlamp Washer Relay Control Circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
3	Turn the ignition on. Disconnect the Headlamp Washer Pump Motor connector. Actuate the washers. Measure the voltage of the Washer Pump Output Circuit. Is the voltage above 10.0 volts? Yes → Replace the Headlamp Washer Pump Motor. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Install a known good relay in place of the Headlamp Washer Relay. Turn the Washers on. Do the Headlamp Washers operate normally? Yes → Replace the Headlamp Washer Relay. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

REAR WASH SWITCH INPUT STUCK

When Monitored and Set Condition:

REAR WASH SWITCH INPUT STUCK

When Monitored: Ignition ON

Set Condition: Switch is applied for more than 10 seconds.

POSSIBLE CAUSES
REAR WASHER SWITCH STUCK
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, select Body, Body Control Module and read the R Washer Switch state. Does the DRB display switch state as Closed? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition off. Disconnect the Rear Washer Switch harness connector. Turn the ignition on. With the DRB, select Body, Body Control Module and read the R Washer Switch state. Does the DRB display switch state as Open? Yes → Replace the Rear Washer Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition on. With the DRBIII®, erase all BCM and FCM DTCs. Turn the ignition off. The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

REAR WASHER OUTPUT OPEN

When Monitored and Set Condition:

REAR WASHER OUTPUT OPEN

When Monitored: Ignition on.

Set Condition:

POSSIBLE CAUSES
INTERMITTENT WIRING AND CONNECTORS
FUSED ACCESSORY RELAY OUTPUT CIRCUIT
REAR WASHER MOTOR CONTROL CIRCUIT OPEN
REAR WASHER MOTOR CONTROL CIRCUIT SHORT TO VOLTAGE
REAR WASHER PUMP MOTOR
FRONT CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. Press the Rear Washer Switch. Does the Rear Washer Motor Function? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition on. With the DRBIII®, erase all BCM and FCM DTCs. Turn the ignition off. The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

REAR WASHER OUTPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Disconnect the Rear Washer Pump Motor harness connector. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Fused Accessory Relay Output circuit in the Rear Washer Pump Motor harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused Accessory Relay Output circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
4	Turn the ignition off to the lock position. Disconnect the Rear Washer Pump Motor harness connector. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Using a 12-volt test light connected to 12 Volts, check the Rear Washer Pump Motor Control circuit in the Rear Washer Pump Motor harness connector while pressing the Rear Washer Switch. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Replace the Rear Washer Pump Motor in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off to the lock position. Disconnect the Front Control Module harness connector. Disconnect the Rear Washer Pump Motor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Rear Washer Pump Motor Control Circuit from the Front Control Module connector to the Rear Washer Pump Motor harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Rear Washer Pump Motor Control Circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the Front Control Module connector. Disconnect the Rear Washer Pump Motor harness connector. **Note: Check connectors - Clean/repair as necessary.** Turn the ignition on. Using a 12-volt test light connected to ground, check the Rear Washer Pump Motor Control circuit. Does the test light illuminate brightly? Yes → Repair the Rear Washer Pump Motor Control Circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Front Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

REAR WIPER OUTPUT OPEN

When Monitored and Set Condition:

REAR WIPER OUTPUT OPEN

When Monitored: Ignition on.

Set Condition: The Output is ON, the Output Driver Status is LOW and there is no Park signal.

POSSIBLE CAUSES
INTERMITTENT WIRING AND CONNECTORS
REAR WIPER MOTOR CONTROL CIRCUIT OPEN
REAR WIPER MOTOR GROUND OPEN
REAR WIPER MOTOR CONTROL CIRCUIT SHORT TO VOLTAGE
REAR WIPER MOTOR
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. Turn on the Rear Wiper. Does the Rear Wiper Function? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition on. With the DRBIII®, erase all BCM and FCM DTCs. Turn the ignition off. The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

REAR WIPER OUTPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Disconnect the Rear Wiper Motor harness connector. **Note: Check connectors - Clean/repair as necessary.** Turn the ignition and Rear Wiper Switch on. Using a 12-volt test light connected to ground, check the Rear Wiper Motor Control circuit in the Rear Wiper Motor harness connector. Does the test light illuminate brightly? Yes → Go To 4 No → Go To 5	All
4	Turn the ignition off to the lock position. Disconnect the Rear Wiper Motor harness connector. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Using a 12-volt test light connected to 12 Volts, check the Rear Wiper Motor ground circuit in the Rear Wiper Motor harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Replace the Rear Wiper Motor in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Repair the Rear Wiper Motor ground circuit for an open. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Rear Wiper Motor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Rear Wiper Motor Control Circuit from the Body Control Module harness connector to the Rear Wiper Motor harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Rear Wiper Motor Control Circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Rear Wiper Motor harness connector. **Note: Check connectors - Clean/repair as necessary.** Turn the ignition on. Using a 12-volt test light connected to ground, check the Rear Wiper Motor Control circuit. Is the test light on? Yes → Repair the Rear Wiper Motor Control Circuit for a short to voltage. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

REAR WIPER OUTPUT SHORT TO GROUND

When Monitored and Set Condition:

REAR WIPER OUTPUT SHORT TO GROUND

When Monitored: Ignition ON

Set Condition:

POSSIBLE CAUSES
REAR WIPER MOTOR FUNCTION
INTERMITTENT WIRING AND CONNECTORS
REAR WIPER MOTOR CONTROL CIRCUIT SHORT TO GROUND
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. Turn on the Rear Wiper. Does the Rear Wiper Function? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition on. With the DRBIII®, erase all BCM and FCM DTCs. Turn the ignition off. The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All
3	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Rear Wiper Motor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Rear Wiper Motor Control circuit. Is the resistance less than 5.0 ohms? Yes → Repair the Rear Wiper Motor Control Circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

REAR WIPER OUTPUT SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Connect a 20A Fused jumper wire between B+ and the Rear Wiper Motor Signal circuit in the Body Control Module connector harness. **NOTE: An internal short in the Wiper Motor may cause the fuse to open.** Does the Wiper Motor function? Yes → Replace the Body Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Rear Wiper Motor in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All

Symptom:

REAR WIPER SWITCH MUX INPUT OPEN

When Monitored and Set Condition:

REAR WIPER SWITCH MUX INPUT OPEN

When Monitored: Ignition ON

Set Condition: A Sensor voltage is over 4.76 volts for more than .125 seconds.

POSSIBLE CAUSES
INTERMITTENT WIRING AND CONNECTORS
REAR WIPER SWITCH MUX CIRCUIT OPEN
REAR WIPER SWITCH MUX RETURN CIRCUIT OPEN
REAR WIPER SWITCH OPEN
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, select Body, Body Control Module and read the R Wiper Switch Sensor voltage. Does the DRB display a Switch voltage greater than 4.5 volts? Yes → Go To 2 No → Go To 5	All
2	Turn the ignition off. Disconnect the Rear Wiper Switch harness connector. Connect a jumper wire between the Rear Wiper Switch MUX circuit and the Rear Wiper Switch MUX Return circuit in the Rear Wiper Switch harness connector. Turn the ignition on. With the DRB, select Body, Body Controller and read the Rear Wiper SW volts. Does the DRB R Wiper Switch Sensor voltage read less than 0.3 Volts? Yes → Replace the Rear Wiper Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Rear Wiper Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Rear Wiper Switch MUX circuit from the Body Control Module connector to the Rear Wiper Switch harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Rear Wiper Switch MUX circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

REAR WIPER SWITCH MUX INPUT OPEN — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Rear Wiper Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Rear Wiper Switch MUX Return circuit from the Body Control Module connector to the Rear Wiper Switch harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Rear Wiper Switch MUX Return circuit for an open. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
5	Turn the ignition on. With the DRBIII®, erase all BCM and FCM DTCs. Turn the ignition off. The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

REAR WIPER SWITCH MUX INPUT SHORT TO GROUND

When Monitored and Set Condition:

REAR WIPER SWITCH MUX INPUT SHORT TO GROUND

When Monitored: Ignition ON

Set Condition: A Sensor voltage is below 0.24 volts for more than 0.125 seconds.

POSSIBLE CAUSES
REAR WIPER SWITCH SHORTED
INTERMITTENT WIRING AND CONNECTORS
REAR WIPER SWITCH MUX CIRCUIT SHORT TO GROUND
REAR WIPER SWITCH MUX RETURN CIRCUIT SHORT TO GROUND
REAR WIPER SWITCH MUX CIRCUIT SHORT TO MUX RETURN CIRCUIT
BODY CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRB, select Body, Body Control Module and read the R Wiper Switch Sensor voltage. Does the DRB display a Switch voltage less than 0.4 volts? Yes → Go To 2 No → Go To 6	All
2	Turn the ignition off. Disconnect the Rear Wiper Switch harness connector. Turn the ignition on. With the DRB, select Body, Body Control Module and read the R Wiper Switch Sensor voltage.. Does the DRB display more than 4.8 volts? Yes → Replace the Rear Wiper Switch in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Rear Wiper Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Rear Wiper Switch MUX circuit. Is the resistance less than 5.0 ohms? Yes → Repair the Rear Wiper Switch MUX Circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Go To 4	All

REAR WIPER SWITCH MUX INPUT SHORT TO GROUND — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Rear Wiper Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between the Rear Wiper Switch MUX Return circuit and the Rear Wiper Switch MUX circuit. Is the resistance less than 5.0 ohms? Yes → Repair the Rear Wiper Switch MUX Circuit for a short to the Rear Wiper Switch MUX Return circuit. Perform BODY VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off to the lock position. Disconnect the Body Control Module harness connector. Disconnect the Rear Wiper Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Rear Wiper Switch MUX Return circuit. Is the resistance less than 5.0 ohms? Yes → Repair the Rear Wiper Switch MUX Return Circuit for a short to ground. Perform BODY VERIFICATION TEST - VER 1. No → Replace the Body Control Module in accordance with the Service Information. Perform BODY VERIFICATION TEST - VER 1.	All
6	Turn the ignition on. With the DRBIII®, erase all BCM and FCM DTCs. Turn the ignition off. The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform BODY VERIFICATION TEST - VER 1. No → Test Complete.	All

Verification Tests

41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1	APPLICABILITY
1. NOTE: After completion of the Transmission Verification Test, the Powertrain Verification Test must be performed. Refer to the Powertrain Category. 2. Connect the DRBIII® to the Data Link Connector (DLC). 3. Reconnect any disconnected components. 4. With the DRBIII®, erase all Transmission DTC's, also erase the PCM DTC's. 5. Perform *PRNDL FAULT CLEARING PROCEDURE after completion of repairs for P0706 CHECK SHIFTER SIGNAL. 6. With the DRBIII®, display Transmission Temperature. Start and run the engine until the Transmission Temperature is HOT, above 43° C or 110° F. 7. Check the transmission fluid and adjust if necessary. Refer to the Service Information for the Fluid Fill procedure. **8. NOTE: If the Transmission Control Module or Torque Converter has been replaced or if the Transmission has been repaired or replaced it is necessary to perform the DRBIII® Quick Learn Procedure and reset the "Pinion Factor"** 9. Road test the vehicle. With the DRBIII®, monitor the engine RPM. Make 15 to 20 1-2, 2-3, 3-4 upshifts. Perform these shifts from a standing start to 45 MPH with a constant throttle opening of 20 to 25 degrees. 10. Below 25 MPH, make 5 to 8 wide open throttle kickdowns to 1st gear. Allow at least 5 seconds each in 2nd and 3rd gear between each kickdown. 11. For a specific DTC, drive the vehicle to the Symptom's When Monitored/When Set conditions to verify the DTC is repaired. 12. If equipped with AutoStick®, upshift and downshift several times using the AutoStick® feature during the road test. **13. NOTE: Use the EATX OBDII task manager to run Good Trip time in each gear, this will confirm the repair and to ensure that the DTC has not re-matured.** 14. Check for Diagnostic Trouble Codes (DTC's) during the road test. If a DTC sets during the road test , return to the Symptom list and perform the appropriate symptom. **15. NOTE: Erase P0700 DTC in the PCM to turn the MIL light off after making transmission repairs.** Were there any Diagnostic Trouble Codes set during the road test? Yes → Repair is not complete, refer to the appropriate symptom. No → Repair is complete.	All

Verification Tests — Continued

41TE TRANSMISSION VERIFICATION TEST - VER 1	APPLICABILITY
1. Connect the DRBIII® to the Data Link Connector (DLC). 2. Reconnect any disconnected components. 3. With the DRBIII®, erase all Transmission DTC's, also erase the PCM DTC's. 4. Perform *PRNDL FAULT CLEARING PROCEDURE after completion of repairs for P0706 CHECK SHIFTER SIGNAL. **5. NOTE: Erase DTC P0700 in the PCM to turn the Malfunction Indicator Lamp (MIL) off after making Transmission repairs.** 6. With the DRBIII®, display Transmission Temperature. Start and run the engine until the Transmission Temperature is HOT - above 43° C or 110° F. 7. Check the Transmission Fluid and adjust if necessary. Refer to the Service information for the Fluid Fill procedure. **8. NOTE: If the Transmission Control Module or the Transmission has been repaired or replaced it is necessary to perform the DRBIII® Quick Learn Procedure and reset the ″Pinion Factor″** 9. Road test the vehicle. With the DRBIII®, monitor the engine RPM. Make 15 to 20 1-2, 2-3, 3-4 upshifts. Perform these shifts from a standing start to 45 MPH with a constant throttle opening of 20 to 25 degrees. 10. Below 25 MPH, make 5 to 8 wide open throttle kickdowns to 1st gear. Allow at least 5 seconds each in 2nd and 3rd gear between each kickdown. 11. For a specific DTC, drive the vehicle to the Symptom's When Monitored/When Set conditions to verify the DTC repair. 12. If equipped with AutoStick®, up-shift and down-shift several times using the AutoStick® feature during the road test. **13. NOTE: Use the EATX OBDII Task Manager to run Good Trip time in each gear, this will confirm the repair and to ensure that the DTC has not re-matured.** 14. Check for Diagnostic Trouble Codes (DTC's) during the road test. If a DTC sets during the road test , return to the Symptom list and perform the appropriate Symptom. Were there any Diagnostic Trouble Codes (DTCs) set during the road test? Yes → Refer to the Symptom List for appropriate Symptom(s). No → Repair is complete.	All

ABS VERIFICATION TEST - VER 1	APPLICABILITY
1. Turn the ignition off. 2. Connect all previously disconnected components and connectors. 3. Ensure all accessories are turned off and the battery is fully charged. 4. Ensure that the Ignition is on, and with the DRBIII, erase all Diagnostic Trouble Codes from ALL modules. Start the engine and allow it to run for 2 minutes and fully operate the system that was malfunctioning. 5. Turn the ignition off and wait 5 seconds. Turn the ignition on and using the DRBIII, read DTC's from ALL modules. 6. If any Diagnostic Trouble Codes are present, return to Symptom list and troubleshoot new or recurring symptom. **7. NOTE: For Sensor Signal and Pump Motor faults, the CAB must sense all 4 wheels at 25 km/h (15 mph) before it will extinguish the ABS Indicator.** 8. If there are no DTC's present after turning ignition on, road test the vehicle for at least 5 minutes. Perform several antilock braking stops. **9. Caution: Ensure braking capability is available before road testing.** 10. Again, with the DRBIII® read DTC's. If any DTC's are present, return to Symptom list. 11. If there are no Diagnostic Trouble Codes (DTC's) present, and the customer's concern can no longer be duplicated, the repair is complete. Are any DTC's present or is the original concern still present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

Verification Tests — Continued

AIRBAG VERIFICATION TEST - VER 1	APPLICABILITY
1. Remove any special tools or jumper wires and reconnect all previously disconnected components - except the Battery. **2. WARNING: TURN THE IGNITION ON, THEN RECONNECT THE BATTERY.** 3. Connect the DRBIII® to the Data Link Connector - use the most current software available. 4. Use the DRBIII® and erase the stored codes in all airbag system modules. 5. Turn the ignition off, and wait 15 seconds, then turn the ignition on. 6. Wait one minute, and read active codes and if there are none present read the stored codes. 7. Note: If equipped with Airbag On - Off switch, read the DTC's in all switch positions. 8. Note: Read the DTC's in all airbag system related modules. 9. If the DRBIII® shows any active or stored codes, return to the Symptom list and follow path specified for that trouble code. If no active or stored codes are present, the repair is complete. Are any DTC's present or is the original condition still present? YES Repair is not complete, refer to appropriate symptom list. NO Repair is complete.	All

BODY VERIFICATION TEST - VER 1	APPLICABILITY
1. Disconnect all jumper wires and reconnect all previously disconnected components and connectors. **2. NOTE: If the SKIM, PCM/ECM or FCM was replaced, refer to the service information for proper programming procedures.** 3. If the Body Control Module (BCM) was replaced, turn the ignition on for 15 seconds (to allow the new BCM to learn VIN) or engine may not start (if VTSS equipped). If the vehicle is equipped with VTSS, use the DRBIII® and enable VTSS. 4. Program all RKE transmitters and other options as necessary. 5. If any HVAC door actuator circuits were repaired, with the DRBIII® in HVAC, System Tests, select Actuator Circuit Test. (Manual Temp Control only). 6. If any actuators were replaced in the HVAC System, with the DRBIII® in HVAC, select System Tests then select HVAC Door Recalibration (Manual Temp Control only). 7. If any actuators were replaced in the ATC System, with the DRBIII® in Automatic Temp Control, select Miscellaneous then select Reset ATC Head. 8. For Three-Zone HVAC Systems, if HVAC Control/Rear Blower Rear Control was replaced/ Rear Blend Pot Circuit Open/Short DTC was set/any rear blend pot circuit was repaired, proceed to Number 9 & 10. 9. With DRBIII® in HVAC, select System Tests then select HVAC Door Recalibration. Door Recalibration must pass before proceeding to next step. 10. With DRBIII® in HVAC, select System Tests then select Reset Rear Blend Switch Span. Rotate Rear Blend/Mode control on Rear Blower Rear Control to full cold. Wait five seconds, then rotate control to full hot. 11. If any repairs were made to the power sliding door or power liftgate, use the DRBIII® and perform the open and close system tests. Observe the instructions on the DRBIII® screen. 12. Ensure that all accessories are turned off and the battery is fully charged. 13. With the DRBIII®, record and erase all DTCs from ALL modules. Start and run the engine for 2 minutes. Operate all functions of the system that caused the original concern. 14. Turn the ignition off and wait 5 seconds. Turn the ignition on and using the DRBIII®, read DTCs from ALL modules. Are any DTC's present or is the original condition still present? Yes → Repair is not complete, refer to the appropriate symptom. No → Repair is complete.	All

Verification Tests — Continued

CABIN HEATER VERIFICATION TEST - VER 1	APPLICABILITY
1. WARNING: DO NOT OPERATE THE DCHA IN AN ENCLOSED AREA SUCH AS A GARAGE THAT DOES NOT HAVE EXHAUST VENTILATION FACILITIES. ALWAYS VENT THE DCHA's EXHAUST WHEN OPERATING THE DCHA. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH. **2. WARNING: ALLOW THE DCHA ASSEMBLY TO COOL BEFORE PERFORMING A COMPONENT INSPECTION/REPAIR/REPLACEMENT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.** **3. NOTE: The DCHA Control will store up to three DTCs in its memory.** **4. NOTE: If the DCHA Control detects a new fault in the DCHA system, one that is not already stored in its memory, the DCHA Control will clear the oldest of the three stored DTCs, and it will store the new fault's DTC.** **5. NOTE: If the DCHA control detects a reoccurrence of a stored fault, the DCHA control will overwrite that fault's DTC with the most recent occurrence.** 6. Verify that the vehicle's battery is fully charged. 7. Verify that there is more than 1/8 of a tank of fuel in the vehicle's fuel tank. Add fuel, if necessary. 8. Verify that all DCHA coolant hoses and fuel lines are securely fastened to their respective components. 9. Disconnect all jumper wires and reconnect all previously disconnected components and connectors. 10. If a heater installation/cooling system service was performed, purge the coolant circuit of air in accordance with the Service Information. 11. Turn the ignition on. 12. On MTC, set the Blend control to the max cool position. 13. On ATC, set the Driver temperature control to LO (max cool). 14. Turn the ATC's or MTC's Power switch off. 15. Ensure that all accessories are turned off. 16. If a fuel system service requiring fuel to drain out of the DCHA fuel line was performed, prime the DCHA Dosing Pump in accordance with the Service Information. 17. With the DRBIII®, record and erase all DTCs from the Diesel Cabin Heater Assist (DCHA) Control and the Front Control Module (FCM). Cycle the ignition off then on. 18. Start the engine. 19. Allow the engine to idle. 20. Turn the ATC's or MTC's Power switch on. 21. Turn the Blower control to the high speed position. **22. NOTE: Do not disconnect the vehicle's battery or the DCHA's main power supply while the DCHA is in operation or in run-down mode. Failure to follow these instructions may result in excess emissions from the DCHA during heater operation.** 23. For MTC, perform Steps 24 through 29 and Steps 33 through 36 of this procedure. For ATC, perform Steps 30 through 36 of this procedure. **24. CAUTION: For MTC, do not activate the Diesel Cabin Heater Test with the engine off. Failure to follow these instructions may result in internal damage to the DCHA Heater Module.** **25. NOTE: For MTC, while performing the Diesel Cabin Heater Test, inspect the coolant and fuel connections for leakage.** 26. For MTC, with the DRBIII® in HVAC, Systems Tests, select Diesel Cabin Heater Test and press #1. 27. For MTC, set the Blend control to the max heat position. Allow the Diesel Cabin Heater Test to run for five minutes. Upon completion of the test, proceed as follows: 28. For MTC, set the Blend control to the max cool position. 29. For MTC, press #2 on the DRBIII® keyboard. **30. NOTE: For ATC, before actuating the AC Cooldown Test, verify that the A/C Compressor is not running. If the compressor is running, turn the A/C off and allow the evaporator to warm up before proceeding with the test.** **31. NOTE: For ATC, while performing the AC Cooldown Test, inspect the coolant and fuel connections for leakage.** 32. For ATC, with the DRBIII® in ATC, Systems Tests, perform the A/C Cooldown Test. The DCHA will operate for approximately 7 minutes. 3 minutes to run and 4 minutes to purge. 33. Turn the Blower control off. 34. Turn the ATC's or MTC's Power switch off. 35. Turn the ignition off, wait 5 seconds, then turn the ignition on. 36. Using the DRBIII®, read the Cabin Heater and Active FCM DTCs. Are any DTC's present or is the original condition still present? Yes → Repair is not complete, refer to the appropriate symptom. No → Repair is complete.	All

Verification Tests — Continued

MEMORY SYSTEM VERIFICATION TEST - VER 1	APPLICABILITY
1. Reconnect all previously disconnected components and connectors. 2. If any Memory Seat Memory Module Trouble Codes are present, erase at this time. 3. With the Memory Switch on the Driver's Door, program the Driver's Seat #1 Button to a desired position and Driver #2 Button to a different position. 4. Remove the Ignition Key and close all Doors to allow the Body Control Module to time out, about 30 seconds. 5. Verify that both Memory positions can be recalled from the RKE transmitter and the Memory Switch on the Driver's Door. 6. Turn the ignition on, and with the DRBIII, erase all Diagnostic Trouble Codes from ALL modules. Start the engine and allow it to run for 2 minutes and fully operate the system that was malfunctioning. 7. Turn the ignition off and wait 5 seconds. Turn the ignition on and using the DRBIII, read DTC's from ALL modules. Are any DTC's present or is the original complaint still present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

POWERTRAIN VERIFICATION TEST VER - 1	APPLICABILITY
1. NOTE: If the PCM has been replaced and the correct VIN and mileage have not been programmed, a DTC will be set in the ABS Module, Airbag Module and the SKIM. **2. NOTE: If the vehicle is equipped with a Sentry Key Immobilizer System, Secret Key data must be updated. Refer to the Service Information for the PCM, SKIM and the Transponder (ignition key) for programming information.** 3. Inspect the vehicle to ensure that all components related to the repair are connected properly. 4. Inspect the engine oil for fuel contamination. Replace the oil and filter as necessary. 5. Attempt to start the engine. 6. If the No Start condition is still present, refer to the symptom list and perform the diagnostic testing as necessary. refer to any Technical Service Bulletins that may apply. 7. Run the engine for one warm-up cycle to verify operation. 8. With the DRBIII®, confirm that no DTCs or Secondary Indicators are present and that all components are functioning properly. 9. If a DTC is present, refer to the appropriate category and select the corresponding symptom. Are any DTCs present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

Verification Tests — Continued

POWERTRAIN VERIFICATION TEST VER - 1 - NGC	APPLICABILITY
1. NOTE: After completing the Powertrain Verification Test the Transmission Verification Test must be performed. **2. NOTE: If the PCM has been replaced and the correct VIN and mileage have not been programmed, a DTC will be set in the ABS Module, Airbag Module and the SKIM.** **3. NOTE: If the vehicle is equipped with a Sentry Key Immobilizer System, Secret Key data must be updated. Refer to the Service Information for the PCM, SKIM and the Transponder (ignition key) for programming information.** 4. Inspect the vehicle to ensure that all components related to the repair are connected properly. 5. Inspect the engine oil for fuel contamination. Replace the oil and filter as necessary. 6. Attempt to start the engine. 7. If the No Start condition is still present, refer to the symptom list and perform the diagnostic testing as necessary. refer to and Technical Service Bulletins that may apply. 8. Run the engine for one warm-up cycle to verify operation. 9. With the DRBIII®, confirm that no DTCs or Secondary Indicators are present and that all components are functioning properly. 10. If a DTC is present, refer to the appropriate category and select the corresponding symptom. Are any DTCs present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

ROAD TEST VERIFICATION - VER-2	APPLICABILITY
1. Inspect the vehicle to ensure that all engine components are properly installed and connected. Reassemble and reconnect components as necessary. 2. If this verification procedure is being performed after a non-DTC test, perform steps 3 and 4. 3. Check to see if the initial symptom still exists. If there are no trouble codes and the symptom no longer exists, the repair was successful and testing is now complete. 4. If the initial or another symptom exists, the repair is not complete. Check all pertinent Technical Service Bulletins (TSBs) and return to the Symptom List if necessary. 5. For previously read DTCs that have not been dealt with, return to the Symptom List and follow the diagnostic path for that DTC; otherwise, continue. 6. If the Engine Control Module (ECM) has not been changed, perform steps 7 and 8, otherwise, continue with step 9. 7. With the DRB III®, erase all diagnostic trouble codes (DTCs), then disconnect the DRB III®. 8. Turn the ignition off for at least 10 seconds. 9. If equipped with a Transfer Case Position Switch, perform step 10, otherwise, continue with step 11. 10. With the ignition switch on, place the Transfer Case Shift Lever in each gear position, stopping for 15 seconds in each position. 11. Ensure no DTCs remain by performing steps 12 through 15. 12. Road test the vehicle. For some of the road test, go at least 64 km/h (40 MPH). If this test is for an A/C Relay Control Circuit, drive the vehicle for at least 5 minutes with the A/C on. 13. At some point, stop the vehicle and turn the engine off for at least 10 seconds, then restart the engine and continue. 14. Upon completion of the road test, turn the engine off and check for DTCs with the DRB III®. 15. If the repaired DTC has set again, the repair is not complete. Check for any pertinent Technical Service Bulletins (TSBs) and return to the Symptom List. If there are no DTCs, the repair was successful and is now complete. Are any DTCs or symptoms remaining? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

Verification Tests — Continued

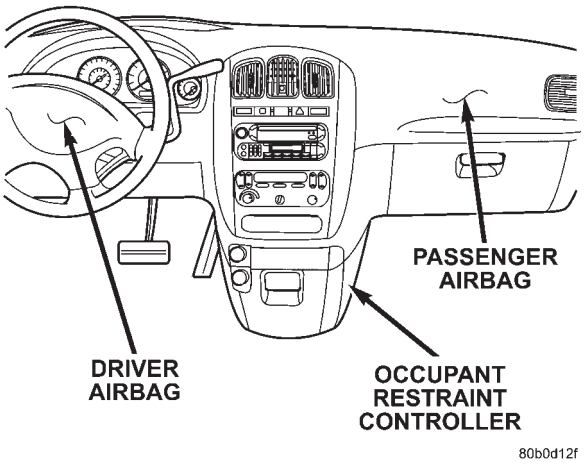
SKIS VERIFICATION	APPLICABILITY
1. Reconnect all previously disconnected components and connectors. 2. Obtain the vehicle's unique Personal Identification Number (PIN) assigned to it's original SKIM. This number can be obtained from the vehicle's invoice or Chrysler's Customer Center (1-800-992-1997). **3. NOTE: When entering the PIN, care should be taken because the SKIM will only allow 3 consecutive attempts to enter the correct PIN. If 3 consecutive incorrect PIN's are entered the SKIM will Lock Out the DRB III for 1 hour.** 4. To exit Lock Out mode, the ignition key must remain in the Run position continually for 1 hour. Turn off all accessories and connect a battery charger if necessary. 5. With the DRB III, select Theft Alarm, SKIM and Miscellaneous. Then select desired procedure and follow the steps that will be displayed. 6. If the SKIM has been replaced, ensure all of the vehicle ignition keys are programmed to the new SKIM. **7. NOTE: Prior to returning vehicle to the costumer, perform a module scan to be sure that all DTC's are erased. Erase any DTC's that are found.** 8. With the DRB III erase all DTC's. Perform 5 ignition key cycles leaving the key on for at least 90 seconds per cycle. 9. With the DRB III, read the SKIM DTC's. Are there any SKIM DTC's? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

TIRE PRESSURE VERIFICATION TEST	APPLICABILITY
1. Perform the EVIC training as instructed in the System Description. 2. Using the DRBIII® or RESET and STEP buttons, set the EVIC to Diagnostics mode. **3. NOTE: The RESET and STEP buttons must be applied and held simultaneously.** 4. Set the EVIC to display BUCKET COUNTERS. 5. Drive the vehicle at 32 km/h (20 mph) for at least 2 minutes. 6. Observe that the counters increment at least 3 sensor/transmitter receptions for each wheel. Can the EVIC be trained and do the counters show Sensor/Transmitter receptions? Yes → Repair is complete. No → Refer to Diagnosing System Faults in the Description and Operation for this system.	All

VTSS VERIFICATION TEST - 1A	APPLICABILITY
1. Ensure all doors, hood, and liftgate are closed. 2. Open the driver's door. 3. Remove the ignition key (but keep in hand). 4. Lower the driver door window and lock the doors with the RKE transmitter. 5. Close the driver's door. 6. Observe the VTSS Indicator. 7. The VTSS Indicator will flash rapidly for approximately 15 seconds and then begin to flash slowly. If the VTSS Indicator is not performing as described, this indicates a system fault. Refer to symptom list for problems related to THEFT ALARM WILL NOT ARM. 8. Perform a system test on the VTSS by duplicating the original complaint. 9. Disarm the system and with the DRBIII®, read DTC's. 10. If the original complaint is corrected and there are no DTC's the repair is complete. Are any DTC's present or is the original complaint still present? Yes → Repair is not complete, refer to the appropriate symptom. No → Repair is complete.	All

8.0 COMPONENT LOCATIONS

8.1 AIRBAG SYSTEM



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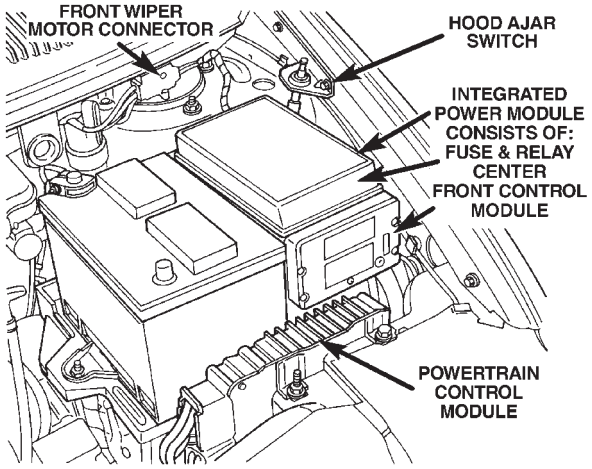

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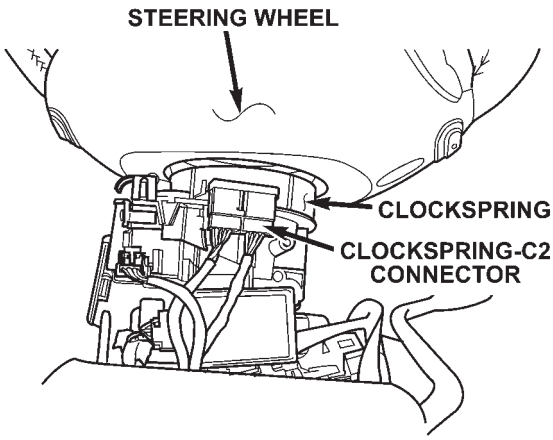

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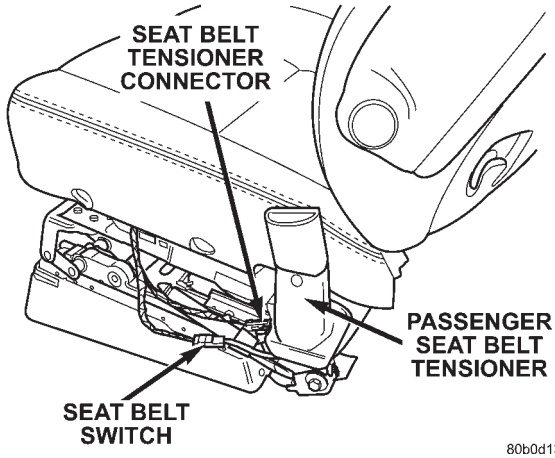

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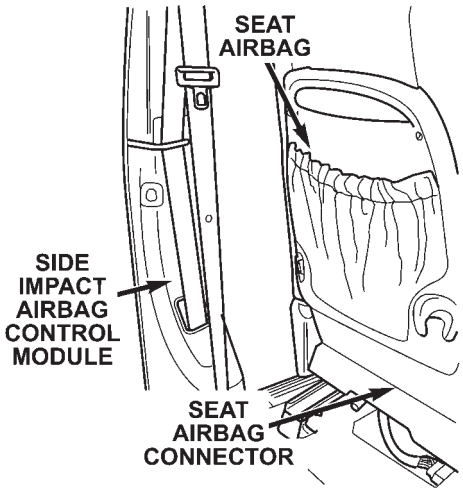

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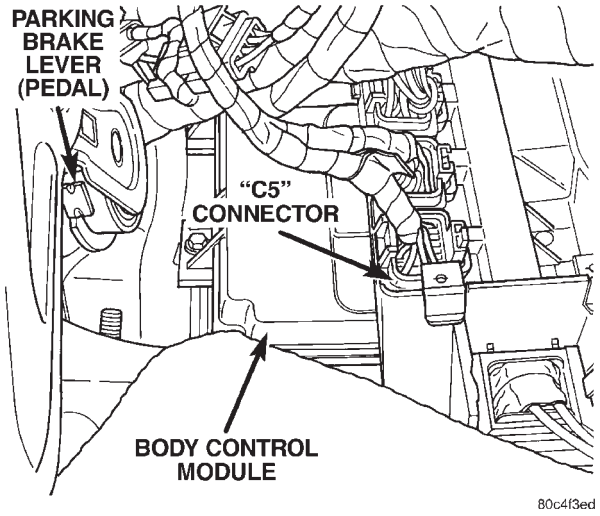
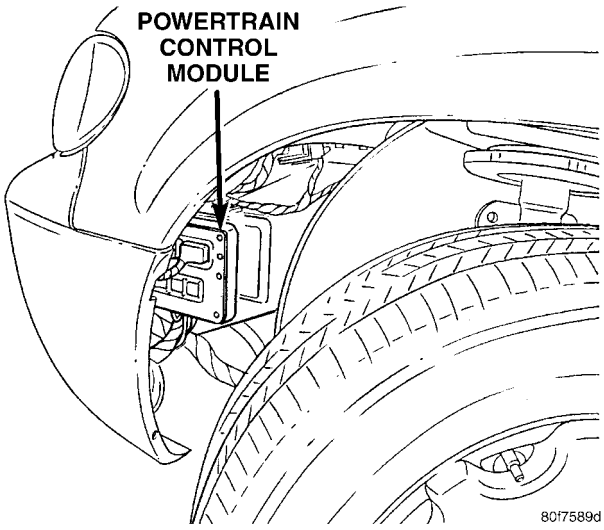
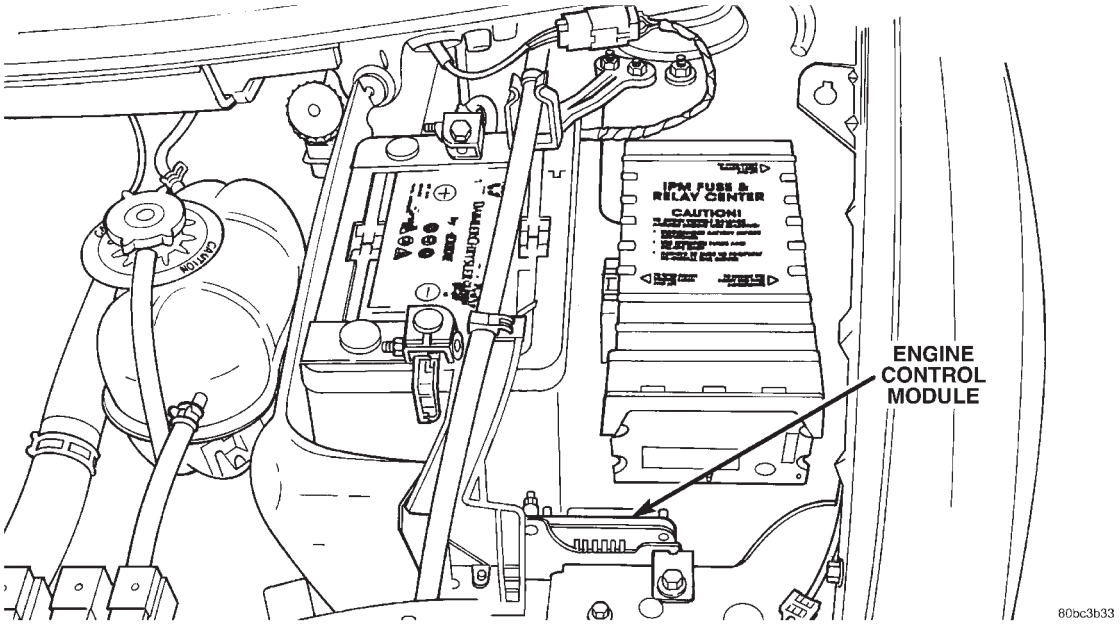
8.2 BODY CONTROL MODULE



8.3 POWERTRAIN CONTROL MODULE - NGC

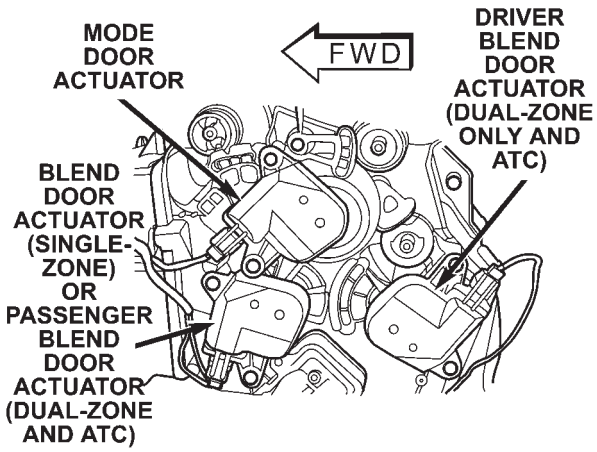


8.4 ENGINE CONTROL MODULE - DIESEL



8.5 HEATING & A/C

8.5.1 ACTUATORS – FRONT, LHD



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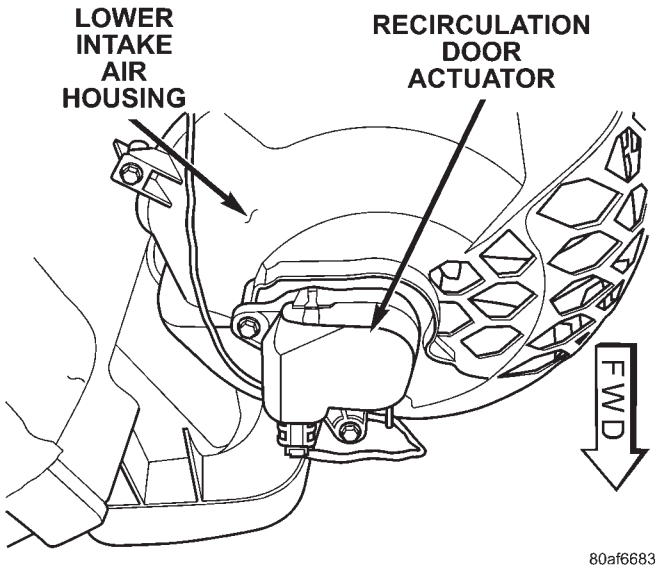
8.5.2 ACTUATOR – FRONT, LHD



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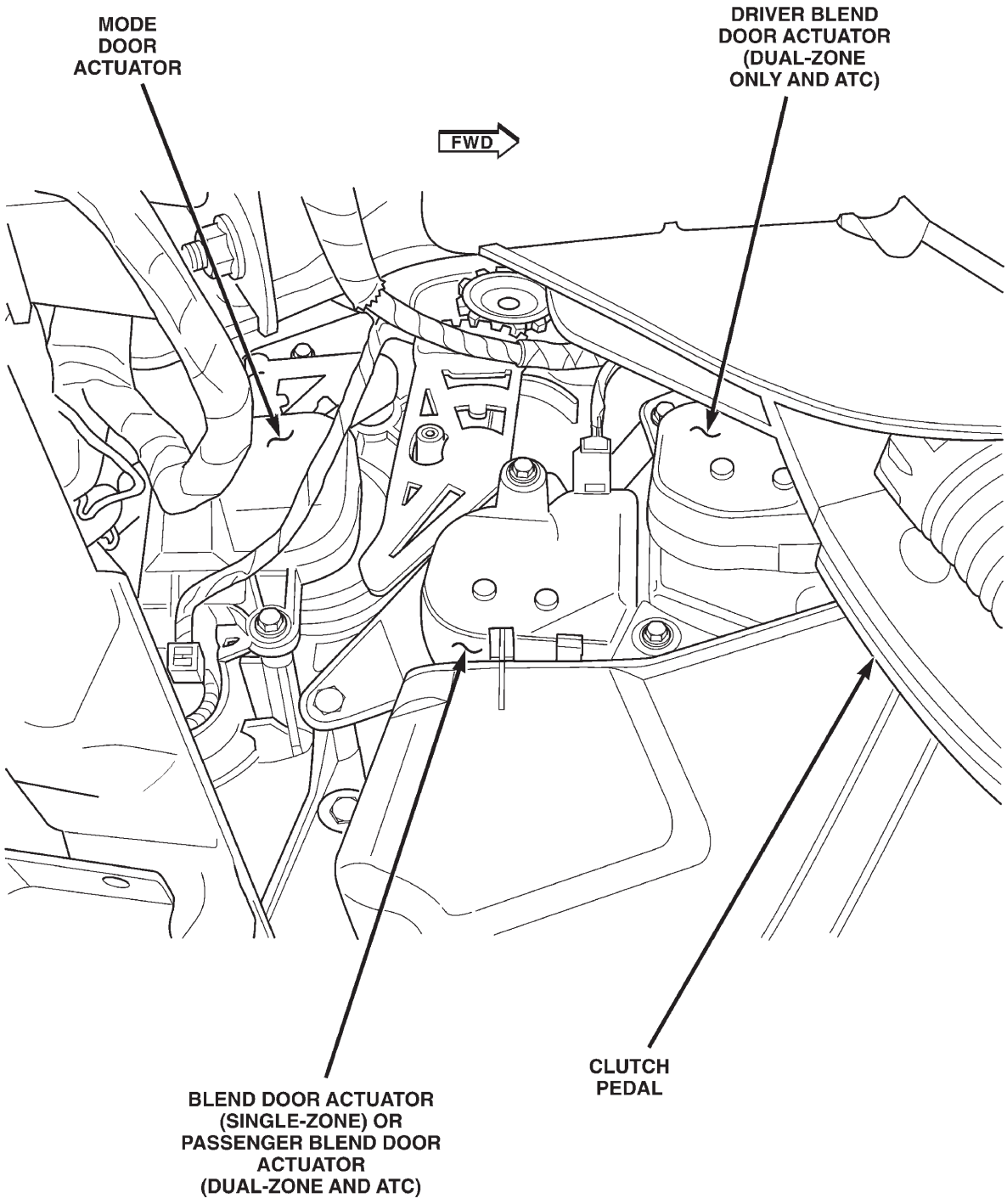
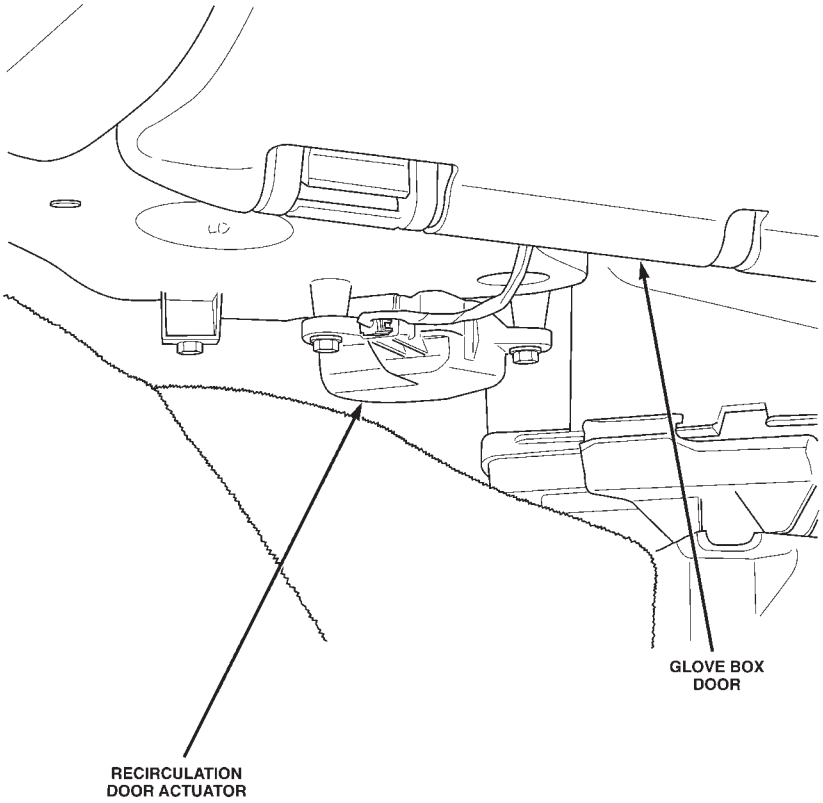
8.5 HEATING & A/C (Continued)
8.5.3 ACTUATORS – FRONT, RHD

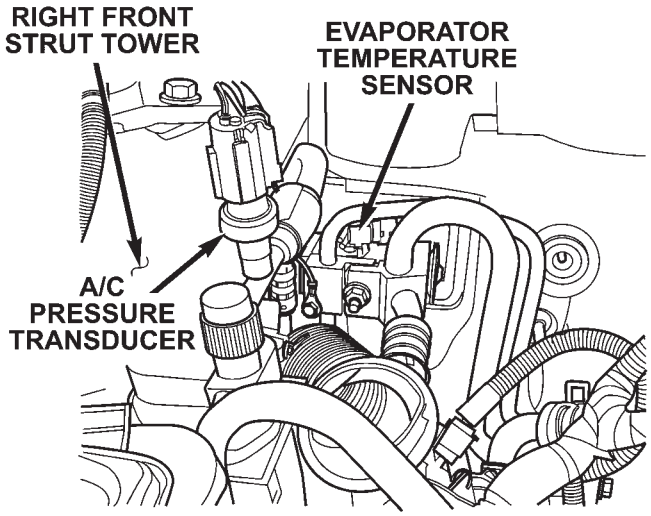


8.5.4 ACTUATOR – FRONT, RHD



80bfa798

8.5.5 EVAPORATOR TEMPERATURE SENSOR, LHD



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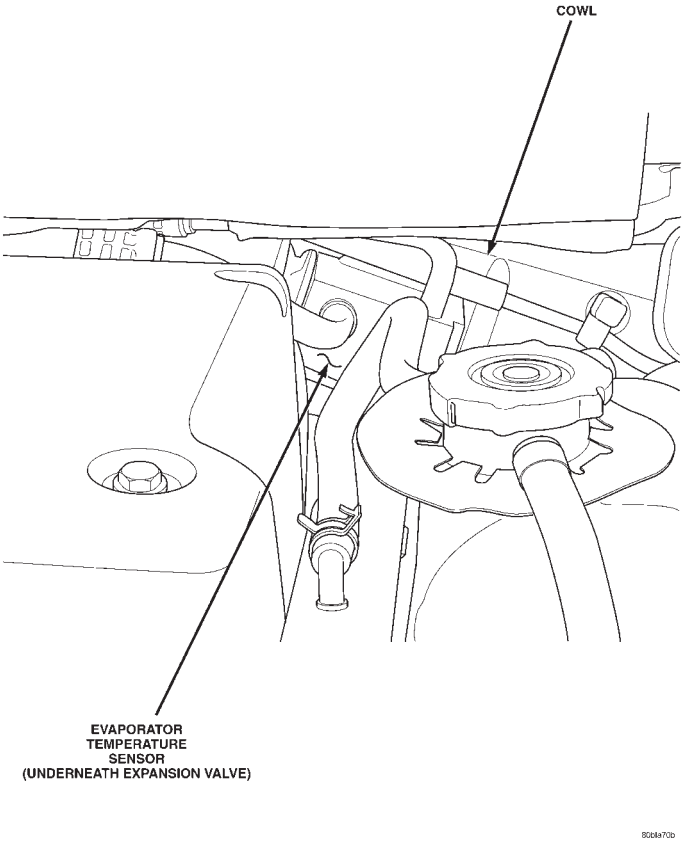
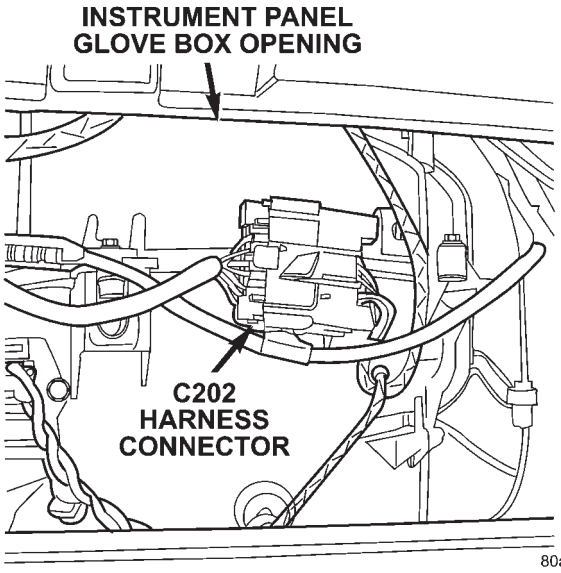
8.5 HEATING & A/C (Continued)

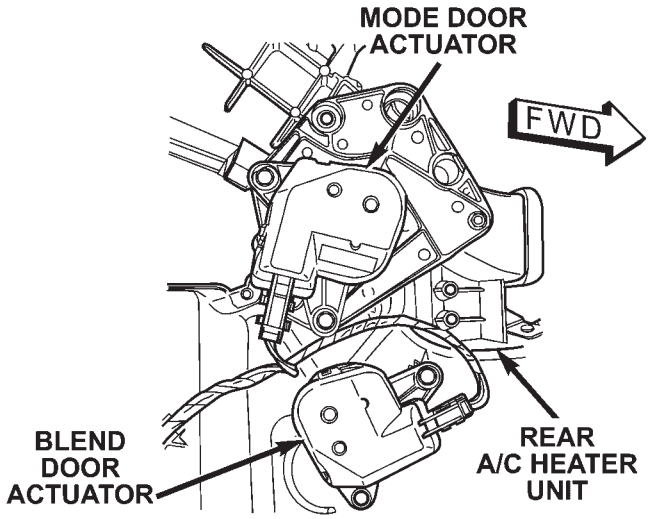
8.5.6 EVAPORATOR TEMPERATURE SENSOR, RHD



8.5.7 C202 CONNECTOR



8.5.8 ACTUATORS – REAR



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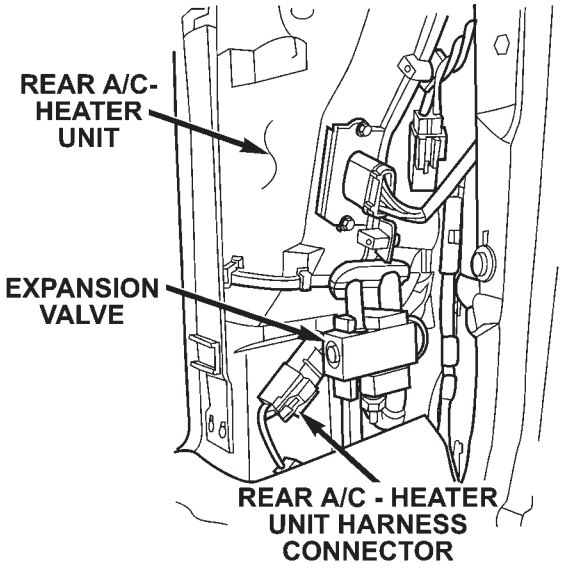
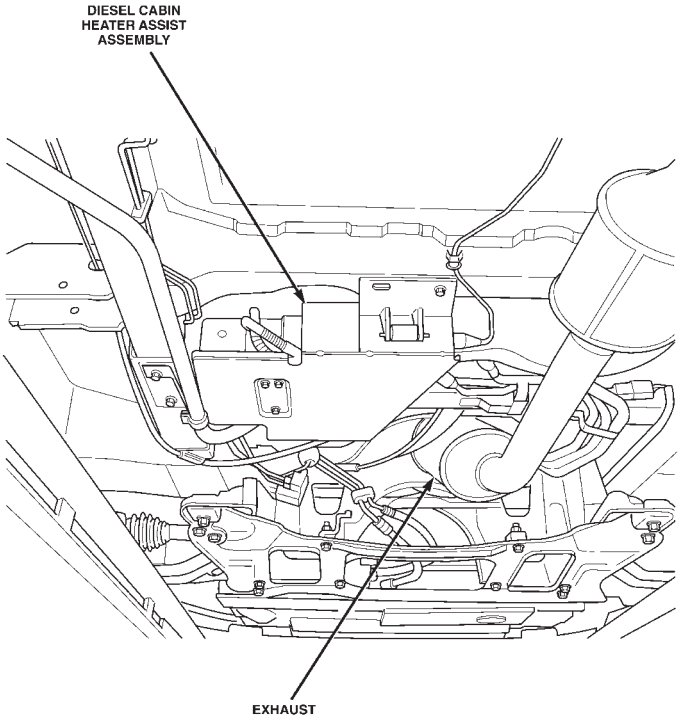
8.5.9 REAR A/C HEATER UNIT CONNECTOR



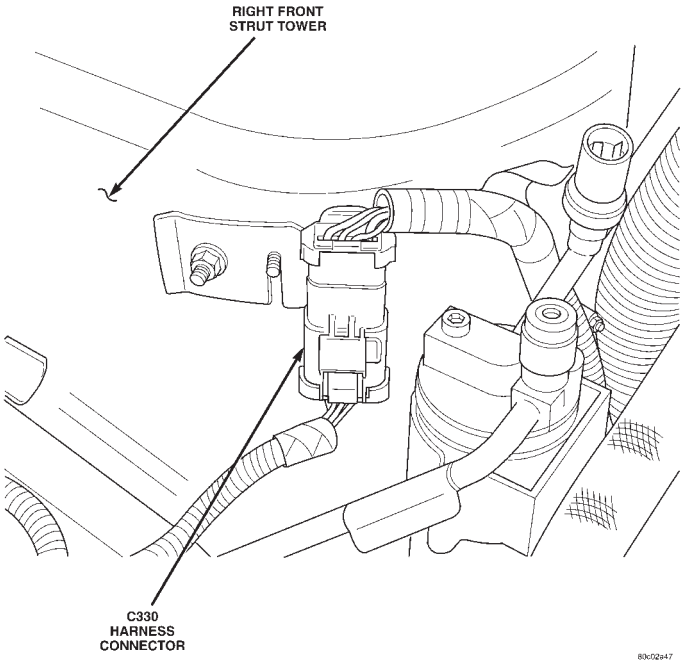
80c0dbac

8.5 HEATING & A/C (Continued)

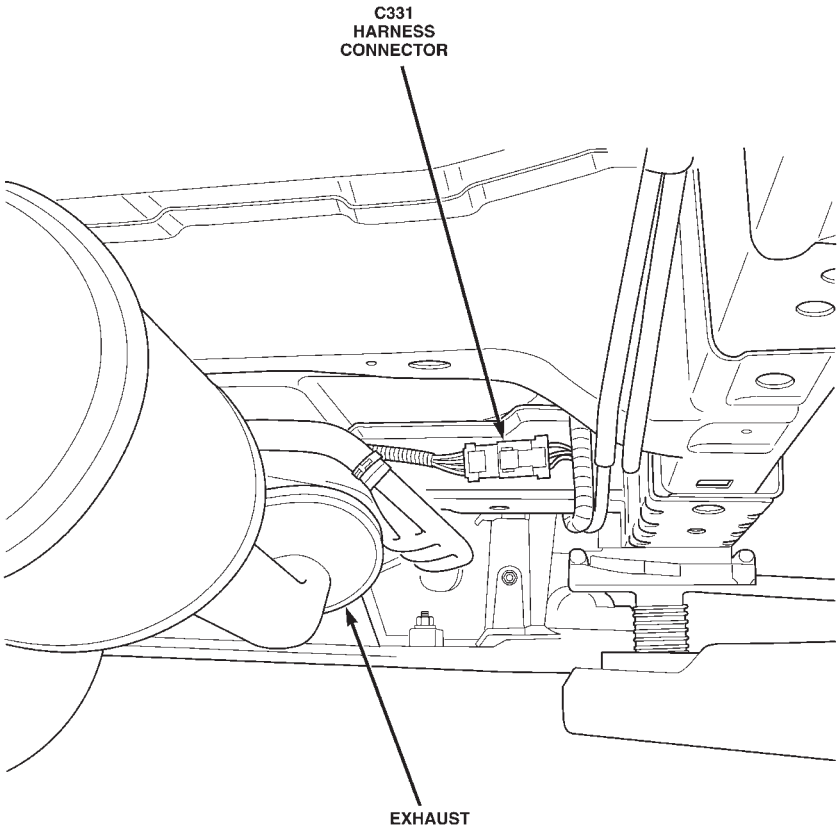
8.5.10 DIESEL CABIN HEATER ASSIST (DCHA) ASSEMBLY



8.5.11 C330 HARNESS CONNECTOR (DCHA)



8.5.12 C331 HARNESS CONNECTOR (DCHA)



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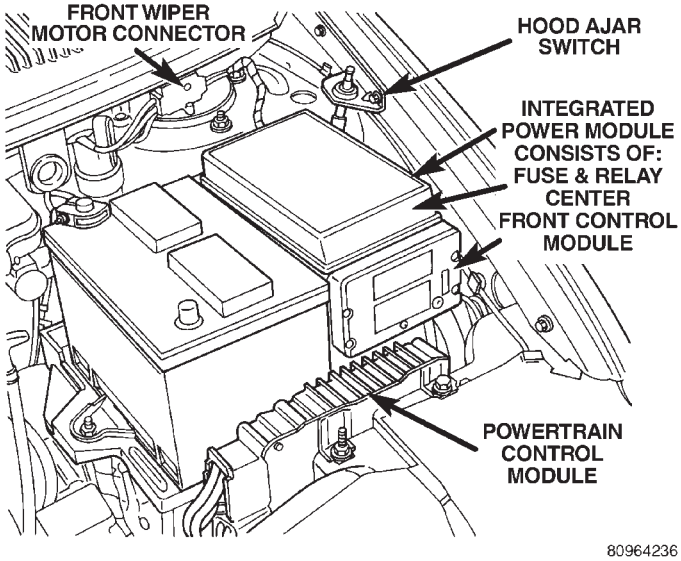
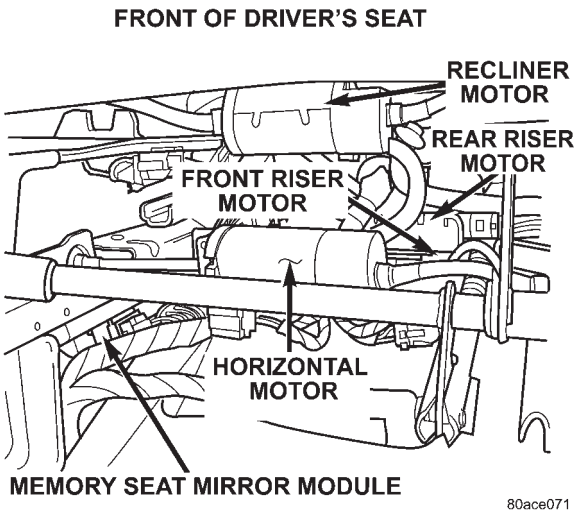
8.6 INTEGRATED POWER MODULE & FRONT CONTROL MODULE – TYPICAL



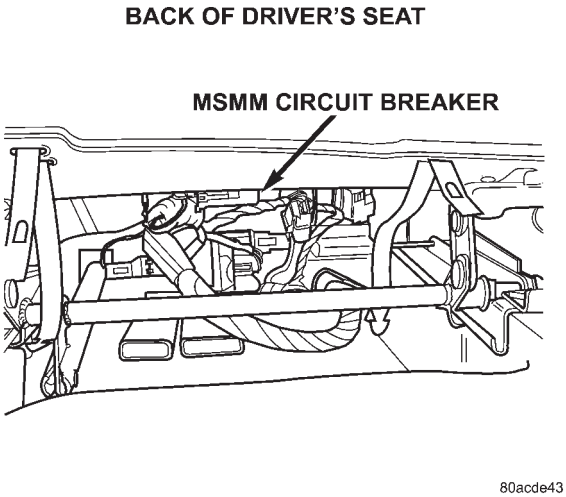
80964236

8.7 MEMORY SYSTEM

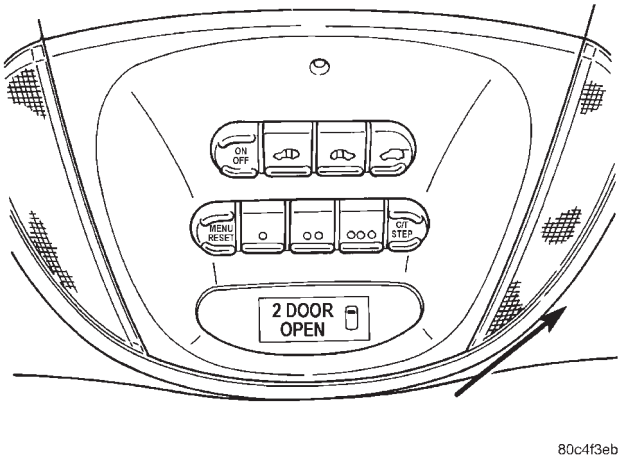
8.7.1 MEMORY SEAT MIRROR MODULE/SEAT MOTORS



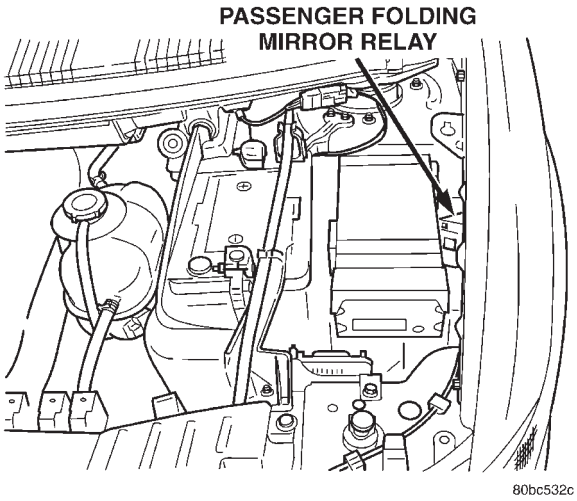
8.7.2 MEMORY SEAT MIRROR MODULE CIRCUIT BREAKER



8.8 OVERHEAD CONSOLE

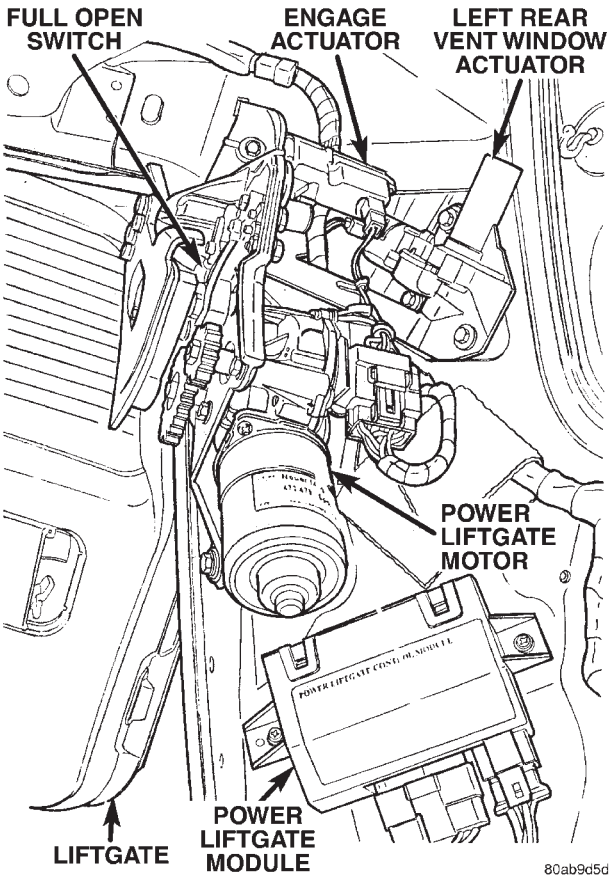


8.9 POWER FOLDING MIRRORS



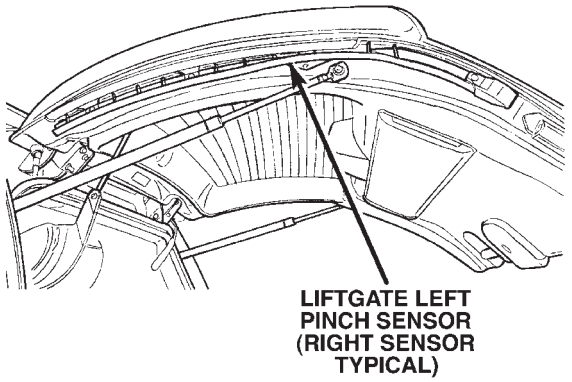
8.10 POWER LIFTGATE SYSTEM

8.10.1 MODULE



8.10 POWER LIFTGATE SYSTEM (Continued)

8.10.2 PINCH SENSORS (TAPE SWITCH)



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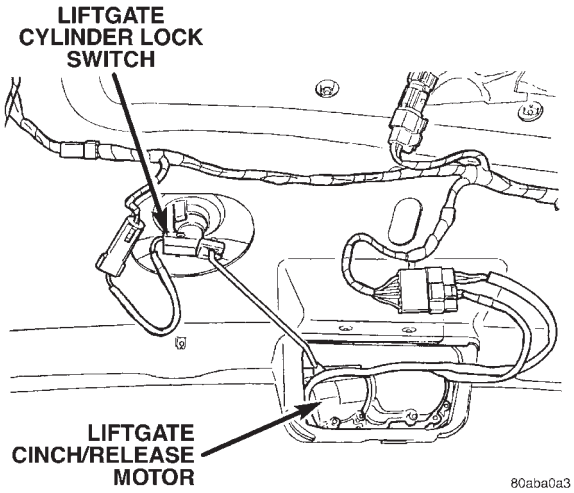
8.10.3 LATCH ASSEMBLY



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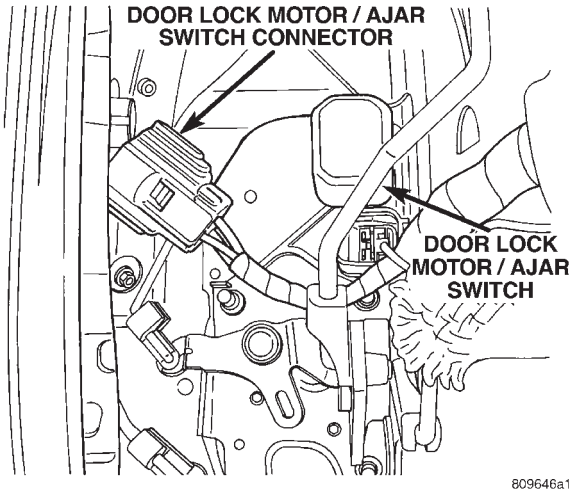
8.11 POWER DOOR LOCK/RKE SYSTEM

8.11.1 DOOR LOCK MOTOR/AJAR SWITCH



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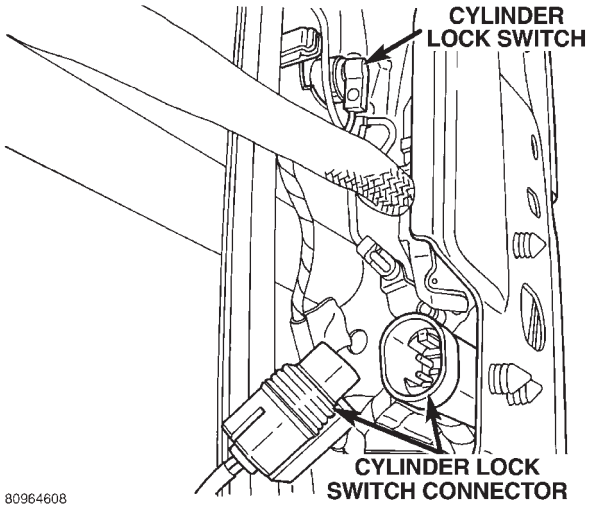
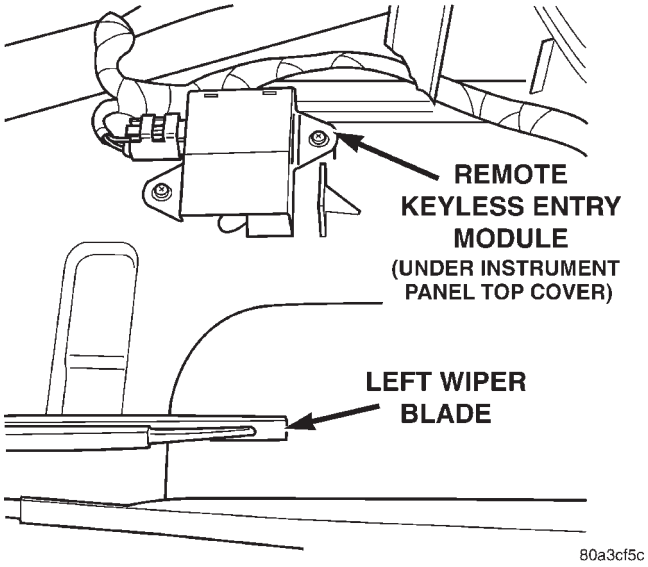
8.11.2 CYLINDER LOCK SWITCH

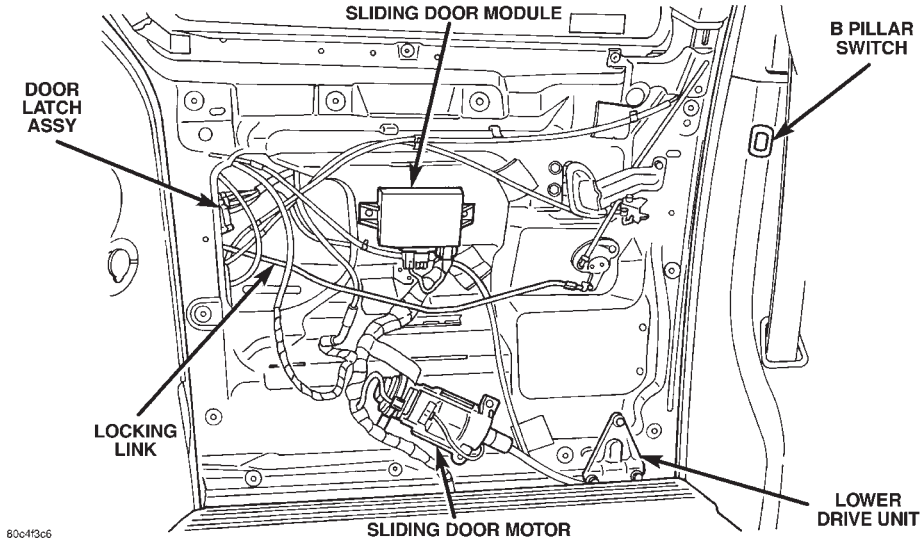


8.11.3 REMOTE KEYLESS ENTRY MODULE



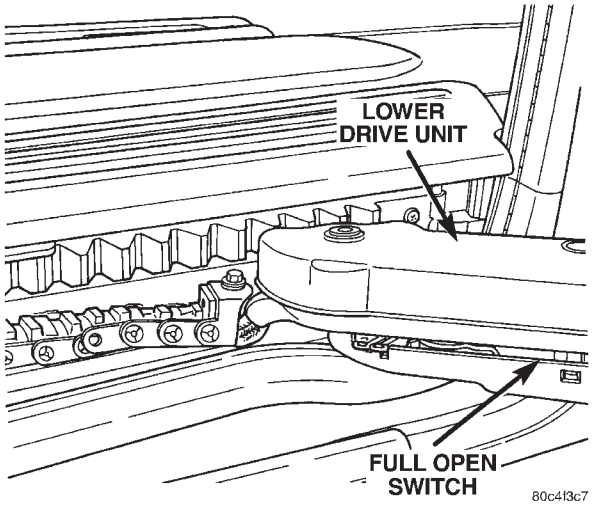
8.12 POWER SLIDING DOOR

8.12.1 MODULE

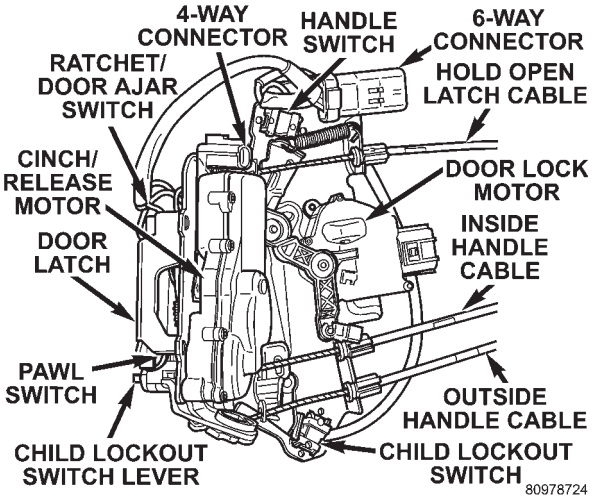


8.12 POWER SLIDING DOOR (Continued)

8.12.2 LOWER DRIVE UNIT

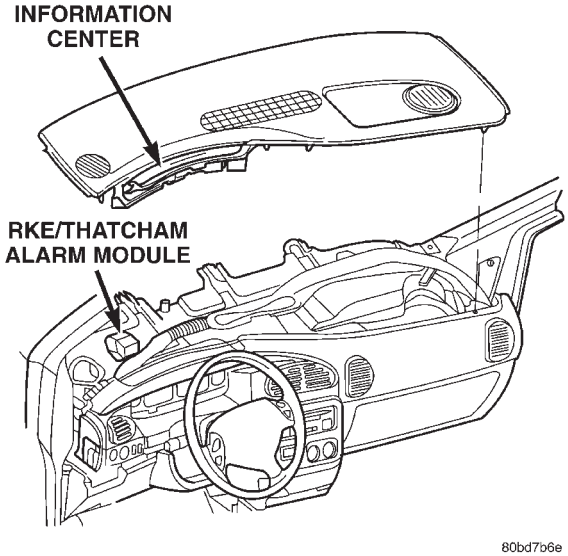


8.12.3 LATCH ASSEMBLY

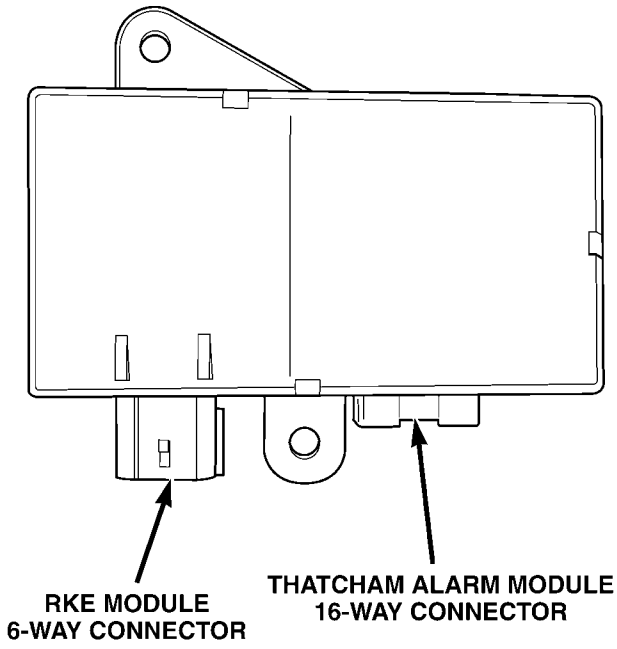


8.13 VEHICLE THEFT SECURITY SYSTEM

8.13.1 RKE/THATCHAM ALARM MODULE (EXPORT ONLY)



8.13.2 RKE/THATCHAM ALARM MODULE CONNECTORS (EXPORT ONLY)



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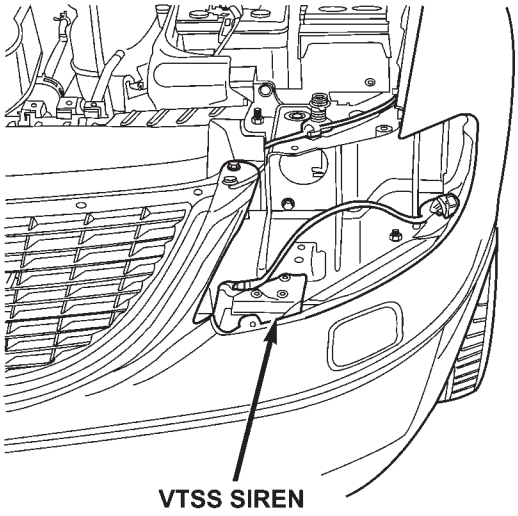
8.13.3 VTSS SIREN (EXPORT ONLY)



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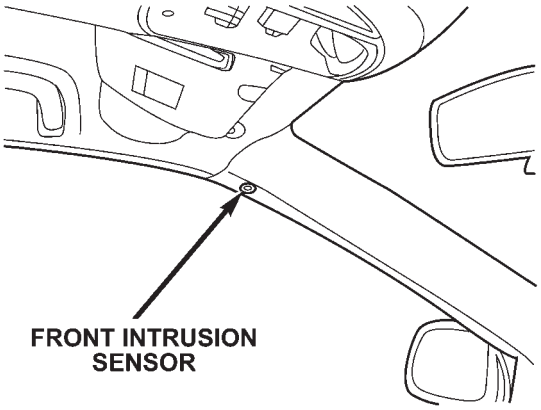
8.13 VEHICLE THEFT SECURITY SYSTEM (Continued)

8.13.4 FRONT INTRUSION SENSOR (EXPORT ONLY)



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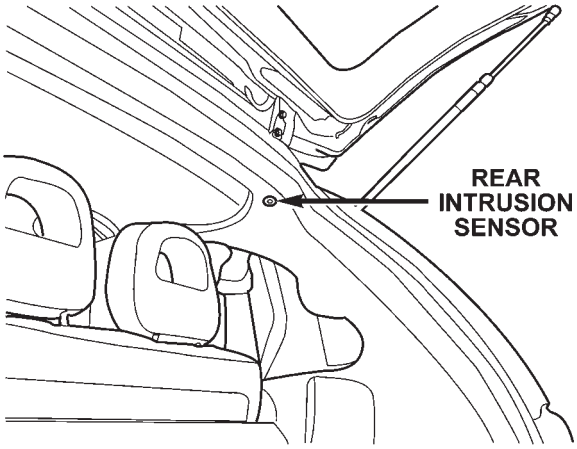
8.13.5 REAR INTRUSION SENSOR (EXPORT ONLY)



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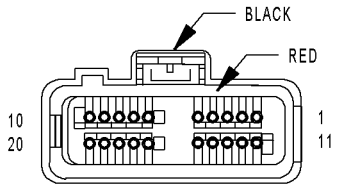
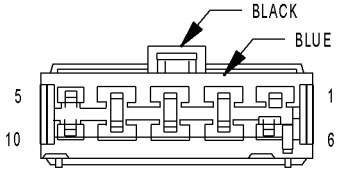
9.0 CONNECTOR PINOUTS



A/C-HEATER CONTROL C1 (MTC)

A/C-HEATER CONTROL C1 (MTC)

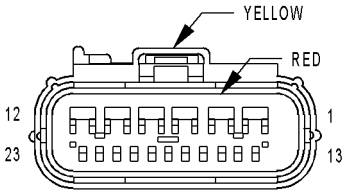
CAV	CIRCUIT	FUNCTION
1	Z24 18BK/OR	GROUND
2	C121 20DB/DG (LHD)	SENSOR GROUND
2	C121 22DB/DG (RHD)	SENSOR GROUND
3	C22 20LB/WT (3 ZONE)	REAR TEMPERATURE FEEDBACK SIGNAL
4	-	-
5	F850 20LB/PK (3 ZONE)	5 VOLT SUPPLY
6	-	-
7	C32 22DB/TN	RECIRCULATION DOOR DRIVER (A)
8	C54 22LB/YL (3 ZONE)	REAR BLEND DOOR DRIVER
9	C34 22DB/LB	COMMON DOOR DRIVER (B)
10	D25 20WT/VT	PCI BUS
11	-	-
12	C121 20DB/DG (3 ZONE)	REAR TEMPERATURE RETURN
13	F504 20GY/PK	IGNITION SWITCH OUTPUT (RUN)
14	E12 20OR/GY	PANEL LAMPS DRIVER
15	C21 22LB	EVAPORATOR TEMPERATURE SENSOR SIGNAL
16	C33 22LB/BR	PASSENGER BLEND DOOR DRIVER (A)
17	C61 22DB/LG (EXCEPT BASE)	DRIVER BLEND DOOR DRIVER (A)
18	C35 22LB/LG	MODE DOOR DRIVER (A)
19	C53 22LB (3 ZONE)	REAR MODE DOOR DRIVER
20	C154 20LB/OR (3 ZONE)	REAR COMMON DOOR DRIVER



A/C-HEATER CONTROL C2 (MTC)

A/C-HEATER CONTROL C2 (MTC)

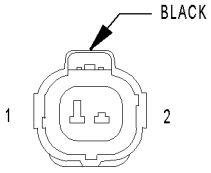
CAV	CIRCUIT	FUNCTION
1	-	-
2	C75 12DB/GY	BLOWER MOTOR HIGH DRIVER
3	C74 12DB/WT	BLOWER MOTOR M3 DRIVER
4	Z134 12BK/OR (LHD EX-PORT)	GROUND
4	Z134 12BK/LG (EXCEPT LHD EXPORT)	GROUND
5	C71 16DB/BR	BLOWER MOTOR LOW DRIVER
6	-	-
7	-	-
8	-	-
9	C73 14DB/VT	BLOWER MOTOR M2 DRIVER
10	C72 16DB/OR	BLOWER MOTOR M1 DRIVER



AIRBAG CONTROL MODULE (ORC)

AIRBAG CONTROL MODULE (ORC)

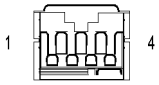
CAV	CIRCUIT	FUNCTION
1	R54 18LB/YL	PASSENGER SEAT BELT TENSIONER LINE 2
2	R56 18LB/DG	PASSENGER SEAT BELT TENSIONER LINE 1
3	R62 18LB/VT (EXCEPT LHD EXPORT)	PASSENGER SQUIB 2 LINE 2
3	R62 18LG/DB (LHD EXPORT)	PASSENGER SQUIB 2 LINE 2
4	R64 18LB/WT	PASSENGER SQUIB 2 LINE 1
5	R42 18LB/BR	PASSENGER SQUIB 1 LINE 2
6	R44 18LB/OR	PASSENGER SQUIB 1 LINE 1
7	R53 18LG/YL	DRIVER SEAT BELT TENSIONER LINE 2
8	R55 18LG/DG	DRIVER SEAT BELT TENSIONER LINE 1
9	R61 18LG/DB	DRIVER SQUIB 2 LINE 1
10	R63 18LG/WT	DRIVER SQUIB 2 LINE 2
11	R43 18LG/BR	DRIVER SQUIB 1 LINE 1
12	R45 18LG/OR	DRIVER SQUIB 1 LINE 2
13	-	-
14	F201 18PK/OR	ORC RUN-START DRIVER
15	F100 18PK/VT	ORC RUN ONLY DRIVER
16	Z12 18BK/OR	GROUND
17	R59 18LG/TN	DRIVER SEAT BELT SWITCH LINE 1
18	R57 18LG/GY	DRIVER SEAT BELT SWITCH LINE 2
19	-	-
20	-	-
21	D25 20WT/VT	PCI BUS
22	-	-
23	-	-



AMBIENT TEMPERATURE SENSOR (EXCEPT BASE)

AMBIENT TEMPERATURE SENSOR (EXCEPT BASE)

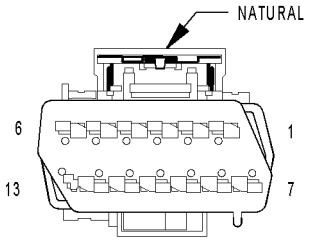
CAV	CIRCUIT	FUNCTION
1	G31 18VT/LG (EXCEPT 2.4L)	AMBIENT TEMPERATURE SENSOR SIGNAL
1	G31 18VT/LG (2.4L)	AAT SIGNAL
2	K900 18DB/DG (2.4L)	SENSOR GROUND
2	G931 18VT/BR (EXCEPT 2.4L)	AMBIENT TEMPERATURE SENSOR RETURN



ATC REMOTE SENSOR (ATC)

ATC REMOTE SENSOR (ATC)

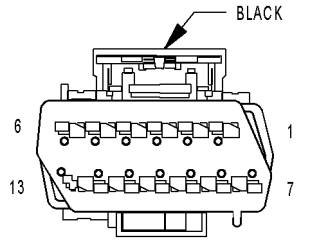
CAV	CIRCUIT	FUNCTION
1	F600 20LB/PK	PROTECTED IGNITION
2	D40 20WT/LB	KDB NO. 2 CLOCK
3	C905 20BR/LB	SENSOR RETURN
4	D18 20WT/YL	KDB NO. 2 DATA



AUTO TEMP
CONTROL C1

AUTO TEMP CONTROL C1

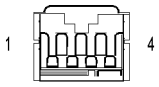
CAV	CIRCUIT	FUNCTION
1	C161 22LB/WT	DRIVER BLEND DOOR DRIVER (B)
2	C61 22DB/LG	DRIVER BLEND DOOR DRIVER (A)
3	C133 22DB/WT	PASSENGER BLEND DOOR DRIVER (B)
4	C33 22LB/BR	PASSENGER BLEND DOOR DRIVER (A)
5	C132 22DB/YL	RECIRCULATION DOOR DRIVER (B)
6	C32 22DB/TN	RECIRCULATION DOOR DRIVER (A)
7	C135 22DB/WT	MODE DOOR DRIVER (B)
8	C35 22LB/LG	MODE DOOR DRIVER (A)
9	C53 22LB	REAR MODE DOOR DRIVER (A)
10	C154 22LB/OR	REAR MODE DOOR DRIVER (B)
11	C54 22LB/YL	REAR BLEND DOOR DRIVER (A)
12	C169 22DB/OR	REAR BLEND DOOR DRIVER (B)
13	-	-



AUTO TEMP
CONTROL C2

AUTO TEMP CONTROL C2

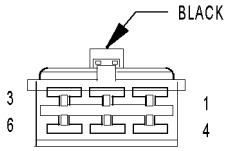
CAV	CIRCUIT	FUNCTION
1	C21 22LB (LHD)	EVAPORATOR TEMPERATURE SENSOR SIGNAL
1	C21 22LB (RHD)	EVAPORATOR TEMPERATURE SENSOR SIGNAL
2	C121 22DB/DG (RHD)	SENSOR GROUND
2	C121 20DB/DG (LHD)	SENSOR GROUND
3	E12 20OR/GY	PANEL LAMPS DRIVER
4	A114 18GY/RD	FUSED B(+) (I.O.D.)
5	F504 20GY/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
6	D25 20WT/VT	PCI BUS
7	C56 22DB/VT (LHD)	BLOWER MOTOR CONTROL
7	C56 22DB/LB (RHD)	BLOWER MOTOR CONTROL
8	C59 22DB/LB	REAR BLOWER MOTOR CONTROL
9	D22 20WT/TN (3 ZONE)	KDB CLOCK
10	D17 22WT/DG	KDB DATA
11	Z24 18BK/OR	GROUND
12	-	-
13	-	-



AUTO TEMP
CONTROL C3

AUTO TEMP CONTROL C3

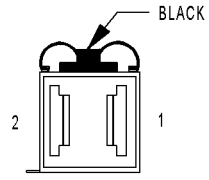
CAV	CIRCUIT	FUNCTION
1	F600 20LB/PK	PROTECTED IGNITION
2	D40 20WT/LB	KDB NO. 2 CLOCK
3	C905 20BR/LB	SENSOR RETURN
4	D18 20WT/YL	KDB NO. 2 DATA



BLOWER MOTOR
RESISTOR C1
(MTC)

BLOWER MOTOR RESISTOR C1 (MTC)

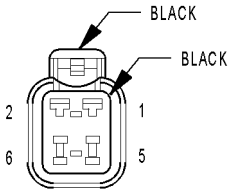
CAV	CIRCUIT	FUNCTION
1	C75 12DB/GY	BLOWER MOTOR HIGH DRIVER
2	C74 12DB/WT	BLOWER MOTOR M3 DRIVER
3	C73 14DB/VT	BLOWER MOTOR M2 DRIVER
4	C7 12DB	FUSED FRONT BLOWER MOTOR RELAY OUTPUT
5	C72 16DB/OR	BLOWER MOTOR M1 DRIVER
6	C71 16DB/BR	BLOWER MOTOR LOW DRIVER



BLOWER MOTOR
RESISTOR C2
(MTC)

BLOWER MOTOR RESISTOR C2 (MTC)

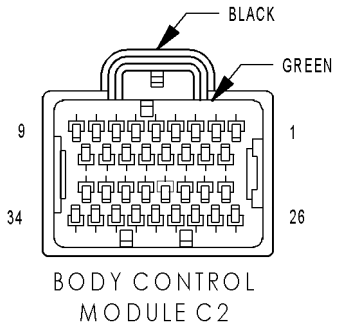
CAV	CIRCUIT	FUNCTION
1	C70 12DG	REAR BLOWER HIGH SPEED
2	C7 12BK	HIGH SPEED BLOWER MOTOR



BODY CONTROL
MODULE C1

BODY CONTROL MODULE C1

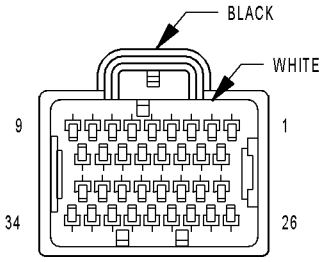
CAV	CIRCUIT	FUNCTION
1	A102 12WT/RD	FUSED B(+)
2	A701 16BR/RD	FUSED B(+) (HAZARD)
3	Z100 12BK/TN	GROUND
4	-	-
5	A101 12VT/RD	FUSED B(+)
6	-	-



BODY CONTROL MODULE C2

BODY CONTROL MODULE C2

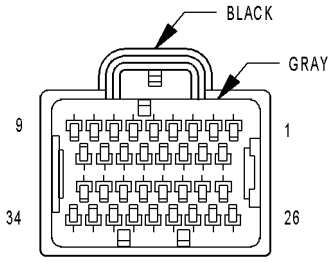
CAV	CIRCUIT	FUNCTION
1	L61 20WT/LB	LEFT FRONT TURN SIGNAL DRIVER
2	L63 18WT/DG	LEFT REAR TURN SIGNAL DRIVER
3	L60 18WT/TN	RIGHT FRONT TURN SIGNAL DRIVER
4	L62 18WT/BR	RIGHT REAR TURN SIGNAL DRIVER
5	F20 22PK/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)
6	G25 22VT/TN (HIGHLINE)	LIFTGATE SWITCH MUX
7	A114 18GY/RD	FUSED B(+) (I.O.D.)
8	-	-
9	L1 18WT/LG	BACK-UP LAMP DRIVER
10	P3 20TN/WT	LEFT FRONT DOOR LOCK DRIVER
11	P2 20TN/GY	RIGHT FRONT DOOR LOCK DRIVER
12	P38 20TN/DB	RIGHT SLIDING DOOR LOCK DRIVER
13	-	-
14	-	-
15	Z15 18BK/TN	GROUND
16	G920 22VT/YL (MEMORY)	MEMORY SELECT SWITCH RETURN
17	G153 22VT/DG (POWER LIFTGATE)	LIFTGATE MODULE WAKE UP SIGNAL
18	P32 20TN/VT	LEFT SLIDING DOOR LOCK DRIVER
19	Z10 18BK/TN	GROUND
20	P5 20TN/OR	LEFT SLIDING DOOR UNLOCK DRIVER
21	P164 18LG/DB (EXPORT)	PASSENGER FOLDING MIRROR RELAY INPUT
22	P30 20TN/DG	LIFTGATE HANDLE SWITCH SENSE
23	-	-
24	G200 22VT/BR (MEMORY)	MEMORY SELECT SWITCH MUX
25	M22 20YL/OR	COURTESY LAMPS DRIVER
26	P4 20TN/BR	RIGHT FRONT DOOR UNLOCK DRIVER
27	P34 20TN/LB	RIGHT SLIDING DOOR UNLOCK DRIVER
28	P1 20TN/LG	LEFT FRONT DOOR UNLOCK DRIVER
29	P159 20TN/DG (EXPORT)	DRIVER FOLDING MIRROR FOLD DRIVER
30	P174 20TN/LB (EXPORT)	RIGHT FOLDING MIRROR UNFOLD DRIVER
31	P171 20TN/YL (EXPORT)	LEFT FOLDING MIRROR UNFOLD DRIVER
32	W13 18BR/LG	REAR WIPER MOTOR CONTROL
33	-	-
34	L38 20WT/YL (EXPORT)	REAR FOG LAMP SWITCH OUTPUT



BODY CONTROL MODULE C3

BODY CONTROL MODULE C3

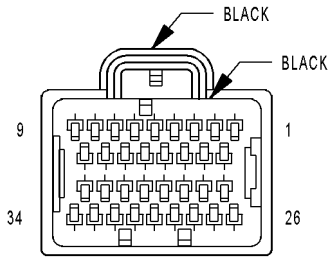
CAV	CIRCUIT	FUNCTION
1	G23 22VT/DB (POWER SLIDING DOOR)	SLIDING DOORS OVERHEAD SWITCH MUX
2	D123 20WT/BR	FLASH PROGRAM ENABLE
3	G152 22VT/GY (POWER SLIDING DOOR)	RIGHT SLIDING DOOR WAKE UP SIGNAL
4	G151 22VT/BR (POWER SLIDING DOOR)	LEFT SLIDING DOOR WAKE UP SIGNAL
5	G76 20VT/YL	RIGHT SLIDING DOOR AJAR SWITCH SENSE
6	G75 22VT (LHD)	LEFT FRONT DOOR AJAR SWITCH SENSE
6	G74 22VT/WT (RHD)	RIGHT FRONT DOOR AJAR SWITCH SENSE
7	G75 22VT (RHD)	LEFT FRONT DOOR AJAR SWITCH SENSE
7	G74 22VT/WT (LHD)	RIGHT FRONT DOOR AJAR SWITCH SENSE
8	G77 22VT/GY	LEFT SLIDING DOOR AJAR SWITCH SENSE
9	E10 20OR/DG (3 ZONE ATC/MTC)	PANEL LAMPS DRIVER (REAR BLOWER SWITCH)
10	-	-
11	L162 20WT/VT (EXPORT)	RIGHT SIDE REPEATER LAMP FEED
12	G42 22VT/WT (POWER SLIDING DOOR)	RIGHT SLIDING DOOR PILLAR SWITCH MUX
13	G165 20VT/GY (EXPORT)	LIFTGATE CYLINDER LOCK SWITCH MUX
14	G163 22VT/LB	LEFT CYLINDER LOCK SWITCH MUX
15	G162 22VT/WT (EXCEPT EXPORT)	RIGHT CYLINDER LOCK SWITCH MUX
15	G162 22VT/TN (EXPORT)	RIGHT CYLINDER LOCK SWITCH MUX
16	-	-
17	F503 20WT/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
18	G41 22VT/DG (POWER SLIDING DOOR)	LEFT SLIDING DOOR PILLAR SWITCH MUX
19	L163 20WT/BR (EXPORT)	LEFT SIDE REPEATER LAMP FEED
20	N4 20DB/WT	FUEL LEVEL SENSOR SIGNAL
21	G161 22VT/DG (LHD)	LEFT DOOR LOCK SWITCH MUX
21	G160 22VT/LG (RHD)	RIGHT DOOR LOCK SWITCH MUX
22	G161 22VT/DG (RHD)	LEFT DOOR LOCK SWITCH MUX
22	G160 22VT/LG (LHD)	RIGHT DOOR LOCK SWITCH MUX
23	D25 20WT/VT	PCI BUS
24	-	-
25	M11 20YL/VT	COURTESY LAMPS DRIVER
26	P31 20TN/YL (POWER RELEASE)	LIFTGATE RELEASE DRIVER
27	-	-
28	-	-
29	G78 20VT/OR	LIFTGATE AJAR SWITCH SENSE
30	G70 22VT/LB (EXPORT)	HOOD AJAR SWITCH SENSE
31	F500 18DG/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
32	-	-
33	M21 20YL/BR	COURTESY LAMPS DRIVER
34	M27 20YL/LB	READING LAMPS DRIVER



BODY CONTROL
MODULE C4

BODY CONTROL MODULE C4

CAV	CIRCUIT	FUNCTION
1	-	-
2	E12 20OR/GY	PANEL LAMPS DRIVER (HVAC)
3	E19 20OR/BR	PANEL LAMPS DRIVER (HEADLAMP SWITCH)
4	D9 22WT/GY (RKE)	RKE MODULE PROGRAM ENABLE
5	G150 22VT/BR	INSTRUMENT CLUSTER WAKE UP SENSE
6	-	-
7	P162 20LG/DG (EXPORT)	PASSENGER FOLDING MIRROR RELAY CONTROL
8	-	-
9	L161 20WT/LG	LEFT TURN INDICATOR DRIVER
10	F504 20GY/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
11	E14 20OR/TN	PANEL LAMPS DRIVER (RADIO)
12	E13 20OR/WT	PANEL LAMPS DRIVER (INSTRUMENT CLUSTER)
13	X920 22GY/OR	RADIO CONTROL MUX RETURN
14	G900 20VT/DB	IGNITION SWITCH SENSE RETURN
15	-	-
16	-	-
17	L160 20WT/TN	RIGHT TURN INDICATOR DRIVER
18	-	-
19	-	-
20	-	-
21	-	-
22	G902 22VT/LB	MULTI-FUNCTION SWITCH MUX RETURN
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
29	-	-
30	-	-
31	G96 22VT/DG (RKE)	REMOTE KEYLESS ENTRY INTERFACE
32	B27 20DG/WT (TRACTION CONTROL)	TRACTION CONTROL SWITCH SENSE
33	P136 20TN/YL (EXPORT)	FOLDING MIRROR SWITCH SENSE
34	G26 22VT/OR	CHIME DRIVER



BODY CONTROL MODULE C5

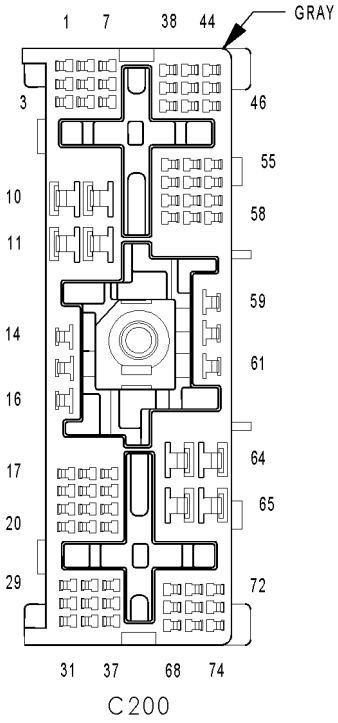
BODY CONTROL MODULE C5

CAV	CIRCUIT	FUNCTION
1	L91 22WT/DB	HAZARD SWITCH SENSE
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	G20 20VT/BR	IGNITION SWITCH SENSE
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	G926 22VT/WT	REAR WIPER SWITCH MUX RETURN
17	L900 22WT/YL	HEADLAMP SWITCH MUX RETURN
18	L307 22WT/BR (RHD)	HEADLAMP SWITCH MUX
18	L307 20WT/BR (LHD)	HEADLAMP SWITCH MUX
19	-	-
20	-	-
21	-	-
22	-	-
23	-	-
24	-	-
25	L36 20WT/DB (EXPORT)	REAR FOG LAMP INDICATOR DRIVER
26	X20 22GY/WT	RADIO CONTROL MUX
27	G194 22VT/LG	HIGH BEAM/FRONT WASHER SWITCH MUX
28	W26 22BR/DB	REAR WIPER SWITCH MUX
29	W52 22BR/YL	FRONT WIPER SWITCH MUX
30	E2 22OR/BR	PANEL LAMPS DIMMER SIGNAL
31	L305 20WT/LB	TURN SIGNAL SWITCH MUX
32	-	-
33	-	-
34	L39 22WT/OR	FRONT FOG LAMP INDICATOR DRIVER

BRAKE FLUID LEVEL SWITCH

BRAKE FLUID LEVEL SWITCH

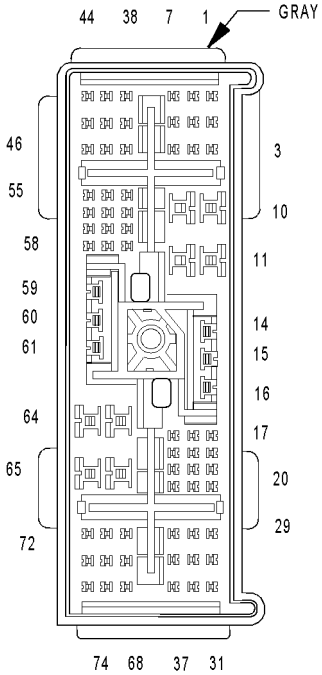
CAV	CIRCUIT	FUNCTION
A	B20 20DG/OR	BRAKE FLUID LEVEL SWITCH SENSE
B	Z420 20BK/OR	GROUND



C200

C200 - (BODY SIDE)

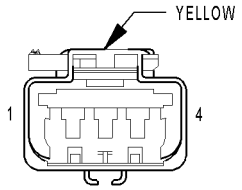
CAV	CIRCUIT
1	C151 18LB/DG (3 ZONE MTC EXCEPT EXPORT)
2	A106 20LB/RD
3	A108 20LG/RD
4	C59 20DB/LB (3 ZONE ATC)
4	C152 16LB/LG (3 ZONE MTC)
5	A128 18RD/OR (EXCEPT EXPORT)
5	P159 20TN/DG (EXPORT)
6	K32 18DB/YL
7	C53 22LB (3 ZONE ATC/MTC)
8	C16 20DB/GY (HEATED MIRRORS)
9	C22 22LB/WT (3 ZONE MTC)
9	D17 20WT/DG (3 ZONE ATC)
10	L13 20WT/YL (EXPORT)
10	C50 12DB/OR (3 ZONE MTC)
11	C7 12DB
12	D22 20WT/TN (3 ZONE ATC EXPORT)
12	Z135 12BK/LB (3 ZONE ATC EXCEPT EXPORT)
12	C153 12DB/BR (3 ZONE MTC)
13	Z849 12BK/OR (MEMORY)
14	A105 18DB/RD
15	A114 16GY/RD
16	F306 16DB/PK
17	C169 20DB/OR (3 ZONE ATC)
17	C154 20LB/OR (3 ZONE MTC)
18	C121 20DB/DG (3 ZONE MTC)
18	D22 20WT/TN (3 ZONE ATC EXCEPT EXPORT)
18	P171 20TN/YL (3 ZONE ATC EXPORT)
19	P160 18TN/LG (EXPORT)
20	F302 18GY/PK (ELECTRIC WIPER DE-ICER)
21	F2 18PK/YL
22	L78 18WT/OR (EXPORT)
22	Q102 18OR/LB (EXCEPT EXPORT)
23	Q103 18OR/LG (EXCEPT EXPORT)
23	P174 20TN/LB (EXPORT)
24	D25 20WT/VT
25	-
26	-
27	-
28	-
29	F20 22PK/WT
30	F100 18PK/VT
31	F201 18PK/OR
32	F504 20GY/PK (3 ZONE ATC)
32	F850 22LB/PK (3 ZONE MTC)
33	P7 20LG/DG (HEATED SEATS)
34	P8 20LG/WT (HEATED SEATS)
35	P64 22TN (MEMORY)
36	P65 22TN/VT (MEMORY)
37	P66 22TN/LG (MEMORY)
38	P67 22TN/OR (MEMORY)
39	P68 22TN/YL (MEMORY)
40	P69 22TN/WT (MEMORY)
41	P70 20TN/LB (MEMORY EXCEPT EXPORT)
41	P70 20TN/WT (MEMORY EXPORT)
42	P71 20TN/DG (MEMORY)
43	P72 20TN/GY (MEMORY)
44	P73 20TN/YL (MEMORY)
45	P74 18TN/YL (MEMORY)
46	P75 20TN/LG (MEMORY)
47	P112 22TN/OR (AUTOMATIC DAY/NIGHT MIRROR)
47	D123 20WT/BR (RHD)
48	B25 20DG/WT (EXPORT)
48	P114 22TN/WT (AUTOMATIC DAY/NIGHT MIRROR)
49	C154 20LB/OR (3 ZONE ATC/MTC)
50	Z104 18BK/LG (PREMIUM 8 SPEAKER)
51	X156 20GY/LB (PREMIUM 8 SPEAKER)
52	X154 20GY/YL (PREMIUM 8 SPEAKER)
53	R57 18LG/GY
54	-
55	R59 18LG/TN
56	-
57	P162 18LG/DG (EXPORT)
57	T55 20YL/VT (AUTOSTICK)
58	T751 20YL
59	X15 16GY/DG (PREMIUM 8 SPEAKER)
60	A701 18BR/RD
61	X3 20DG/VT
62	C54 22LB/YL (3 ZONE MTC EXCEPT LHD EXPORT)
62	X53 22DG (LHD EXPORT)
63	X54 22GY (LHD EXPORT)
63	A701 16BR/RD (EXCEPT LHD EXPORT)
64	X51 20DG/DB (EXCEPT LHD EXPORT)
64	X55 22DG/BR (LHD EXPORT)
65	X56 22GY/BR (LHD EXPORT)
65	X52 20GY/DB (EXCEPT LHD EXPORT)
66	X53 20DG (EXCEPT LHD EXPORT)
66	C54 22LB/YL (LHD EXPORT)
67	V37 20VT
68	X51 20DG/DB (LHD EXPORT)
68	X55 20DG/BR (EXCEPT LHD EXPORT)
69	X56 20GY/BR (EXCEPT LHD EXPORT)
69	X52 20GY/DB (LHD EXPORT)
70	X57 22DG/OR
71	X58 22GY/OR
72	X153 20DG/YL (PREMIUM 8 SPEAKER)
73	K900 20DB/DG
74	X155 20DG/LB (PREMIUM 8 SPEAKER)



C200

C200 - (INSTRUMENT PANEL SIDE)

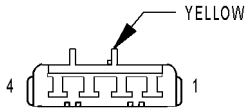
CAV	CIRCUIT
1	C151 18LB/DG (3 ZONE MTC)
2	A106 20LB/RD
3	A108 20LG/RD
4	C59 22DB/LB (3 ZONE ATC)
4	C152 16 LB/LG (3 ZONE MTC)
5	A128 18RD/OR (EXCEPT EXPORT)
5	P159 20TN/DG (EXPORT)
6	K32 18DB/YL
7	C53 22LB (3 ZONE ATC/MTC)
8	C16 20DB/GY (HEATED MIRRORS)
9	D17 22WT/DG (3 ZONE ATC)
9	C22 20LB/WT (3 ZONE MTC)
10	C50 12DB/OR (3 ZONE MTC)
10	L13 20WT/YL (EXPORT)
11	C7 12DB
12	D22 20WT/TN (3 ZONE ATC EXPORT)
12	Z135 12BK/LB (3 ZONE ATC EXCEPT EXPORT)
12	C153 12DB/BR (3 ZONE MTC)
13	Z849 12BK/OR (MEMORY)
14	A105 16DB/RD
15	A114 16GY/RD
16	F306 18DB/PK
17	C169 22DB/OR (3 ZONE ATC)
17	C154 20LB/OR (3 ZONE MTC)
18	C121 20DB/DG (3 ZONE MTC)
18	D22 20WT/TN (3 ZONE ATC EXCEPT EXPORT)
18	P171 20TN/YL (3 ZONE ATC EXPORT)
19	P160 18TN/LG (EXPORT)
20	-
21	F2 18PK/YL
22	L78 20WT/OR (EXPORT)
22	Q102 18OR/LB (EXCEPT EXPORT)
23	Q103 18OR/LG (EXCEPT EXPORT)
23	P174 20TN/LB (EXPORT)
24	D25 20WT/VT
25	-
26	-
27	-
28	-
29	F20 20PK/WT
30	F100 18PK/VT
31	F201 18PK/OR
32	F504 20GY/PK (3 ZONE ATC)
32	F850 20LB/PK (3 ZONE MTC)
33	P7 20LG/DG (HEATED SEATS)
34	P8 22LG/WT (HEATED SEATS)
35	P64 20TN (MEMORY)
36	P65 20TN/VT (MEMORY)
37	P66 20TN/LG (MEMORY)
38	P67 20TN/OR (MEMORY)
39	P68 20TN/YL (MEMORY)
40	P69 20TN/WT (MEMORY)
41	P70 20TN/LB (MEMORY)
42	P71 20TN/DG (MEMORY)
43	P72 20TN/GY (MEMORY)
44	P73 20TN/VT (MEMORY)
45	P74 20TN/DB (MEMORY)
46	P75 20TN/LG (MEMORY)
47	P112 22TN/OR (AUTOMATIC DAY/NIGHT MIRROR)
48	P114 22TN/WT (AUTOMATIC DAY/NIGHT MIRROR)
48	B25 20DG/WT (EXPORT)
49	C154 22LB/OR (3 ZONE ATC)
49	C154 20LB/OR (3 ZONE MTC)
50	Z104 18BK/LG
51	X156 20GY/LB (PREMIUM 8 SPEAKER)
52	X154 20GY/YL (PREMIUM 8 SPEAKER)
53	R57 18LG/GY
54	-
55	R59 18LG/TN
56	-
57	-
58	T751 20YL
59	X15 16GY/DG (PREMIUM 8 SPEAKER)
60	A701 18BR/RD
61	X3 22 DG/VT
62	X53 20DG
63	X54 20GY
64	X55 20DG/BR
65	X56 20GY/BR
66	C54 22LB/YL (3 ZONE ATC RHD EXPORT)
66	C54 20LB/YL (3 ZONE ATC/ EXCEPT RHD EXPORT)
67	V37 22VT
68	X51 22DG/DB
69	X52 22GY/DB
70	X57 22DG/OR (EXCEPT LHD EXPORT)
70	X57 20DG/OR (LHD EXPORT)
71	X58 20GY/OR (LHD EXPORT)
71	X58 22GY/OR (EXCEPT LHD EXPORT)
72	X153 22DG/YL (PREMIUM 8 SPEAKER EXCEPT LHD EXPORT)
72	X153 20DG/YL (PREMIUM 8 SPEAKER LHD EXPORT)
73	K900 20DB/DG
74	X155 20DG/LB (PREMIUM 8 SPEAKER LHD EXPORT)
74	X155 22DG/LB (PREMIUM 8 SPEAKER EXCEPT LHD EXPORT)



C201

C201 - (BODY SIDE)

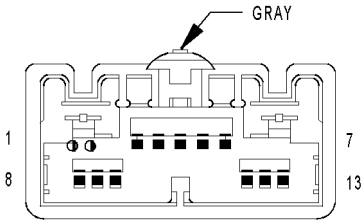
CAV	CIRCUIT
1	R53 18LG/YL
2	R55 18LG/DG
3	R54 18LB/YL
4	R56 18LB/DG



C201

C201 - (INSTRUMENT PANEL SIDE)

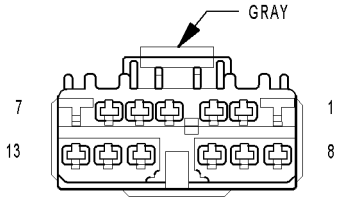
CAV	CIRCUIT
1	R53 18LG/YL
2	R55 18LG/DG
3	R54 18LB/YL
4	R56 18LB/DG



C202

C202 - (COMPONENT SIDE)

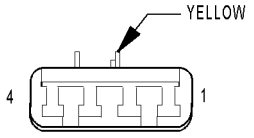
CAV	CIRCUIT
1	Z134 12BK/OR (ATC)
2	C56 20DB/LB (ATC)
2	C34 20DB/LB (MTC)
3	C32 20DB/TN
4	C33 20LB/BR
5	C61 20DB/LG (ATC)
5	C61 20LB/WT (MTC)
6	C35 20LB/OR
7	C7 12DB (ATC)
8	C132 20DB/YL (ATC)
9	C133 20DB/WT (ATC)
10	C161 20LB/WT (ATC)
11	C135 20DB/GY (ATC)
12	C21 20DB/LG
13	C121 20DB/DG



C202

C202 - (INSTRUMENT PANEL SIDE)

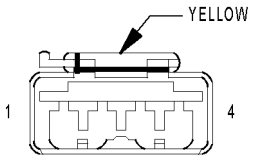
CAV	CIRCUIT
1	Z134 12BK/OR (ATC LHD)
1	Z134 12BK/LG (ATC RHD)
2	C34 22DB/LB (MTC LHD EXPORT)
2	C56 22DB/LB (ATC EXCEPT LHD EXPORT)
2	C34 22DB/LB (MTC EXCEPT LHD EXPORT)
2	C56 22DB/VT (ATC LHD EXPORT)
3	C32 22DB/TN
4	C33 22LB/BR
5	C61 22DB/LG
6	C35 22LB/LG
7	C7 12DB (ATC)
8	C132 22DB/YL (ATC)
9	C133 22DB/WT (ATC)
10	C161 22LB/WT (ATC)
11	C135 22DB/GY (ATC)
12	C21 22LB
13	C121 22DB/DG (RHD)
13	C121 20DB/DG (LHD)



C304

C304 - (BODY SIDE)

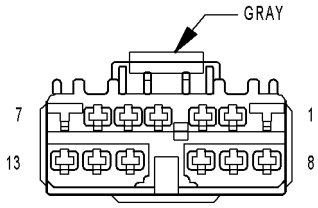
CAV	CIRCUIT
1	R53 18LG/YL (LHD)
1	R54 18LB/YL (RHD)
2	R56 18LB/DG (RHD)
2	R55 18LG/DG (LHD)
3	R31 18LG/OR
4	R33 18LG/WT



C304

C304 - (SEAT SIDE)

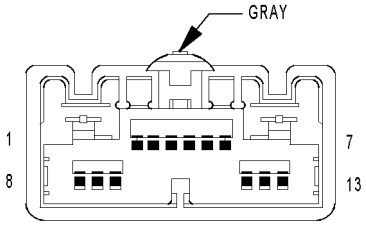
CAV	CIRCUIT
1	R53 18LG/YL (LHD)
1	R54 18LB/YL (RHD)
2	R56 18LB/DG (RHD)
2	R55 18LG/DG (LHD)
3	R31 18LG/OR
4	R33 18LG/WT



C305

C305 - (BODY SIDE)

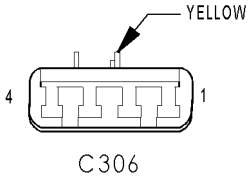
CAV	CIRCUIT
1	Z849 12BK/OR
2	R57 18LG/GY
3	R59 18LG/TN
4	P7 20LG/DG (HEATED SEATS)
5	A210 14OR/RD (HEATED SEATS)
6	F503 20WT/PK (HEATED SEATS)
7	A110 12OR/RD
8	-
9	-
10	-
11	-
12	-
13	-



C305

C305 - (SEAT SIDE)

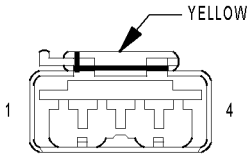
CAV	CIRCUIT
1	Z849 14BK/OR (POWER SEAT)
1	Z849 12BK/OR (HEATED SEAT)
2	R57 18LG/GY
3	R59 18LG/TN
4	P7 20LG/DG (HEATED SEAT)
5	A210 14OR/RD (POWER/ HEATED SEAT)
6	F503 20WT/PK (HEATED SEAT)
7	A110 12OR/RD (POWER/ HEATED SEAT)
8	-
9	-
10	-
11	-
12	-
13	-



C306

C306 - (BODY SIDE)

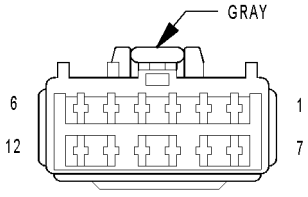
CAV	CIRCUIT
1	R54 18LB/YL (LHD)
1	R53 18LG/YL (RHD)
2	R55 18LG/DG (RHD)
2	R56 18LB/DG (LHD)
3	R32 18LB/OR
4	R34 18LB/WT



C306

C306 - (SEAT SIDE)

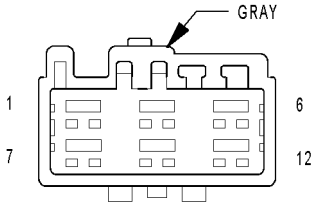
CAV	CIRCUIT
1	R54 18LB/YL (LHD)
1	R53 18LG/YL (RHD)
2	R55 18LG/DG (RHD)
2	R56 18LB/DG (LHD)
3	R32 18LB/OR
4	R34 18LB/WT



C307
(HEATED SEATS)

C307 (HEATED SEATS) - (BODY SIDE)

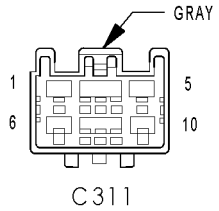
CAV	CIRCUIT
1	Z848 12BK/OR (POWER SEAT)
2	-
3	-
4	P8 20LG/WT
5	A210 14OR/RD (POWER SEAT)
6	F503 20WT/PK
7	-
8	-
9	-
10	-
11	-
12	-



C307
(HEATED SEATS)

C307 (HEATED SEATS) - (SEAT SIDE)

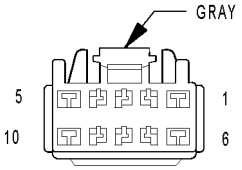
CAV	CIRCUIT
1	Z848 18BK/OR (POWER SEAT)
2	-
3	-
4	P8 20LG/WT
5	A210 14OR/RD (POWER SEAT)
6	F503 20WT/PK
7	-
8	-
9	-
10	-
11	-
12	-



C311

C311 - (BODY SIDE)

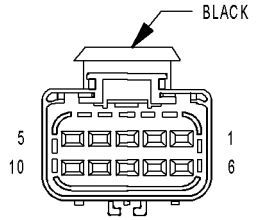
CAV	CIRCUIT
1	C153 12DB/BR (3 ZONE MTC)
2	F504 20GY/PK (3 ZONE ATC)
2	F850 22LB/PK (3 ZONE MTC)
3	C121 22DB/DG (3 ZONE MTC)
3	D22 20WT/TN (3 ZONE ATC)
4	D17 20WT/DG (3 ZONE ATC)
4	C22 20LB/WT (3 ZONE MTC)
5	C151 18LB/DG (3 ZONE MTC)
6	-
7	C152 16LB/LG (3 ZONE MTC)
8	E10 20OR/DG (3 ZONE ATC/ MTC)
9	Z409 20BK/OR (3 ZONE MTC)
9	Z27 18BK/DG (3 ZONE ATC)
10	C50 12DB/OR (3 ZONE MTC)



C311

C311 - (REAR A/C JUMPER SIDE)

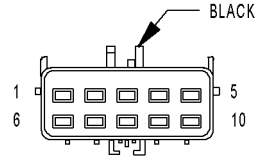
CAV	CIRCUIT
1	C153 12 DB/BR (3 ZONE MTC)
2	F504 20GY/PK (3 ZONE ATC)
2	F850 20LB/PK (3 ZONE MTC)
3	C121 20DB/DG (3 ZONE MTC)
3	D22 20WT/TN (3 ZONE ATC SWB)
3	D22 22WT/TN (3 ZONE ATC LWB)
4	D17 20WT/DG (3 ZONE ATC SWB)
4	D17 22WT/DG (3 ZONE ATC LWB)
4	C22 20LB/DB (3 ZONE MTC)
5	C151 18LB/DG (3 ZONE MTC)
6	-
7	C152 16LB/LG (3 ZONE MTC)
8	E10 20OR/DG (3 ZONE ATC/ MTC)
9	Z409 20BK/OR (3 ZONE MTC)
9	Z27 18BK/DG (3 ZONE ATC)
10	C50 12DB/OR (3 ZONE MTC)



C316
(POWER SLIDING DOOR)

C316 (POWER SLIDING DOOR) - (LEFT DOOR WIRE TRACK ASSEMBLY SIDE)

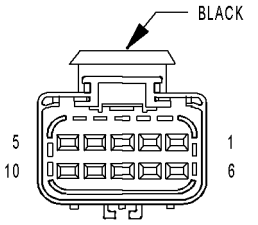
CAV	CIRCUIT
1	P5 20BK/DB
2	P32 20BK/TN
3	G77 20BK/DG
4	Z825 14BK
5	-
6	-
7	G151 20BK/GY
8	D25 20BK/VT
9	-
10	A113 14BK/RD



C316
(POWER SLIDING DOOR)

C316 (POWER SLIDING DOOR) - (LEFT SLIDING DOOR SIDE)

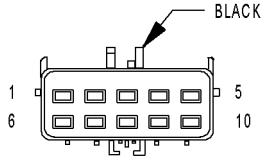
CAV	CIRCUIT
1	P5 20TN/OR
2	P32 20TN/VT
3	G77 20TN/OR
4	Z825 14BK/WT
5	-
6	-
7	G151 20VT/BR
8	D25 20WT/VT
9	-
10	A113 14WT/RD



C317
(POWER SLIDING DOOR)

C317 (POWER SLIDING DOOR) - (RIGHT DOOR WIRE TRACK ASSEMBLY SIDE)

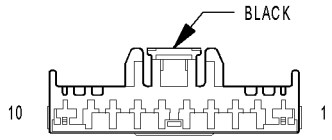
CAV	CIRCUIT
1	P38 20BK/DB
2	P34 20BK/TN
3	G76 20BK/DG
4	Z824 14BK
5	-
6	-
7	G152 20BK/GY
8	D25 20BK/VT
9	-
10	A113 14BK/RD



C317
(POWER SLIDING DOOR)

C317 (POWER SLIDING DOOR) - (RIGHT SLIDING DOOR SIDE)

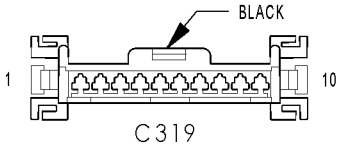
CAV	CIRCUIT
1	P38 20TN/DB
2	P34 20TN/LB
3	G76 20TN/OR
4	Z824 14BK/WT
5	-
6	-
7	G152 20VT/GY
8	D25 20WT/VT
9	-
10	A113 14WT/RD



C319
(LOWLINE)

C319 (LOWLINE) - (BODY SIDE)

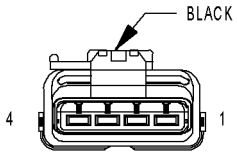
CAV	CIRCUIT
1	C15 12DB/WT
2	L77 18WT/BR
3	L50 18WT/TN
4	P30 20TN/DG
5	P31 20TN/YL
6	G78 20VT/OR
7	M11 20YL/VT
8	W13 18BR/LG
9	F302 18GY/PK
10	Z800 12BK



C319
(LOWLINE)

C319 (LOWLINE) - (LIFTGATE SIDE)

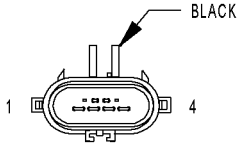
CAV	CIRCUIT
1	C15 12DB/WT
2	L77 18WT/BR
3	L50 18WT/TN
4	P30 20TN/DG
5	P31 20TN/YL
6	G78 20VT/OR
7	M11 20YL/VT
8	W13 18BR/LG
9	F302 18GY/PK
10	Z800 12BK



C324
(MANUAL SLIDING DOOR)

C324 (MANUAL SLIDING DOOR) - (LEFT DOOR WIRE TRACK ASSEMBLY SIDE)

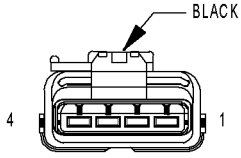
CAV	CIRCUIT
1	P38 20BK/DB
2	P34 20BK/TN
3	G77 20BK/DG
4	Z76 20BK



C324
(MANUAL SLIDING DOOR)

C324 (MANUAL SLIDING DOOR) - (LEFT MANUAL SLIDING DOOR SIDE)

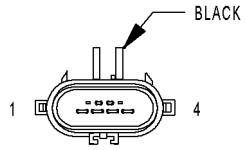
CAV	CIRCUIT
1	P5 20BK/DB
2	P32 20BK/TN
3	G77 20BK/DG
4	Z77 20BK



C325
(MANUAL SLIDING DOOR)

C325 (MANUAL SLIDING DOOR) - (RIGHT DOOR WIRE TRACK ASSEMBLY SIDE)

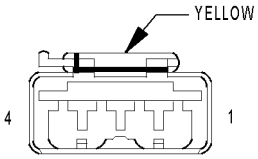
CAV	CIRCUIT
1	P38 20BK/DB
2	P34 20BK/TN
3	G76 20BK/DG
4	Z76 20BK



C325
(MANUAL SLIDING DOOR)

C325 (MANUAL SLIDING DOOR) - (RIGHT MANUAL SLIDING DOOR SIDE)

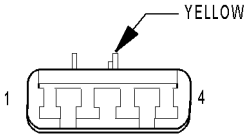
CAV	CIRCUIT
1	P38 20BK/DB
2	P34 20BK/TN
3	G76 20BK/DG
4	Z76 20BK



C326

C326 - (SAFETY SEAT SIDE)

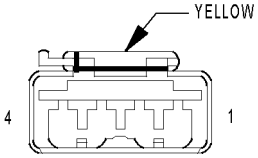
CAV	CIRCUIT
1	-
2	-
3	R33 18LG/WT (EXCEPT EXPORT)
3	R33 18WT/BK (EXPORT)
4	R31 18DG/WT (EXPORT)
4	R31 18LG/OR (EXCEPT EXPORT)



C326

C326 - (SEAT SIDE)

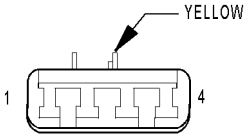
CAV	CIRCUIT
1	-
2	-
3	R33 18LG/WT
4	R31 18LG/OR



C327

C327 - (SAFETY SEAT SIDE)

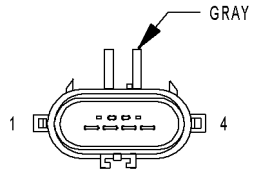
CAV	CIRCUIT
1	-
2	-
3	R34 18WT/BK (EXPORT)
3	R34 18LB/WT (EXCEPT EXPORT)
4	R32 18LB/OR (EXCEPT EXPORT)
4	R32 18DG/WT (EXPORT)



C327

C327 - (SEAT SIDE)

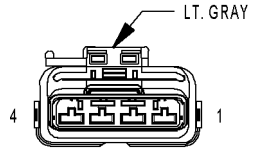
CAV	CIRCUIT
1	-
2	-
3	R34 18LB/WT
4	R32 18LB/OR



C330
(DIESEL)

C330 (DIESEL) - (CABIN HEATER JUMPER SIDE)

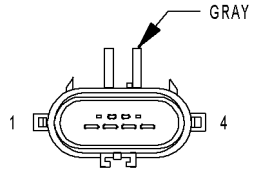
CAV	CIRCUIT
1	A119 16RD/OR
2	C41 20LB/DG
3	D21 20WT/BR
4	Z149 16BK/DB



C330
(DIESEL)

C330 (DIESEL) - (POWERTRAIN SIDE)

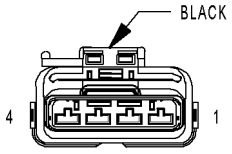
CAV	CIRCUIT
1	A119 16RD/OR
2	C41 20LB/DG
3	D21 20WT/BR
4	Z149 16BK/DB



C331
(DIESEL)

C331 (DIESEL) - (CABIN HEATER COMPONENT SIDE)

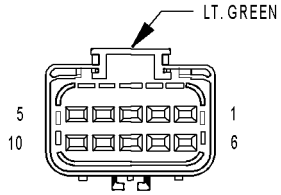
CAV	CIRCUIT
1	A119 14RD/OR
2	C41 20DB/OR
3	D21 20WT/DB
4	Z149 14BK/DB



C331
(DIESEL)

C331 (DIESEL) - (CABIN HEATER JUMPER SIDE)

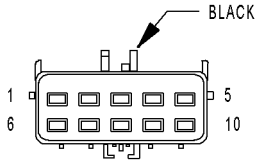
CAV	CIRCUIT
1	A119 16RD/OR
2	C41 20LB/DG
3	D21 20WT/BR
4	Z149 16BK/DB



C332
(3 ZONE ATC)

C332 (3 ZONE ATC) - (BODY SIDE)

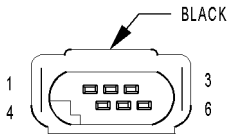
CAV	CIRCUIT
1	C53 20LB
2	C169 20DB/OR
3	C51 12LB/BR
4	C59 20DB/LB
5	-
6	Z135 12BK/LB
7	C54 20LB/YL
8	C154 20LB/OR
9	-
10	-



C332
(3 ZONE ATC)

C332 (3 ZONE ATC) - (COMPONENT SIDE)

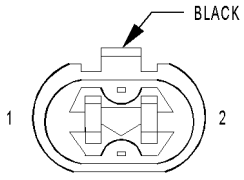
CAV	CIRCUIT
1	C53 18LB
2	C169 18LB/TN
3	C51 12DB/BR
4	C59 18DB/LB
5	-
6	Z135 12BK/LB
7	C54 18LB/YL
8	C154 18LB/GY
9	-
10	-



CABIN HEATER
ASSIST C1
(DIESEL)

CABIN HEATER ASSIST C1 (DIESEL)

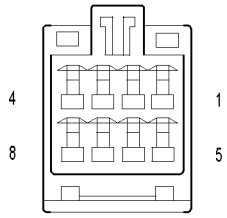
CAV	CIRCUIT	FUNCTION
1	-	-
2	D21 20WT/DB	SCI TRANSMIT
3	-	-
4	-	-
5	C41 20DB/OR	CABIN HEATER ASSIST CONTROL
6	18RD	DOSING PUMP CONTROL



CABIN HEATER
ASSIST C2
(DIESEL)

CABIN HEATER ASSIST C2 (DIESEL)

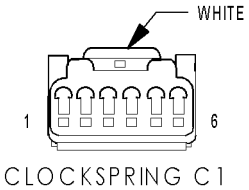
CAV	CIRCUIT	FUNCTION
1	A119 14RD/OR	FUSED B(+)
2	Z149 14BK/DB	GROUND



CD
CHANGER

CD CHANGER

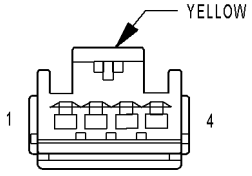
CAV	CIRCUIT	FUNCTION
1	X40 24GY/WT	AUDIO OUT RIGHT
2	E14 18OR/TN	PANEL LAMPS DRIVER
3	D25 20WT/VT (EXCEPT EXPORT)	PCI BUS
3	D25 20VT/YL (EXPORT)	PCI BUS
4	X112 20RD	IGNITION SWITCH OUTPUT
5	X41 20DG/WT	AUDIO OUT LEFT
6	Z140 18BK/OR	GROUND
7	Z141 18BK/TN	GROUND
8	X160 20GY/YL	B(+)



CLOCKSPRING C1

CLOCKSPRING C1

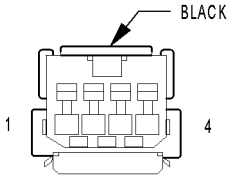
CAV	CIRCUIT	FUNCTION
1	X920 22GY/OR	RADIO CONTROL MUX RETURN
2	X20 22GY/WT	RADIO CONTROL MUX
3	X3 22DG/VT	HORN SWITCH SENSE
4	V37 22VT	SPEED CONTROL SWITCH SIGNAL
5	K900 20DB/DG	SPEED CONTROL SWITCH GROUND
6	-	-



CLOCKSPRING C2

CLOCKSPRING C2

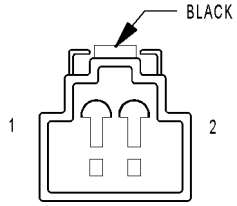
CAV	CIRCUIT	FUNCTION
1	R61 18LG/DB	DRIVER SQUIB 2 LINE 1
2	R63 18LG/WT	DRIVER SQUIB 2 LINE 2
3	R43 18LG/BR	DRIVER SQUIB 1 LINE 1
4	R45 18LG/OR	DRIVER SQUIB 1 LINE 2



CLOCKSPRING C3

CLOCKSPRING C3

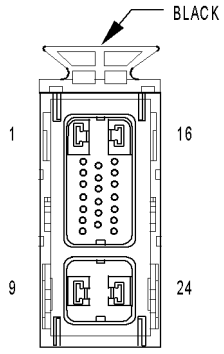
CAV	CIRCUIT	FUNCTION
1	-	-
2	Z23 20BK/VT	LEFT SPEED CONTROL SWITCH GROUND
2	Z23 20BK/VT	RIGHT SPEED CONTROL SWITCH GROUND
3	V37 20VT (EXCEPT 2.4L)	SPEED CONTROL SWITCH SIGNAL
3	V37 20VT (2.4L)	S/C SWITCH SIGNAL
3	V37 20VT (2.4L)	S/C SWITCH SIGNAL
3	V37 20VT (EXCEPT 2.4L)	SPEED CONTROL SWITCH SIGNAL
4	X3 20DG/VT	HORN SWITCH SENSE



CLOCKSPRING C4

CLOCKSPRING C4

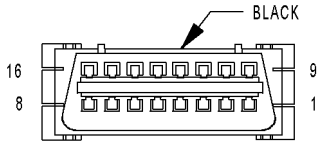
CAV	CIRCUIT	FUNCTION
1	X20 20RD/BK	RADIO CONTROL MUX
2	X920 20RD/DB	RADIO CONTROL MUX RETURN



CONTROLLER ANTILOCK BRAKE

CONTROLLER ANTILOCK BRAKE

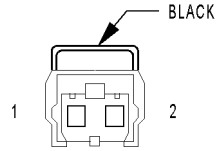
CAV	CIRCUIT	FUNCTION
1	Z107 12BK/DG	GROUND
2	B1 18DG/OR	RIGHT REAR WHEEL SPEED SENSOR SIGNAL
3	B2 18DG/LB	RIGHT REAR WHEEL SPEED SENSOR 12 VOLT SUPPLY
4	-	-
5	D25 18WT/VT	PCI BUS
6	B6 18DG/WT	RIGHT FRONT WHEEL SPEED SENSOR SIGNAL
7	B7 18DG/VT	RIGHT FRONT WHEEL SPEED SENSOR 12 VOLT SUPPLY
8	-	-
9	A111 12DG/RD	FUSED B(+)
10	F500 18DG/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	Z127 12BK/DG	GROUND
17	-	-
18	L50 18WT/TN	BRAKE LAMP SWITCH OUTPUT
19	B3 18DG/YL	LEFT REAR WHEEL SPEED SENSOR SIGNAL
20	B4 18DG/GY	LEFT REAR WHEEL SPEED SENSOR 12 VOLT SUPPLY
21	-	-
22	B8 18DG/TN	LEFT FRONT WHEEL SPEED SENSOR SIGNAL
23	B9 18DG/LG (EXCEPT 3.3L/3.8L)	LEFT FRONT WHEEL SPEED SENSOR 12 VOLT SUPPLY
23	B9 18DG/WT (3.3L/3.8L)	LEFT FRONT WHEEL SPEED SENSOR 12 VOLT SUPPLY
24	A107 12TN/RD	FUSED B(+)



DATA LINK CONNECTOR

DATA LINK CONNECTOR

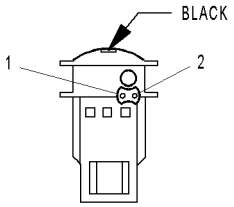
CAV	CIRCUIT	FUNCTION
1	-	-
2	D25 20WT/VT	PCI BUS
3	-	-
4	Z11 18BK/LG	GROUND
5	Z111 18BK/WT	GROUND
6	-	-
7	D21 20WT/DG (GAS)	SCI TRANSMIT (PCM)
7	D21 20WT/DG (DIESEL)	SCI TRANSMIT (ECM)
8	-	-
9	D123 20WT/BR	FLASH PROGRAM ENABLE
10	-	-
11	-	-
12	D20 20WT/LG (GAS)	SCI RECEIVE (PCM)
13	-	-
14	-	
15	D15 20DG/YL (GAS)	SCI TRANSMIT (TCM)
16	A105 20DB/RD	FUSED B(+)



DOSING PUMP (DIESEL)

DOSING PUMP (DIESEL)

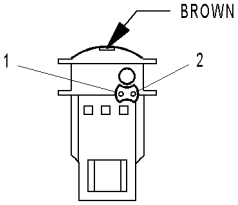
CAV	CIRCUIT	FUNCTION
1	18RD	DOSING PUMP CONTROL
2	Z149 18BK/DB	GROUND



DRIVER
AIRBAG
SQUIB 1

DRIVER AIRBAG SQUIB 1

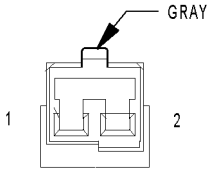
CAV	CIRCUIT	FUNCTION
1	R43 20OR/LB	DRIVER SQUIB 1 LINE 1
2	R45 20TN/LB	DRIVER SQUIB 1 LINE 2



DRIVER
AIRBAG
SQUIB 2

DRIVER AIRBAG SQUIB 2

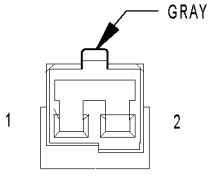
CAV	CIRCUIT	FUNCTION
1	R61 20BK/LB	DRIVER SQUIB 2 LINE 1
2	R63 20OR/LB	DRIVER SQUIB 2 LINE 2



DRIVER
BLEND DOOR
ACTUATOR
(ATC)

DRIVER BLEND DOOR ACTUATOR (ATC)

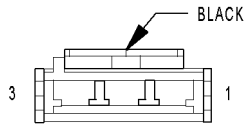
CAV	CIRCUIT	FUNCTION
1	C61 20DB/LG	DRIVER BLEND DOOR DRIVER (A)
2	C161 20LB/WT	DRIVER BLEND DOOR DRIVER (B)



DRIVER
BLEND DOOR
ACTUATOR
(MTC)

DRIVER BLEND DOOR ACTUATOR (MTC)

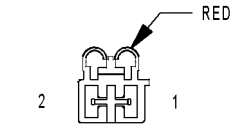
CAV	CIRCUIT	FUNCTION
1	C34 20DB/LB (RHD)	COMMON DOOR DRIVER (B)
1	C61 20LB/WT (LHD)	DRIVER BLEND DOOR DRIVER (A)
2	C34 20DB/LB (LHD)	COMMON DOOR DRIVER (B)
2	C61 20LB/WT (RHD)	DRIVER BLEND DOOR DRIVER (A)



DRIVER DOOR LOCK SWITCH

DRIVER DOOR LOCK SWITCH

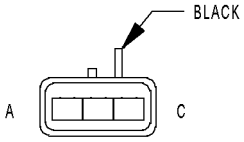
CAV	CIRCUIT	FUNCTION
1	F304 16WT/PK (POWER WINDOWS)	FUSED WINDOW CIRCUIT BREAKER OUTPUT
1	F304 16WT/PK (EXCEPT POWER WINDOWS)	FUSED ACCESSORY RELAY OUTPUT
2	G161 20VT/DG (LHD)	LEFT DOOR LOCK SWITCH MUX
2	G160 20VT/LG (RHD)	RIGHT DOOR LOCK SWITCH MUX
3	Z461 20BK/DG (LHD)	GROUND
3	Z460 20BK/LG (RHD)	GROUND



DRIVER POWER SEAT FRONT RISER MOTOR

DRIVER POWER SEAT FRONT RISER MOTOR

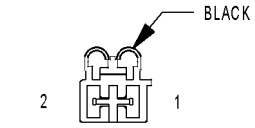
CAV	CIRCUIT	FUNCTION
1	P19 14LG/LB	DRIVER FRONT UP SWITCH SENSE
1	P119 14LG/DG (MEMORY)	SEAT FRONT UP DRIVER
2	P121 14LG/DB (MEMORY)	SEAT FRONT DOWN DRIVER
2	P21 14LG/TN	DRIVER FRONT DOWN SWITCH SENSE



DRIVER POWER SEAT FRONT RISER POSITION SENSOR

DRIVER POWER SEAT FRONT RISER POSITION SENSOR

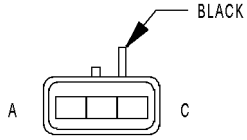
CAV	CIRCUIT	FUNCTION
A	P28 20LG/BR	SEAT POSITION SENSOR GROUND
B	P26 20LG	FRONT RISER POSITION SIGNAL
C	P29 20LG/WT	SEAT SENSOR 5 VOLT SUPPLY



DRIVER POWER SEAT HORIZONTAL MOTOR

DRIVER POWER SEAT HORIZONTAL MOTOR

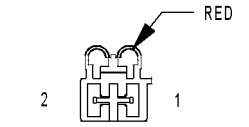
CAV	CIRCUIT	FUNCTION
1	P17 14LG/DG	DRIVER SEAT HORIZONTAL REARWARD SWITCH SENSE
1	P115 14LG (RHD) (MEMORY)	SEAT HORIZONTAL FORWARD DRIVER
1	P117 14LG/LB (RHD) (MEMORY)	SEAT HORIZONTAL REARWARD DRIVER
2	P15 14LG/WT	DRIVER SEAT HORIZONTAL FORWARD SWITCH SENSE
2	P117 14LG/LB (RHD) (MEMORY)	SEAT HORIZONTAL REARWARD DRIVER
2	P115 14LG (RHD) (MEMORY)	SEAT HORIZONTAL FORWARD DRIVER



DRIVER POWER SEAT HORIZONTAL POSITION SENSOR

DRIVER POWER SEAT HORIZONTAL POSITION SENSOR

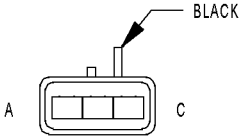
CAV	CIRCUIT	FUNCTION
A	P29 20LG/WT	SEAT SENSOR 5 VOLT SUPPLY
B	P25 20LG/VT	SEAT HORIZONTAL POSITION SIGNAL
C	P28 20LG/BR	SEAT POSITION SENSOR GROUND



DRIVER POWER SEAT REAR RISER MOTOR

DRIVER POWER SEAT REAR RISER MOTOR

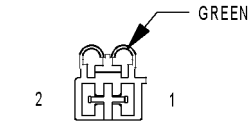
CAV	CIRCUIT	FUNCTION
1	P11 14LG/YL	DRIVER SEAT REAR UP SWITCH SENSE
1	P111 14LG/YL (MEMORY)	SEAT REAR UP DRIVER
2	P113 14LG/WT (MEMORY)	SEAT REAR DOWN DRIVER
2	P13 14LG/OR	DRIVER SEAT REAR DOWN SWITCH SENSE



DRIVER POWER SEAT REAR RISER POSITION SENSOR

DRIVER POWER SEAT REAR RISER POSITION SENSOR

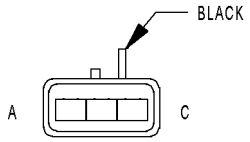
CAV	CIRCUIT	FUNCTION
A	P28 20LG/BR	SEAT POSITION SENSOR GROUND
B	P27 20LG/LB	REAR RISER POSITION SIGNAL
C	P29 20LG/WT	SEAT SENSOR 5 VOLT SUPPLY



DRIVER POWER SEAT RECLINER MOTOR

DRIVER POWER SEAT RECLINER MOTOR

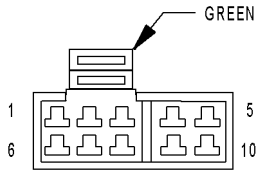
CAV	CIRCUIT	FUNCTION
1	P41 14LG/GY (EXCEPT MEMORY)	DRIVER SEAT RECLINER DOWN SWITCH SENSE
1	P141 14LG/BR (MEMORY EXPORT)	SEAT RECLINER DOWN DRIVER
1	P41 14LG/GY (MEMORY EXCEPT EXPORT)	SEAT RECLINER DOWN DRIVER
2	P43 14LG/GY (MEMORY EXCEPT EXPORT)	SEAT RECLINER UP DRIVER
2	P143 14LG/GY (MEMORY EXPORT)	SEAT RECLINER UP DRIVER
2	P43 14LG/VT (EXCEPT MEMORY)	DRIVER SEAT RECLINER UP SWITCH SENSE



DRIVER POWER SEAT RECLINER POSITION SENSOR

DRIVER POWER SEAT RECLINER POSITION SENSOR

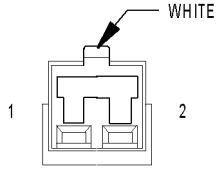
CAV	CIRCUIT	FUNCTION
A	P29 20LG/WT	SEAT SENSOR 5 VOLT SUPPLY
B	P47 20LG/LB	RECLINER POSITION SIGNAL
C	P28 20LG/BR	SEAT POSITION SENSOR GROUND



DRIVER POWER SEAT SWITCH

DRIVER POWER SEAT SWITCH

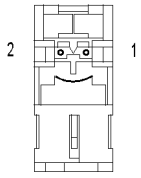
CAV	CIRCUIT	FUNCTION
1	Z849 14BK/OR (EXCEPT MEMORY)	GROUND
1	Z849 20BK/OR (MEMORY)	GROUND
2	P43 14LG/VT (RHD MEMORY)	RECLINER UP SWITCH SENSE
2	P43 14LG/VT (EXCEPT MEMORY)	DRIVER SEAT RECLINER UP SWITCH SENSE
2	P40 20LG/DG (LHD MEMORY)	RECLINER UP SWITCH SENSE
3	P17 14LG/DG (EXCEPT MEMORY)	DRIVER SEAT HORIZONTAL REARWARD SWITCH SENSE
3	P17 20LG/DG (MEMORY)	SEAT HORIZONTAL REARWARD SWITCH SENSE
4	P41 14LG/GY (RHD MEMORY)	RECLINER DOWN SWITCH SENSE
4	P41 14LG/GY (EXCEPT MEMORY)	DRIVER SEAT RECLINER DOWN SWITCH SENSE
4	P48 20LG/DB (LHD MEMORY)	RECLINER DOWN SWITCH SENSE
5	A210 14OR/RD (EXCEPT MEMORY)	FUSED SEAT SWITCH DRIVER
5	P9 20LG/OR (MEMORY)	SEAT SWITCH B(+) SUPPLY
6	P15 20LG/WT (MEMORY)	SEAT HORIZONTAL FORWARD SWITCH SENSE
6	P15 14LG/WT (EXCEPT MEMORY)	DRIVER SEAT HORIZONTAL FORWARD SWITCH SENSE
7	P19 14LG/LB (EXCEPT MEMORY)	DRIVER FRONT UP SWITCH SENSE
7	P19 20LG/LB (MEMORY)	SEAT FRONT UP SWITCH SENSE
8	P11 20LG/YL (MEMORY)	SEAT REAR UP SWITCH SENSE
8	P11 14LG/YL (EXCEPT MEMORY)	DRIVER SEAT REAR UP SWITCH SENSE
9	P13 14LG/OR (EXCEPT MEMORY)	DRIVER SEAT REAR DOWN SWITCH SENSE
9	P13 20LG/OR (MEMORY)	SEAT REAR DOWN SWITCH SENSE
10	P21 20LG/TN (MEMORY)	SEAT FRONT DOWN SWITCH SENSE
10	P21 14LG/TN (EXCEPT MEMORY)	DRIVER FRONT DOWN SWITCH SENSE



DRIVER SEAT BELT SWITCH

DRIVER SEAT BELT SWITCH

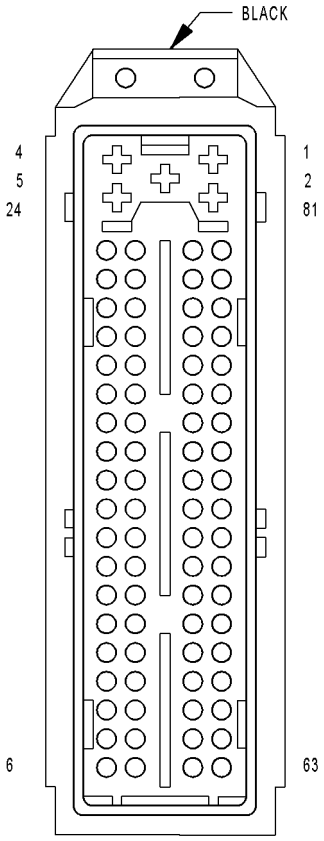
CAV	CIRCUIT	FUNCTION
1	R59 18LG/TN	DRIVER SEAT BELT SWITCH LINE 1
2	R57 18LG/GY	DRIVER SEAT BELT SWITCH LINE 2



DRIVER SEAT BELT TENSIONER

DRIVER SEAT BELT TENSIONER

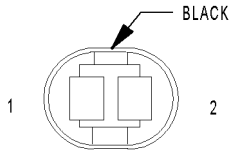
CAV	CIRCUIT	FUNCTION
1	R53 18LG/YL	DRIVER SEAT BELT TENSIONER LINE 2
2	R55 18LG/DG	DRIVER SEAT BELT TENSIONER LINE 1



ENGINE CONTROL MODULE C1 (DIESEL)

ENGINE CONTROL MODULE C1 (DIESEL)

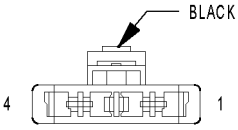
CAV	CIRCUIT	FUNCTION
1	Z130 14BK/BR	GROUND
2	Z131 14BK/DG	GROUND
3	K20 14BR/GY	GENERATOR FIELD CONTROL
4	K342 14BR/WT	ECM/PCM RELAY OUTPUT
5	K342 14BR/WT	ECM/PCM RELAY OUTPUT
6	-	-
7	D25 20WT/VT	PCI BUS
8	K944 20BK/GY	CAMSHAFT POSITION SENSOR SHIELD GROUND
9	K44 20DB/GY	CAMSHAFT POSITION SENSOR SIGNAL
10	-	-
11	K37 20DB/YL	BOOST PRESSURE SENSOR SIGNAL
12	K55 20DB/OR	MASS AIR FLOW SENSOR SIGNAL
13	K78 20GY	FUEL PRESSURE SENSOR SIGNAL
14	-	-
15	K22 20OR/DB	ACCELERATOR PEDAL POSITION SENSOR SIGNAL
16	K80 20DB/TN	FUEL PRESSURE SENSOR GROUND
17	-	-
18	-	-
19	K342 20BR/WT	ECM/PCM RELAY OUTPUT
20	Z138 20BK/OR	GROUND
21	K900 20DB/DG	SENSOR GROUND
22	F202 20PK/GY	FUSED IGNITION SWITCH OUTPUT (RUN-START)
23	F851 20LB/PK	SENSOR REFERENCE VOLTAGE B
24	K3 20BR/OR	CRANKSHAFT POSITION SENSOR SIGNAL NO. 1
25	-	-
26	-	-
27	-	-
28	-	-
29	-	-
30	G6 20VT/GY	ENGINE OIL PRESSURE SENSOR SIGNAL
31	F853 20LG/PK	WATER IN FUEL SENSOR SIGNAL
32	K25 20BR/TN	BATTERY TEMPERATURE SENSOR SIGNAL
33	-	-
34	K4 20BK/LB	LOW IDLE POSITION SWITCH GROUND
35	K853 20DB/BR	ACCELERATOR PEDAL POSITION SENSOR 5 VOLT SUPPLY
36	C18 20LB/BR	A/C PRESSURE SENSOR SIGNAL
37	-	-
38	V37 20VT/TN	SPEED CONTROL SWITCH SIGNAL
39	-	-
40	K2 20TN/BK	ENGINE COOLANT TEMPERATURE SENSOR SIGNAL
41	K21 20DB/LG	INTAKE AIR TEMPERATURE SENSOR SIGNAL
42	Z122 18WT	GROUND (DRAIN)
43	K24 20BR/LB	CRANKSHAFT POSITION SENSOR SIGNAL NO. 2
44	-	-
45	-	-
46	-	-
47	L50 20WT/TN	PRIMARY BRAKE SWITCH SIGNAL
48	B29 20DG/WT	SECONDARY BRAKE SWITCH SIGNAL
49	T751 20YL	FUSED IGNITION SWITCH OUTPUT (START)
50	F855 20PK/YL	SENSOR REFERENCE VOLTAGE A
51	-	-
52	K121 20DB	BOOST PRESSURE SENSOR GROUND
53	-	-
54	K957 20BK/OR	MASS AIR FLOW SENSOR GROUND
55	N7 20DB/OR	VEHICLE SPEED SENSOR SIGNAL
56	C918 20BK/LB	A/C PRESSURE SENSOR GROUND
57	-	-
58	-	-
59	-	-
60	K9 20LB	FUEL PRESSURE SENSOR 5 VOLT SUPPLY
61	K51 20BR/WT	ECM/PCM RELAY CONTROL
62	-	-
63	D21 20WT/BR	SCI TRANSMIT (ECM)
64	K151 20WT	LOW IDLE POSITION SWITCH SENSE
65	-	-
66	K936 20BR/YL	ENGINE OIL PRESSURE SENSOR GROUND
67	-	-
68	-	-
69	C13 20LB/OR	A/C COMPRESSOR CLUTCH RELAY CONTROL
70	N210 20DB/DG	LOW SPEED RADIATOR FAN RELAY CONTROL
71	-	-
72	N21 20DB/TN	LIFT PUMP RELAY CONTROL
73	-	-
74	T752 20DG/OR	STARTER MOTOR RELAY CONTROL
75	-	-
76	-	-
77	K152 20DB/WT	GLOW PLUG RELAY CONTROL
78	N122 20DB/YL	HIGH SPEED RADIATOR FAN DUAL RELAY CONTROL
79	-	-
80	K87 20BR	FUEL PRESSURE SOLENOID CONTROL
81	K87 20BR	FUEL PRESSURE SOLENOID CONTROL



EVAPORATOR TEMPERATURE SENSOR

EVAPORATOR TEMPERATURE SENSOR

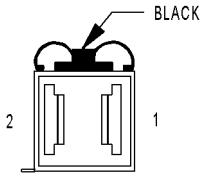
CAV	CIRCUIT	FUNCTION
1	C21 20DB/LG	EVAPORATOR TEMPERATURE SENSOR SIGNAL
2	C121 20DB/DG	SENSOR GROUND



FRONT BLOWER MODULE C1 (ATC)

FRONT BLOWER MODULE C1 (ATC)

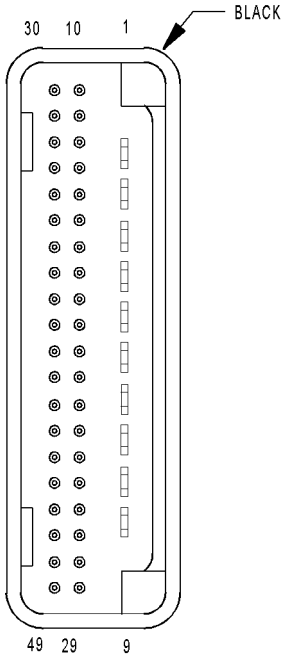
CAV	CIRCUIT	FUNCTION
1	-	-
2	Z134 12BK/OR	GROUND
3	C56 20DB/LB	BLOWER MOTOR CONTROL
4	C7 12DB	FUSED FRONT BLOWER MOTOR RELAY OUTPUT



FRONT BLOWER MODULE C2 (ATC)

FRONT BLOWER MODULE C2 (ATC)

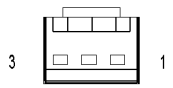
CAV	CIRCUIT	FUNCTION
1	C7 12DG (EXPORT)	HIGH SPEED BLOWER MOTOR
1	C7 12DB (EXCEPT EXPORT)	HIGH SPEED BLOWER MOTOR
2	C70 12DB/YL (EXCEPT EXPORT)	REAR BLOWER HIGH SPEED
2	C70 12BK (EXPORT)	REAR BLOWER HIGH SPEED



FRONT CONTROL MODULE

FRONT CONTROL MODULE

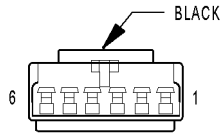
CAV	CIRCUIT	FUNCTION
1	A1	B(+)
2	A1	B(+)
3	L43	LEFT LOW BEAM DRIVER
4	L34	RIGHT HIGH BEAM DRIVER
5	L33	LEFT HIGH BEAM DRIVER
6	L44	RIGHT LOW BEAM DRIVER
7	-	NOT USED
8	Z117, Z118, Z343, Z344	GROUND
9	A1	B(+)
10	FCM 10	HORN RELAY CONTROL
11	FCM 11	NAME BRAND SPEAKER RELAY CONTROL
12	P201 (EXCEPT EXPORT)	ADJUSTABLE PEDALS RELAY CONTROL
13	FCM 13	PARK LAMP RELAY CONTROL
14	FCM 14	FRONT WIPER ON/OFF RELAY CONTROL
15	C41 (DIESEL)	CABIN HEATER ASSIST CONTROL
16	W7	FRONT WIPER PARK SWITCH SENSE
17	X3	HORN SWITCH SENSE
18	W1	WASHER FLUID LEVEL SWITCH SENSE
19	FCM 19 (GAS)	FUSED IGNITION SWITCH OUTPUT (START)
20	A114	FUSED B(+) (I.O.D.)
21	L78	FUSED PARK LAMP RELAY OUTPUT (RIGHT)
22	D25	PCI BUS
23	G931	AMBIENT TEMPERATURE SENSOR RETURN
24	-	SPARE
25	G31	AMBIENT TEMPERATURE SENSOR SIGNAL
26	L13 (EXPORT)	HEADLAMP ADJUST SIGNAL
27	F1, F2	FCM OUTPUT (UNLOCK-RUN-START)
28	F214	SIACM RUN-START DRIVER
29	F100	ORC RUN ONLY DRIVER
30	FCM 30	FRONT/REAR BLOWER MOTOR RELAY CONTROL
31	FCM 31	REAR WINDOW DEFOGGER RELAY CONTROL
32	FCM 32 (EXPORT)	HEADLAMP WASHER RELAY CONTROL
33	FCM 33	FRONT FOG LAMP RELAY CONTROL
34	FCM 34	FRONT WIPER HIGH/LOW RELAY CONTROL
35	FCM 35	ACCESSORY RELAY CONTROL (RUN-ACC)
36	B20	BRAKE FLUID LEVEL SWITCH SENSE
37	F20	FUSED IGNITION SWITCH OUTPUT (RUN-START)
38	A1	B(+) (WHEN IPM C-5 CPA IS NOT ENGAGED)
39	T2	TRS REVERSE SENSE
40	-	NOT USED
41	L77	FUSED PARK LAMP RELAY OUTPUT (LEFT)
42	D23	FLASH PROGRAM ENABLE
43	Z116	GROUND
44	L50	PRIMARY BRAKE SWITCH SIGNAL
45	W10	FRONT WASHER PUMP MOTOR CONTROL
46	W20	REAR WASHER PUMP MOTOR CONTROL
47	K32	BRAKE TRANSMISSION SHIFT INTERLOCK SOLENOID CONTROL
48	F201	ORC RUN-START DRIVER
49	-	NOT USED



FRONT INTRUSION SENSOR (UNITED KINGDOM)

FRONT INTRUSION SENSOR (UNITED KINGDOM)

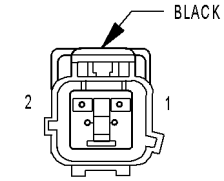
CAV	CIRCUIT	FUNCTION
1	G460 20DG/VT	FRONT INTRUSION SENSOR SIGNAL
2	-	-
3	G946 20LG/VT	SENSOR GROUND



FRONT READING LAMPS/ SWITCH

FRONT READING LAMPS/SWITCH

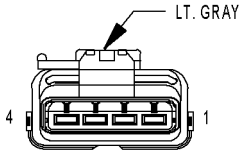
CAV	CIRCUIT	FUNCTION
1	E15 20OR/DB (EXCEPT BASE)	ASH/RECEIVER LAMP FEED
2	Z137 20BK/LB	GROUND
3	-	-
4	M27 20YL/LB	READING LAMPS DRIVER
5	M24 20YL/WT	COURTESY LAMPS DRIVER
6	-	-



FRONT WASHER PUMP MOTOR

FRONT WASHER PUMP MOTOR

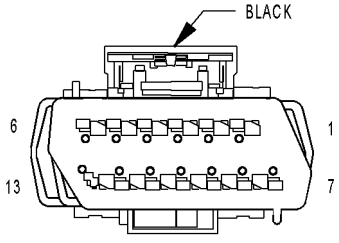
CAV	CIRCUIT	FUNCTION
1	W10 18BR	FRONT WASHER PUMP MOTOR CONTROL
2	F300 18OR/PK	FUSED ACCESSORY RELAY OUTPUT



FUEL PUMP MODULE

FUEL PUMP MODULE

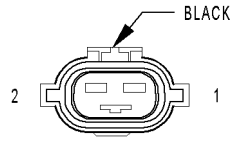
CAV	CIRCUIT	FUNCTION
1	Z201 18BK/OR (GAS)	GROUND
2	Z201 20BK/DB (LHD/ DIESEL/GAS)	GROUND
2	Z201 18BK/OR (RHD/ DIESEL)	GROUND
3	N4 20DB/WT	FUEL LEVEL SENSOR SIGNAL
4	N1 18DB/OR (GAS)	FUEL PUMP RELAY OUTPUT



HEADLAMP SWITCH

HEADLAMP SWITCH

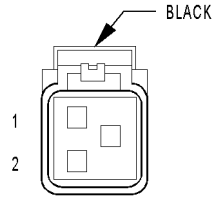
CAV	CIRCUIT	FUNCTION
1	Z403 20BK/YL (EXPORT)	GROUND
2	L78 20WT/OR (EXPORT)	FUSED PARK LAMP RELAY OUTPUT
3	-	-
4	Z407 22BK/OR	GROUND
5	L36 20WT/DB (EXPORT)	REAR FOG LAMP INDICATOR DRIVER
6	L900 22WT/YL	HEADLAMP SWITCH RETURN
7	L13 20WT/YL (EXPORT)	HEADLAMP ADJUST SIGNAL
8	E19 20OR/BR	PANEL LAMPS DRIVER (HEADLAMP SWITCH)
9	-	-
10	L39 22WT/OR	FRONT FOG LAMP INDICATOR DRIVER
11	L307 22WT/BR (RHD)	HEADLAMP SWITCH SENSE
11	L307 20WT/BR (LHD)	HEADLAMP SWITCH SENSE
12	E2 22OR/BR	PANEL LAMPS DIMMER SIGNAL
13	-	-



HEADLAMP WASHER PUMP MOTOR (EXPORT)

HEADLAMP WASHER PUMP MOTOR (EXPORT)

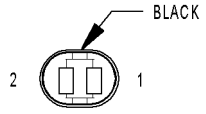
CAV	CIRCUIT	FUNCTION
1	V53 12BR/OR	HEADLAMP WASHER RELAY OUTPUT
2	Z243 12BK/OR	GROUND



HIGH NOTE HORN

HIGH NOTE HORN

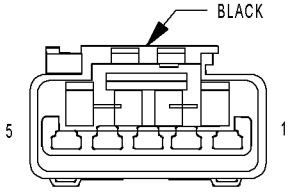
CAV	CIRCUIT	FUNCTION
1	Z299 18BK/OR	GROUND
2	X2 18DG/OR	HORN RELAY OUTPUT



HOOD AJAR SWITCH (EXPORT)

HOOD AJAR SWITCH (EXPORT)

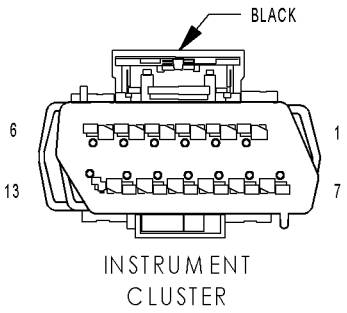
CAV	CIRCUIT	FUNCTION
1	G70 22VT/LB	HOOD AJAR SWITCH SENSE
2	Z470 22BK/LB	GROUND



IGNITION SWITCH

IGNITION SWITCH

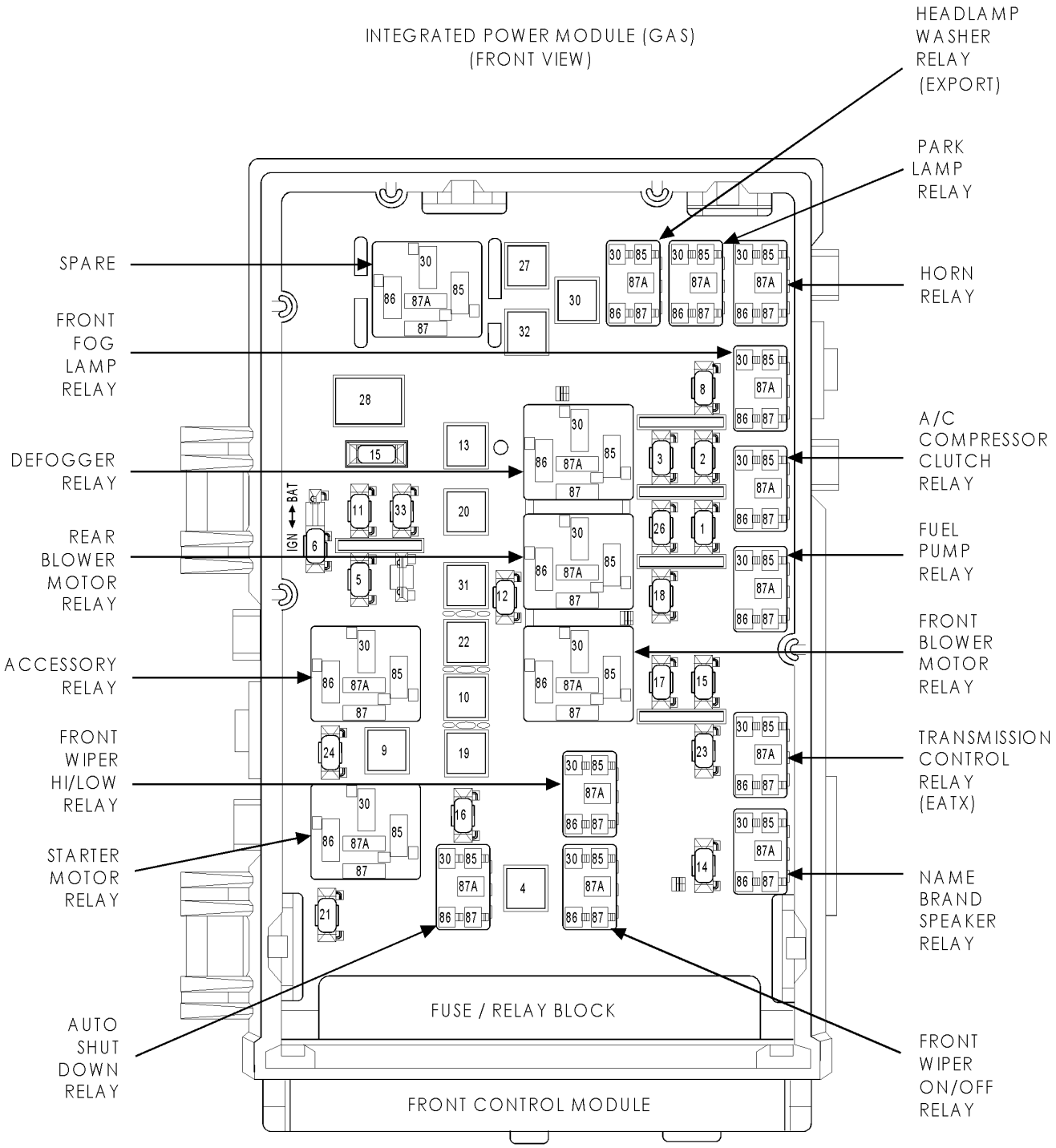
CAV	CIRCUIT	FUNCTION
1	G900 20VT/DB	IGNITION SWITCH SENSE RETURN
2	G20 20VT/BR	IGNITION SWITCH SENSE
3	F20 20PK/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)
3	F20 20PK/WT (LHD)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
4	T751 20YL	FUSED IGNITION SWITCH OUTPUT (START)
5	A106 20LB/RD	FUSED B(+)



INSTRUMENT CLUSTER

INSTRUMENT CLUSTER

CAV	CIRCUIT	FUNCTION
1	E13 20OR/WT	PANEL LAMPS DRIVER
2	L160 20WT/TN (LOWLINE)	RIGHT TURN INDICATOR DRIVER
3	G7 20VT/GY (LHD EXPORT)	LOW OIL PRESSURE INDICATOR DRIVER
4	G3 20VT/LB (LHD EXPORT)	MALFUNCTION INDICATOR LAMP DRIVER
5	L134 20WT/GY (HIGHLINE)	HIGH BEAM INDICATOR DRIVER
6	A701 18BR/RD	FUSED B(+) (HAZARD)
7	Z108 18BK/LG	GROUND
8	L161 20WT/LG (LOWLINE)	LEFT TURN INDICATOR DRIVER
9	D25 20WT/VT	PCI BUS
10	B25 20DG/WT (RHD)	PARK BRAKE SWITCH SENSE
10	B25 18DG/WT (LHD EXPORT)	PARK BRAKE SWITCH SENSE
10	B25 16DG/WT (LHD EXCEPT EXPORT)	PARK BRAKE SWITCH SENSE
11	G26 20VT/OR	CHIME DRIVER
12	G150 20VT/BR	INSTRUMENT CLUSTER WAKE UP SENSE
13	Z18 18BK/LB	GROUND


INTEGRATED POWER MODULE (GAS)
(FRONT VIEW)
HEADLAMP WASHER RELAY (EXPORT)
PARK LAMP RELAY
SPARE
HORN RELAY
FRONT FOG LAMP RELAY
A/C COMPRESSOR CLUTCH RELAY
DEFOGGER RELAY
FUEL PUMP RELAY
REAR BLOWER MOTOR RELAY
FRONT BLOWER MOTOR RELAY
ACCESSORY RELAY
TRANSMISSION CONTROL RELAY (EATX)
FRONT WIPER HI/LOW RELAY
NAME BRAND SPEAKER RELAY
STARTER MOTOR RELAY
FRONT WIPER ON/OFF RELAY
AUTO SHUT DOWN RELAY
IGN
BAT
FUSE / RELAY BLOCK
FRONT CONTROL MODULE

FUSES (IPM)

FUSE NO.	AMPS	FUSED CIRCUIT	FUNCTION
1	20A	INTERNAL	FUSED B(+)
2	15A	INTERNAL	FUSED PARK LAMP RELAY OUTPUT
3	15A	INTERNAL	FUSED PARK LAMP RELAY OUTPUT
4	30A	INTERNAL	FUSED B(+)
5	20A	F306 16DB/PK	FUSED ACCESSORY RELAY OUTPUT
6	20A	F307 16LB/PK (BATTERY POSITION)	FUSED B(+)
6	20A	F307 16LB/PK (ACCESSORY RELAY POSITION)	FUSED ACCESSORY RELAY OUTPUT
8	20A	INTERNAL	FUSED B(+)
9	40A	INTERNAL	FUSED B(+)
10	40A	C7 12DB	FUSED FRONT BLOWER MOTOR RELAY OUTPUT
11	20A	F302 18GY/PK	FUSED ACCESSORY RELAY OUTPUT
12	25A	C51 12LB/BR	FUSED REAR BLOWER MOTOR RELAY OUTPUT
13	40A	C15 12DB/WT	FUSED REAR WINDOW DEFOGGER RELAY OUTPUT
14	20A	INTERNAL	FUSED B(+) (I.O.D.)
15	20A	INTERNAL (EATX)	FUSED B(+)
15	20A	INTERNAL (DIESEL)	FUSED B(+)
16	25A	INTERNAL	FUSED B(+)
17	20A	INTERNAL	FUSED B(+)
18	15A	INTERNAL	FUSED B(+)
19	40A	A101 12VT/RD	FUSED B(+)
20	40A	A102 12WT/RD	FUSED B(+)
21	25A	A111 12DG/RD	FUSED B(+)
22	40A	A110 12OR/RD	FUSED B(+)
23	10A	A106 20LB/RD	FUSED B(+)
24	20A	A701 16BR/RD	FUSED B(+) (HAZARD)
26	20A	A103 18GY/RD	FUSED B(+)
27	40A	A112 12OR/RD	FUSED B(+)
28	40A	F30 12PK/YL	FUSED ACCESSORY RELAY OUTPUT
30	40A	INTERNAL (EXPORT)	FUSED B(+)
31	40A	A113 12WT/RD	FUSED B(+)
32	40A	A115 12YL/RD	FUSED B(+)
33	15A	INTERNAL	FUSED ACCESSORY RELAY OUTPUT

ACCESSORY RELAY

CAV	CIRCUIT	FUNCTION
30	INTERNAL	B(+)
85	FCM 35	ACCESSORY RELAY CONTROL (RUN-ACC)
86	INTERNAL	B(+)
87	INTERNAL	FUSED ACCESSORY RELAY OUTPUT
87A	-	-

DEFOGGER RELAY

CAV	CIRCUIT	FUNCTION
30	INTERNAL	B(+)
85	FCM 31	REAR WINDOW DEFOGGER RELAY CONTROL
86	INTERNAL	B(+)
87	INTERNAL	FUSED REAR WINDOW DEFOGGER RELAY OUTPUT
87A	-	-

FRONT BLOWER MOTOR RELAY

CAV	CIRCUIT	FUNCTION
30	INTERNAL	B(+)
85	FCM 30	FRONT BLOWER MOTOR RELAY CONTROL
86	INTERNAL	B(+)
87	C7 12DB	FUSED FRONT BLOWER MOTOR RELAY OUTPUT
87A	-	-

FRONT FOG LAMP RELAY

CAV	CIRCUIT	FUNCTION
30	INTERNAL	FUSED B(+)
85	FCM 33	FRONT FOG LAMP RELAY CONTROL
86	INTERNAL	FUSED B(+)
87	INTERNAL	FRONT FOG LAMP RELAY OUTPUT
87A	-	-

FRONT WIPER HIGH/LOW RELAY

CAV	CIRCUIT	FUNCTION
30	INTERNAL	FRONT WIPER ON/OFF RELAY OUTPUT
85	FCM 34	FRONT WIPER HIGH/LOW RELAY CONTROL
86	INTERNAL	FRONT WIPER ON/OFF RELAY OUTPUT
87	W4 12BR/OR	FRONT WIPER HIGH/LOW RELAY HIGH SPEED OUTPUT
87A	W3 12BR/WT	FRONT WIPER HIGH/LOW RELAY LOW SPEED OUTPUT

FRONT WIPER ON/OFF RELAY

CAV	CIRCUIT	FUNCTION
30	INTERNAL	FRONT WIPER ON/OFF RELAY OUTPUT
85	INTERNAL	FUSED B(+)
86	FCM 14	FRONT WIPER ON/OFF RELAY CONTROL
87	INTERNAL	FUSED B(+)
87A	INTERNAL	GROUND

HEADLAMP WASHER RELAY (EXPORT)

CAV	CIRCUIT	FUNCTION
30	INTERNAL	FUSED B(+)
85	FCM 32	HEADLAMP WASHER RELAY CONTROL
86	INTERNAL	FUSED B(+)
87	V53 12BR/OR	HEADLAMP WASHER RELAY OUTPUT
87A	-	-

NAME BRAND SPEAKER RELAY

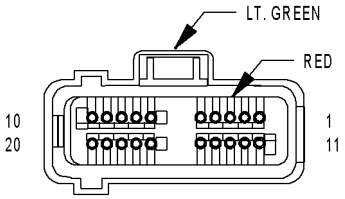
CAV	CIRCUIT	FUNCTION
30	INTERNAL	FUSED B(+) (I.O.D.)
85	FCM 11	NAME BRAND SPEAKER (NBS) RELAY CONTROL
86	INTERNAL	FUSED B(+) (I.O.D.)
87	X1 16DG/BR	NAME BRAND SPEAKER (NBS) RELAY OUTPUT
87A	-	-

PARK LAMP RELAY

CAV	CIRCUIT	FUNCTION
30	INTERNAL	B(+)
85	FCM 13	PARK LAMP RELAY CONTROL
86	INTERNAL	B(+)
87	INTERNAL	PARK LAMP RELAY OUTPUT
87A	-	-

REAR BLOWER MOTOR RELAY (3 ZONE)

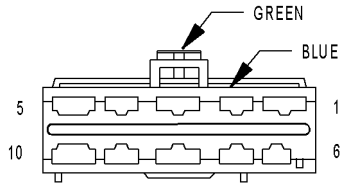
CAV	CIRCUIT	FUNCTION
30	INTERNAL	B(+)
85	FCM 30	REAR BLOWER MOTOR RELAY CONTROL
86	INTERNAL	B(+)
87	C51 12LB/BR	FUSED REAR BLOWER MOTOR RELAY OUTPUT
87A	-	-



INTEGRATED POWER MODULE C1

INTEGRATED POWER MODULE C1

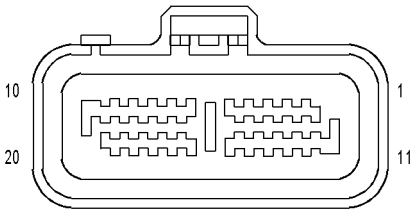
CAV	CIRCUIT	FUNCTION
1	F301 18VT/PK	FUSED ACCESSORY RELAY OUTPUT
2	-	-
3	-	-
4	L43 18WT/DB	LEFT LOW BEAM DRIVER
5	Z344 16BK/TN	GROUND
6	L34 16WT/GY	RIGHT HIGH BEAM DRIVER
7	W1 18BR/TN	WASHER FLUID LEVEL SWITCH SENSE
8	L33 18WT/LG	LEFT HIGH BEAM DRIVER
9	G31 18VT/LG (EXCEPT 2.4L/BASE)	AMBIENT TEMPERATURE SENSOR SIGNAL
9	G31 18VT/LG (2.4L)	AAT SIGNAL
10	L44 16WT/TN	RIGHT LOW BEAM DRIVER
11	F300 18OR/PK	FUSED ACCESSORY RELAY OUTPUT
12	-	-
13	Z343 18BK/LG	GROUND
14	-	-
15	L78 18WT/OR	FUSED PARK LAMP RELAY OUTPUT (RIGHT)
16	L77 18WT/BR	FUSED PARK LAMP RELAY OUTPUT (LEFT)
17	-	-
18	G931 18VT/BR (EXCEPT 2.4L/BASE)	AMBIENT TEMPERATURE SENSOR RETURN
19	W20 18BR/YL	REAR WASHER PUMP MOTOR CONTROL
20	W10 18BR	FRONT WASHER PUMP MOTOR CONTROL



INTEGRATED POWER MODULE C2

INTEGRATED POWER MODULE C2

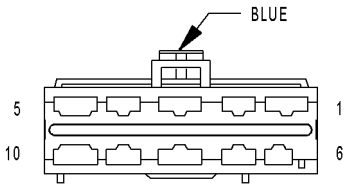
CAV	CIRCUIT	FUNCTION
1	N173 16DB/VT (GAS)	RADIATOR FAN RELAY CONTROL
2	V53 12BR/OR (EXPORT)	HEADLAMP WASHER RELAY OUTPUT
3	L60 16WT/TN (EXPORT)	RIGHT FRONT TURN SIGNAL DRIVER
3	L60 16WT/TN (EXCEPT EXPORT)	RIGHT FRONT TURN SIGNAL DRIVER
4	L13 18WT/YL (EXPORT)	HEADLAMP ADJUST SIGNAL
5	X2 18DG/OR	HORN RELAY OUTPUT
6	L90 18WT/OR (FOG LAMPS)	FRONT FOG LAMP RELAY OUTPUT
7	L61 16WT/LG	LEFT FRONT TURN SIGNAL DRIVER
8	-	-
9	A112 12OR/RD	FUSED B(+)
10	L89 18WT/YL (FOG LAMPS)	FRONT FOG LAMP RELAY OUTPUT



INTEGRATED POWER MODULE C3

INTEGRATED POWER MODULE C3

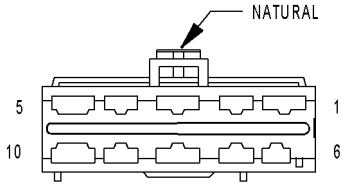
CAV	CIRCUIT	FUNCTION
1	Z115 18BK/OR (2.4L EATX)	GROUND
1	Z115 20BK/OR (3.3L/3.8L EATX)	GROUND
1	N21 20DB/TN (DIESEL)	LIFT PUMP RELAY CONTROL
2	F1 18PK/WT (GAS EATX)	FCM OUTPUT (UNLOCK-RUN-START)
3	T751 18YL (GAS)	FUSED IGNITION SWITCH OUTPUT (START)
3	T751 20YL (DIESEL)	FUSED IGNITION SWITCH OUTPUT (START)
4	T2 18DG/WT (2.4L/DIESEL MTX)	TRS REVERSE SENSE
5	T16 18YL/OR (GAS EATX)	TRANSMISSION CONTROL RELAY OUTPUT
5	N2 18DB/YL (DIESEL)	LIFT PUMP RELAY OUTPUT
6	F202 18PK/GY (DIESEL)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
6	T15 18YL/BR (GAS EATX)	TRANSMISSION CONTROL RELAY CONTROL
7	C3 20DB/YL (GAS)	A/C COMPRESSOR CLUTCH RELAY OUTPUT
7	C3 18DB/YL (DIESEL)	A/C COMPRESSOR CLUTCH RELAY OUTPUT
8	Z114 18BK/LG (DIESEL)	GROUND
8	K31 18BR (GAS)	FUEL PUMP RELAY CONTROL
9	C13 18LB/OR (GAS)	A/C COMPRESSOR CLUTCH RELAY CONTROL
9	C13 20LB/OR (DIESEL)	A/C COMPRESSOR CLUTCH RELAY CONTROL
10	A119 16RD/OR (DIESEL)	FUSED B(+)
10	A104 18YL/RD (3.3L/3.8L EATX)	FUSED B(+)
11	C41 20LB/DG (DIESEL)	CABIN HEATER ASSIST CONTROL
12	-	-
13	D25 18WT/VT (GAS)	PCI BUS
13	D25 20WT/VT (DIESEL)	PCI BUS
14	T752 18DG/OR (2.4L)	STARTER RELAY CONTROL
14	T752 18DG/OR (3.3L/3.8L)	STARTER MOTOR RELAY CONTROL
14	T752 20DG/OR (DIESEL)	STARTER MOTOR RELAY CONTROL
15	Z116 18BK/VT	GROUND
16	K51 18BR/WT (GAS)	AUTOMATIC SHUT DOWN RELAY CONTROL
16	K51 20BR/WT (DIESEL)	ECM/PCM RELAY CONTROL
17	F202 18PK/GY (DIESEL)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
17	F202 20PK/GY (GAS)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
18	K173 18BR/VT (3.3L/3.8L)	RADIATOR FAN RELAY CONTROL
18	K173 18BR/WT (2.4L)	RAD FAN RELAY CONTROL
19	F202 20PK/GY (GAS)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
19	K342 16BR/WT (DIESEL)	ECM/PCM RELAY OUTPUT
20	A109 18OR/RD (GAS)	FUSED B(+)



INTEGRATED POWER MODULE C4

INTEGRATED POWER MODULE C4

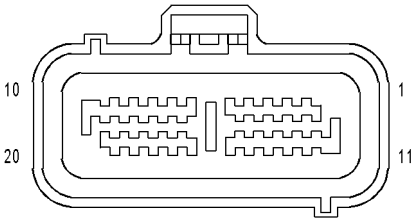
CAV	CIRCUIT	FUNCTION
1	Z127 12BK (2.4L EXCEPT EXPORT/3.3L/3.8L/ABS)	GROUND
2	T750 12YL/GY	STARTER MOTOR RELAY OUTPUT
3	K342 16BR/WT (GAS)	AUTOMATIC SHUT DOWN RELAY OUTPUT
3	K342 16BR/WT (DIESEL)	ECM/PCM RELAY OUTPUT
4	F500 16DG/PK (EATX)	FUSED IGNITION SWITCH OUTPUT (RUN)
5	-	-
6	D25 18WT/VT (ANTILOCK BRAKES)	PCI BUS
6	D25 18WT/VT (3.3L/3.8L)	PCI BUS
7	A107 12TN/RD (ANTILOCK BRAKES)	FUSED B(+)
8	A111 12DG/RD (ANTILOCK BRAKES)	FUSED B(+)
9	A710 14RD/BR	B(+) (HAZARD FEED)
10	-	-



INTEGRATED POWER MODULE C6

INTEGRATED POWER MODULE C6

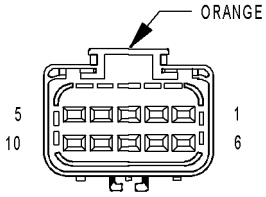
CAV	CIRCUIT	FUNCTION
1	A101 12VT/RD	FUSED B(+)
2	Z117 16BK/WT	GROUND
3	Z118 16BK/YL	GROUND
4	A110 12OR/RD (POWER SEAT)	FUSED B(+)
5	-	-
6	-	-
7	C7 12DB	FUSED FRONT BLOWER MOTOR RELAY OUTPUT
8	F307 16LB/PK (BATTERY POSITION)	FUSED B(+)
8	F307 18LB/PK (ACCESSORY RELAY POSITION)	FUSED ACCESSORY RELAY OUTPUT
9	A113 12WT/RD (POWER SLIDING DOOR)	FUSED B(+)
10	-	-



INTEGRATED POWER MODULE C7

INTEGRATED POWER MODULE C7

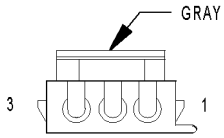
CAV	CIRCUIT	FUNCTION
1	C16 20DB/GY	FUSED REAR WINDOW DEFOGGER RELAY OUTPUT
2	T751 20YL (GAS)	FUSED IGNITION SWITCH OUTPUT (START)
2	T141 20YL/OR (DIESEL)	FUSED IGNITION SWITCH OUTPUT (START)
3	D25 20WT/VT	PCI BUS
4	L13 20WT/YL (EXPORT)	HEADLAMP ADJUST SIGNAL
5	K32 18DB/YL (GAS)	BRAKE TRANSMISSION SHIFT INTERLOCK SOLENOID CONTROL
6	-	-
7	W7 20BR/GY	FRONT WIPER PARK SWITCH SENSE
8	B20 20DG/OR	BRAKE FLUID LEVEL SWITCH SENSE
9	F201 18PK/OR	ORC RUN-START DRIVER
10	F214 18PK/LG (SIACM)	SIACM RUN-START DRIVER
11	A106 20LB/RD	FUSED B(+)
12	-	-
13	F2 18PK/YL (GAS)	FCM OUTPUT (UNLOCK-RUN-START)
14	-	-
15	A114 16GY/RD	FUSED B(+) (I.O.D.)
16	D123 20WT/BR	FLASH PROGRAM ENABLE
17	L50 18WT/TN	BRAKE LAMP SWITCH OUTPUT
18	X13 16DG/GY (PREMIUM 8 SPEAKER)	NAME BRAND SPEAKER RELAY OUTPUT
19	X3 20DG/VT	HORN SWITCH SENSE
20	F100 18PK/VT	ORC RUN ONLY DRIVER



INTEGRATED POWER MODULE C8

INTEGRATED POWER MODULE C8

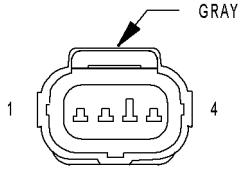
CAV	CIRCUIT	FUNCTION
1	W3 14BR/WT	FRONT WIPER HIGH/LOW RELAY LOW SPEED OUTPUT
2	N1 18DB/OR (GAS)	FUEL PUMP RELAY OUTPUT
2	N1 16DB/OR (DIESEL)	FUEL HEATER RELAY OUTPUT
3	A108 20LG/RD	FUSED B(+)
4	A103 18GY/RD	FUSED B(+)
5	L77 20WT/BR	FUSED PARK LAMP RELAY OUTPUT (LEFT)
6	W4 14BR/OR	FRONT WIPER HIGH/LOW RELAY HIGH SPEED OUTPUT
7	C51 12LB/BR (3 ZONE ATC/MTC)	FUSED REAR BLOWER MOTOR RELAY OUTPUT
8	-	-
9	L78 18WT/OR	FUSED PARK LAMP RELAY OUTPUT (RIGHT)
10	L60 18WT/TN	RIGHT FRONT TURN SIGNAL DRIVER



LEFT
B-PILLAR
SWITCH
(POWER
SLIDING DOOR)

LEFT B-PILLAR SWITCH (POWER SLIDING DOOR)

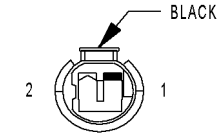
CAV	CIRCUIT	FUNCTION
1	Z61 22BK/DG	GROUND
2	F302 18GY/PK	FUSED ACCESSORY RELAY OUTPUT
3	G41 22VT/DG	LEFT SLIDING DOOR PILLAR SWITCH MUX



LEFT CINCH/
RELEASE MOTOR
(POWER SLIDING DOOR)

LEFT CINCH/RELEASE MOTOR (POWER SLIDING DOOR)

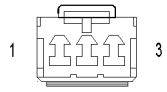
CAV	CIRCUIT	FUNCTION
1	Q49 18TN/WT	LEFT CINCH/RELEASE MOTOR UNLATCH DRIVER
2	Z249 18BK/WT	GROUND
3	Q45 18OR/GY	LEFT CINCH/RELEASE MOTOR CLUTCH DRIVER
4	Q47 18TN/GY	LEFT CINCH/RELEASE MOTOR LATCH DRIVER



LEFT CYLINDER
LOCK SWITCH

LEFT CYLINDER LOCK SWITCH

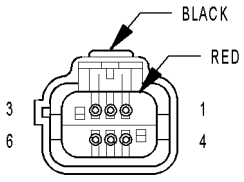
CAV	CIRCUIT	FUNCTION
1	Z463 20BK/LB	GROUND
2	G163 20VT/LB	LEFT CYLINDER LOCK SWITCH MUX



LEFT
DOOR
SPEAKER
(LOWLINE)

LEFT DOOR SPEAKER (LOWLINE)

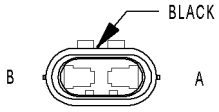
CAV	CIRCUIT	FUNCTION
1	X55 20DG/BR	LEFT FRONT SPEAKER (-)
2	-	-
3	X53 20DG	LEFT FRONT SPEAKER (+)



LEFT DOOR SPEAKER (MIDLINE/ HIGHLINE)

LEFT DOOR SPEAKER (MIDLINE/HIGHLINE)

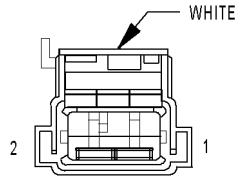
CAV	CIRCUIT	FUNCTION
1	X153 20DG/YL (HIGHLINE)	LEFT INSTRUMENT PANEL SPEAKER (+)
2	X15 16GY/DG (HIGHLINE)	AMPLIFIED SPEAKER GROUND
3	X155 20DG/LB (HIGHLINE)	LEFT INSTRUMENT PANEL SPEAKER (-)
4	X53 20DG	LEFT FRONT SPEAKER (+)
5	X13 16DG/GY (HIGHLINE)	NAME BRAND SPEAKER RELAY OUTPUT
6	X55 20DG/BR	LEFT FRONT SPEAKER (-)



LEFT FOG LAMP (EXCEPT EXPORT)

LEFT FOG LAMP (EXCEPT EXPORT)

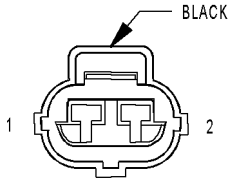
CAV	CIRCUIT	FUNCTION
A	L89 18WT/YL	FRONT FOG LAMP RELAY OUTPUT
B	Z349 18BK/YL	GROUND



LEFT FOG LAMP (EXPORT)

LEFT FOG LAMP (EXPORT)

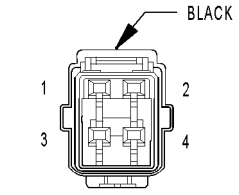
CAV	CIRCUIT	FUNCTION
1	L89 18WT/YL	FRONT FOG LAMP RELAY OUTPUT
2	Z349 18BK/YL	GROUND



LEFT FRONT DOOR AJAR SWITCH (BASE)

LEFT FRONT DOOR AJAR SWITCH (BASE)

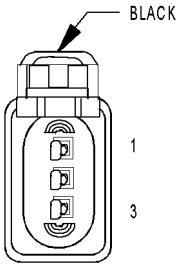
CAV	CIRCUIT	FUNCTION
1	G75 20VT	LEFT FRONT DOOR AJAR SWITCH SENSE
2	Z75 20BK/VT	GROUND



LEFT FRONT DOOR
LOCK MOTOR/
AJAR SWITCH
(EXCEPT BASE)

LEFT FRONT DOOR LOCK MOTOR/AJAR SWITCH (EXCEPT BASE)

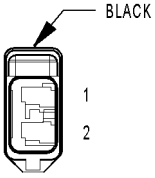
CAV	CIRCUIT	FUNCTION
1	G75 20VT	LEFT FRONT DOOR AJAR SWITCH SENSE
2	Z75 20BK/VT	GROUND
3	P1 20TN/LG	LEFT FRONT DOOR UNLOCK DRIVER
4	P3 20TN/WT	LEFT FRONT DOOR LOCK DRIVER



LEFT FRONT PARK/
TURN SIGNAL LAMP
(EXCEPT EXPORT)

LEFT FRONT PARK/TURN SIGNAL LAMP (EXCEPT EXPORT)

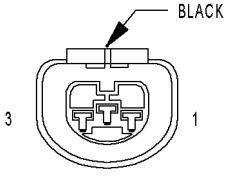
CAV	CIRCUIT	FUNCTION
1	L61 16WT/LG	LEFT FRONT TURN SIGNAL DRIVER
2	L77 18WT/BR	FUSED PARK LAMP RELAY OUTPUT (LEFT)
3	Z377 18BK/BR	GROUND



LEFT FULL
OPEN SWITCH
(POWER SLIDING DOOR)

LEFT FULL OPEN SWITCH (POWER SLIDING DOOR)

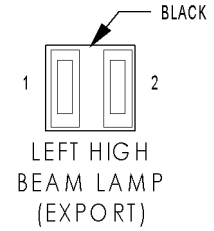
CAV	CIRCUIT	FUNCTION
1	Q53 20OR	LEFT FULL OPEN SWITCH SENSE
2	Z77 20BK/GY	GROUND



LEFT
HEADLAMP
(EXCEPT EXPORT)

LEFT HEADLAMP (EXCEPT EXPORT)

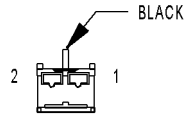
CAV	CIRCUIT	FUNCTION
1	L43 18WT/DB	LEFT LOW BEAM DRIVER
2	Z343 18BK/LG	GROUND
3	L33 18WT/LG	LEFT HIGH BEAM DRIVER



LEFT HIGH BEAM LAMP (EXPORT)

LEFT HIGH BEAM LAMP (EXPORT)

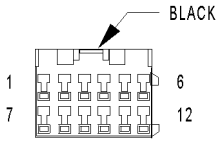
CAV	CIRCUIT	FUNCTION
1	Z343 16BR	GROUND
1	Z343 16BR	GROUND
2	L33 16GY	LEFT HIGH BEAM DRIVER



LEFT INSTRUMENT PANEL SPEAKER

LEFT INSTRUMENT PANEL SPEAKER

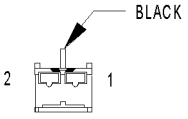
CAV	CIRCUIT	FUNCTION
1	X153 20DG/YL	LEFT INSTRUMENT PANEL SPEAKER (+)
1	X53 20DG (LOWLINE)	LEFT FRONT SPEAKER (+)
2	X55 20DG/BR (LOWLINE)	LEFT FRONT SPEAKER (-)
2	X155 20DG/LB	LEFT INSTRUMENT PANEL SPEAKER (-)



LEFT POWER MIRROR

LEFT POWER MIRROR

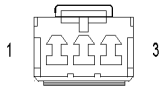
CAV	CIRCUIT	FUNCTION
1	P171 20TN/YL (EXPORT)	LEFT FOLDING MIRROR UNFOLD DRIVER
2	P112 22TN/OR (EXCEPT EXPORT/MEMORY)	MIRROR B(+)
3	P114 22TN/WT (EXCEPT EXPORT/MEMORY)	MIRROR B(-)
4	P65 20TN/VT (MEMORY)	LEFT MIRROR HORIZONTAL POSITION SIGNAL
5	P69 20TN/WT (MEMORY)	LEFT MIRROR SENSOR GROUND
6	P64 20TN (MEMORY EXPORT)	LEFT MIRROR VERTICAL POSITION SIGNAL
7	P160 20TN/LG (RHD)	PASSENGER FOLDING MIRROR RELAY OUTPUT
7	P159 20TN/DG (LHD EXPORT)	DRIVER FOLDING MIRROR FOLD DRIVER
8	Z215 22BK/LG	GROUND
9	C16 20DB/GY (HEATED MIRRORS)	FUSED REAR WINDOW DEFOGGER RELAY OUTPUT
10	P73 20TNYL	LEFT MIRROR COMMON DRIVER (RIGHT/DOWN)
11	P71 20TN/DG	LEFT MIRROR UP DRIVER
12	P75 20TN/LG	LEFT MIRROR LEFT DRIVER



LEFT REAR PILLAR SPEAKER

LEFT REAR PILLAR SPEAKER

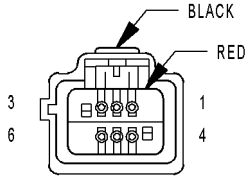
CAV	CIRCUIT	FUNCTION
1	X157 20DG	LEFT REAR PILLAR SPEAKER (-)
2	X151 20DG/WT	LEFT REAR PILLAR SPEAKER (+)



LEFT
REAR
SPEAKER
(LOWLINE)

LEFT REAR SPEAKER (LOWLINE)

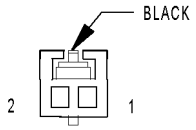
CAV	CIRCUIT	FUNCTION
1	X57 22DG/OR	LEFT REAR SPEAKER (-)
2	-	-
3	X51 20DG/DB	LEFT REAR SPEAKER (+)



LEFT REAR
SPEAKER
(MIDLINE/
HIGHLINE)

LEFT REAR SPEAKER (MIDLINE/HIGHLINE)

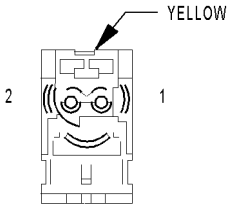
CAV	CIRCUIT	FUNCTION
1	X151 20DG/WT (HIGHLINE)	LEFT REAR PILLAR SPEAKER (+)
2	X15 16GY/DG (HIGHLINE)	AMPLIFIED SPEAKER GROUND
3	X157 20DG (HIGHLINE)	LEFT REAR PILLAR SPEAKER (-)
4	X51 20DG/DB	LEFT REAR SPEAKER (+)
5	X13 16DG/GY (HIGHLINE)	NAME BRAND SPEAKER RELAY OUTPUT
6	X57 22DG/OR	LEFT REAR SPEAKER (-)



LEFT REMOTE
RADIO SWITCH

LEFT REMOTE RADIO SWITCH

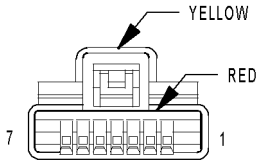
CAV	CIRCUIT	FUNCTION
1	X20 20RD/BK	RADIO CONTROL MUX
2	X920 20RD/DB	RADIO CONTROL MUX RETURN



LEFT
SEAT AIRBAG

LEFT SEAT AIRBAG

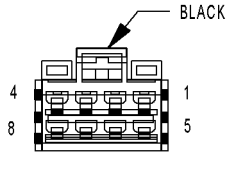
CAV	CIRCUIT	FUNCTION
1	R33 18WT/BK (EXPORT)	LEFT SEAT SQUIB LINE 2
1	R31 18LG/OR (EXCEPT EXPORT)	LEFT SEAT SQUIB LINE 1
2	R33 18LG/WT (EXCEPT EXPORT)	LEFT SEAT SQUIB LINE 2
2	R31 18DG/WT (EXPORT)	LEFT SEAT SQUIB LINE 1



LEFT SIDE
IMPACT AIRBAG
CONTROL MODULE

LEFT SIDE IMPACT AIRBAG CONTROL MODULE

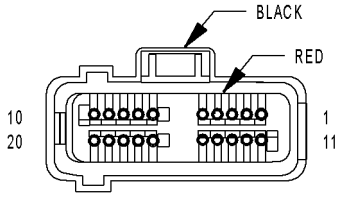
CAV	CIRCUIT	FUNCTION
1	R31 18LG/OR	LEFT SEAT SQUIB LINE 1
2	R33 18LG/WT	LEFT SEAT SQUIB LINE 2
3	-	-
4	D25 20WT/VT	PCI BUS
5	F214 18PK/LG	SIACM RUN-START DRIVER
6	Z104 18BK/LG	GROUND
7	Z104 18BK/LG	GROUND



LEFT SLIDING
DOOR CONTROL
MODULE C1
(POWER SLIDING DOOR)

LEFT SLIDING DOOR CONTROL MODULE C1 (POWER SLIDING DOOR)

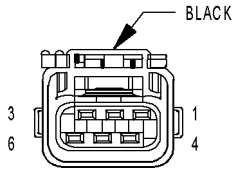
CAV	CIRCUIT	FUNCTION
1	Q45 18OR/GY	LEFT CINCH/RELEASE MOTOR CLUTCH DRIVER
2	Q67 16TN/BR	LEFT SLIDING DOOR OPEN DRIVER
3	Q69 16TN/OR	LEFT SLIDING DOOR CLOSE DRIVER
4	-	-
5	A113 14WT/RD	FUSED B(+)
6	-	-
7	-	-
8	Z123 14BK/WT	GROUND



LEFT SLIDING
DOOR CONTROL
MODULE C2
(POWER SLIDING DOOR)

LEFT SLIDING DOOR CONTROL MODULE C2 (POWER SLIDING DOOR)

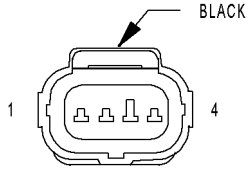
CAV	CIRCUIT	FUNCTION
1	Q71 20TN/VT	LEFT DOOR MOTOR HALL EFFECT SUPPLY
2	-	-
3	Q35 20OR/GY	LEFT DOOR LOCK SENSE
4	Q55 20OR/BR	LEFT DOOR IN/OUT HANDLE SWITCH SENSE
5	-	-
6	-	-
7	Q63 18OR/TN	LEFT DOOR MOTOR CLUTCH DRIVER
8	Q47 18TN/GY	LEFT CINCH/RELEASE MOTOR LATCH DRIVER
9	Q49 18TN/WT	LEFT CINCH/RELEASE MOTOR UNLATCH DRIVER
10	-	-
11	D25 20WT/VT	PCI BUS
12	G77 20TN/OR	LEFT SLIDING DOOR AJAR SWITCH SENSE
13	Q59 20OR/YL	LEFT PAWL SWITCH SENSE
14	Q53 20OR	LEFT FULL OPEN SWITCH SENSE
15	Z25 20BK/TN	GROUND-DRIVER SIDE IDENTIFIER (LHD/RHD)
16	-	-
17	Q73 20TN/YL	LEFT DOOR MOTOR HALL EFFECT SIGNAL
18	-	-
19	G151 20VT/BR	LEFT SLIDING DOOR WAKE UP SIGNAL
20	Z25 20BK/TN	GROUND



LEFT SLIDING DOOR LATCH SENSING SWITCH (POWER SLIDING DOOR)

LEFT SLIDING DOOR LATCH SENSING SWITCH (POWER SLIDING DOOR)

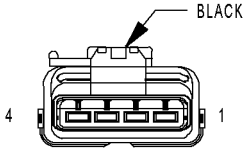
CAV	CIRCUIT	FUNCTION
1	Z77 20BK/GY	GROUND
2	Q59 20OR/YL	LEFT PAWL SWITCH SENSE
3	G77 20TN/OR	LEFT SLIDING DOOR AJAR SWITCH SENSE
4	Z77 20BK/GY	GROUND
5	Q55 20OR/BR	LEFT DOOR IN/OUT HANDLE SWITCH SENSE
6	-	-



LEFT SLIDING DOOR LOCK MOTOR (POWER SLIDING DOOR)

LEFT SLIDING DOOR LOCK MOTOR (POWER SLIDING DOOR)

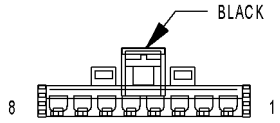
CAV	CIRCUIT	FUNCTION
1	P5 20TN/OR	LEFT SLIDING DOOR LOCK UNLOCK DRIVER
2	P32 20TN/VT	LEFT SLIDING DOOR LOCK DRIVER
3	Q35 20OR/GY	LEFT DOOR LOCK SENSE
4	Z77 20BK/GY	GROUND



LEFT SLIDING DOOR LOCK MOTOR/ AJAR SWITCH (MANUAL SLIDING DOOR)

LEFT SLIDING DOOR LOCK MOTOR/AJAR SWITCH (MANUAL SLIDING DOOR)

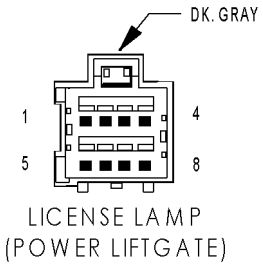
CAV	CIRCUIT	FUNCTION
1	P5 20BK/DB	LEFT SLIDING DOOR UNLOCK DRIVER
2	P32 20BK/TN	LEFT SLIDING DOOR LOCK DRIVER
3	G77 20BK/DG	LEFT SLIDING DOOR AJAR SWITCH SENSE
4	Z77 20BK	GROUND



LEFT SLIDING DOOR MOTOR (POWER SLIDING DOOR)

LEFT SLIDING DOOR MOTOR (POWER SLIDING DOOR)

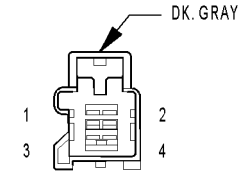
CAV	CIRCUIT	FUNCTION
1	-	-
2	Q71 20TN/VT	LEFT DOOR MOTOR HALL EFFECT SUPPLY
3	Q69 16TN/OR	LEFT SLIDING DOOR CLOSE DRIVER
4	Z163 18BK/TN	GROUND
5	Q63 18OR/TN	LEFT DOOR MOTOR CLUTCH DRIVER
6	Q67 16TN/BR	LEFT SLIDING DOOR OPEN DRIVER
7	Z33 20BK/TN	GROUND
8	Q73 20TN/YL	LEFT DOOR MOTOR HALL EFFECT SIGNAL



LICENSE LAMP
(POWER LIFTGATE)

LICENSE LAMP (POWER LIFTGATE)

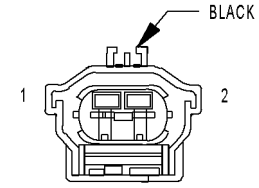
CAV	CIRCUIT	FUNCTION
1	L77 18WT/BR	FUSED PARK LAMP RELAY OUTPUT (LEFT)
2	Z367 20BK/BR	GROUND
3	P30 20TN/DG	LIFTGATE HANDLE SWITCH SENSE
4	Z430 20BK/LG	GROUND
5	Q94 20TN/LG	LIFTGATE CHIME DRIVER
6	Z294 20BK/LG	GROUND
7	G32 20VT/LB	LIFTGATE TEMPERATURE SENSOR SIGNAL
8	Z78 20BK/OR	GROUND



LICENSE
LAMP
(POWER
RELEASE)

LICENSE LAMP (POWER RELEASE)

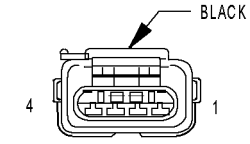
CAV	CIRCUIT	FUNCTION
1	L77 18WT/BR	FUSED PARK LAMP RELAY OUTPUT (LEFT)
2	Z367 20BK/BR	GROUND
3	P30 20TN/DG	LIFTGATE HANDLE SWITCH SENSE
4	Z430 20BK/LG	GROUND



LIFTGATE
AJAR SWITCH
(MANUAL RELEASE)

LIFTGATE AJAR SWITCH (MANUAL RELEASE)

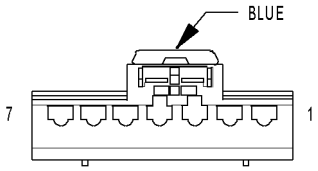
CAV	CIRCUIT	FUNCTION
1	Z78 20BK/OR	GROUND
2	G78 20VT/OR	LIFTGATE AJAR SWITCH SENSE



LIFTGATE
AJAR SWITCH
(POWER RELEASE)

LIFTGATE AJAR SWITCH (POWER RELEASE)

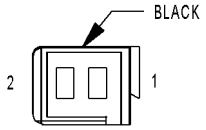
CAV	CIRCUIT	FUNCTION
1	Z78 20BK/OR	GROUND
2	G78 20VT/OR	LIFTGATE AJAR SWITCH SENSE
3	P31 20TN/YL	LIFTGATE RELEASE DRIVER
4	Z231 20BK/YL	GROUND



LIFTGATE CINCH/ RELEASE MOTOR (POWER LIFTGATE)

LIFTGATE CINCH/RELEASE MOTOR (POWER LIFTGATE)

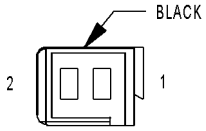
CAV	CIRCUIT	FUNCTION
1	Z78 20BK/OR	GROUND
2	G78 20VT/OR	LIFTGATE AJAR SWITCH SENSE
3	Q60 20OR/YL	LIFTGATE PAWL SWITCH SENSE
4	Z245 18BK/GY	GROUND
5	Q85 18TN/WT	LIFTGATE LATCH RELEASE DRIVER
6	Q84 18TN/GY	LIFTGATE LATCH CINCH DRIVER
7	Q83 18OR/GY	LIFTGATE LATCH CLUTCH DRIVER



LIFTGATE CYLINDER LOCK SWITCH (EXPORT)

LIFTGATE CYLINDER LOCK SWITCH (EXPORT)

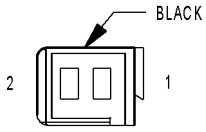
CAV	CIRCUIT	FUNCTION
1	Z465 20BK/GY	GROUND
2	G165 20VT/GY	LIFTGATE CYLINDER LOCK SWITCH MUX



LIFTGATE LEFT PINCH SENSOR (POWER LIFTGATE)

LIFTGATE LEFT PINCH SENSOR (POWER LIFTGATE)

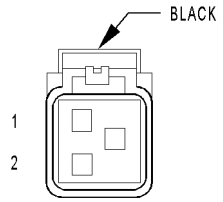
CAV	CIRCUIT	FUNCTION
1	Q77 20OR/DB	RIGHT PINCH SENSOR SIGNAL
2	Q76 20OR/LB	PINCH SENSOR SIGNAL



LIFTGATE RIGHT PINCH SENSOR (POWER LIFTGATE)

LIFTGATE RIGHT PINCH SENSOR (POWER LIFTGATE)

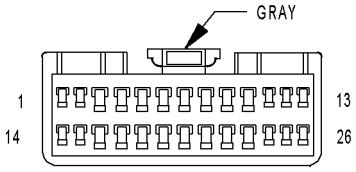
CAV	CIRCUIT	FUNCTION
1	Q77 20OR/DB	RIGHT PINCH SENSOR SIGNAL
2	Z78 20BK/OR	GROUND



LOW
NOTE
HORN

LOW NOTE HORN

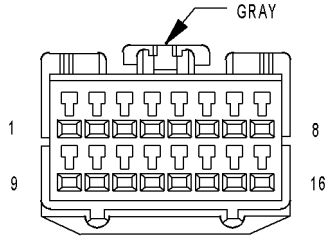
CAV	CIRCUIT	FUNCTION
1	Z298 18BK/DB	GROUND
2	X2 18DG/OR	HORN RELAY OUTPUT



MEMORY
SEAT/MIRROR
MODULE C1

MEMORY SEAT/MIRROR MODULE C1

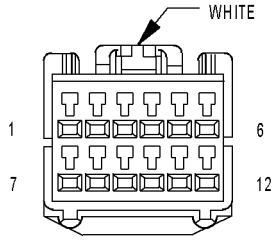
CAV	CIRCUIT	FUNCTION
1	P69 20TN/WT	LEFT MIRROR SENSOR GROUND
2	P25 20LG/VT	SEAT HORIZONTAL POSITION SIGNAL
3	P27 20LG/LB	REAR RISER POSITION SIGNAL
4	-	-
5	-	-
6	P67 20OR	RIGHT MIRROR VERTICAL POSITION SIGNAL
7	P64 20TN/OR	LEFT MIRROR VERTICAL POSITION SIGNAL
8	P21 20LG/TN	SEAT FRONT DOWN SWITCH SENSE
9	P13 20LG/OR	SEAT REAR DOWN SWITCH SENSE
10	P15 20LG/WT	SEAT HORIZONTAL FORWARD SWITCH SENSE
11	P43 14LG/VT	RECLINER UP SWITCH SENSE
12	-	-
13	-	-
14	P66 20WT	RIGHT MIRROR SENSOR GROUND
15	P26 20LG	FRONT RISER POSITION SIGNAL
16	P47 20LG/LB	RECLINER POSITION SIGNAL
17	-	-
18	-	-
19	P68 20YL	RIGHT MIRROR HORIZONTAL POSITION SIGNAL
20	P65 20TN/YL	LEFT MIRROR HORIZONTAL POSITION SIGNAL
21	P19 20LG/LB	SEAT FRONT UP SWITCH SENSE
22	P11 20LG/YL	SEAT REAR UP SWITCH SENSE
23	P17 20LG/DG	SEAT HORIZONTAL REARWARD SWITCH SENSE
24	P41 14LG/GY	RECLINER DOWN SWITCH SENSE
25	-	-
26	D25 20WT/VT	PCI BUS



MEMORY SEAT/MIRROR
MODULE C2

MEMORY SEAT/MIRROR MODULE C2

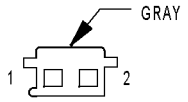
CAV	CIRCUIT	FUNCTION
1	-	-
2	-	-
3	P73 18TN/LB	LEFT MIRROR COMMON DRIVER (RIGHT/DOWN)
4	P75 18DB	LEFT MIRROR LEFT DRIVER
5	P71 18TN/GY	LEFT MIRROR UP DRIVER
6	P29 20LG/WT	SEAT SENSOR 5 VOLT SUPPLY
7	-	-
8	-	-
9	-	-
10	-	-
11	P70 18LB	RIGHT MIRROR COMMON DRIVER (RIGHT/DOWN)
12	P74 18TN/DB	RIGHT MIRROR LEFT DRIVER
13	P72 18GY	RIGHT MIRROR UP DRIVER
14	-	-
15	-	-
16	P28 20LG/BR	SEAT POSITION SENSOR GROUND



MEMORY SEAT/MIRROR MODULE C3

MEMORY SEAT/MIRROR MODULE C3

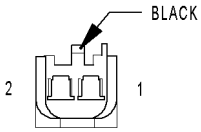
CAV	CIRCUIT	FUNCTION
1	P111 14LG/YL	SEAT REAR UP DRIVER
2	P115 14LG	SEAT HORIZONTAL FORWARD DRIVER
3	P119 14LG/DG	SEAT FRONT UP DRIVER
4	P113 14LG/WT	SEAT REAR DOWN DRIVER
5	P121 14LG/DB	SEAT FRONT DOWN DRIVER
6	-	-
7	P143 14LG/GY (EXPORT)	SEAT RECLINER UP DRIVER
7	P43 14LG/VT (EXCEPT EXPORT)	SEAT RECLINER UP DRIVER
8	P9 20LG/OR	SEAT SWITCH B(+) SUPPLY
9	-	-
10	P141 14LG/BR (EXPORT)	SEAT RECLINER DOWN DRIVER
10	P41 14LG/GY (EXCEPT EXPORT)	SEAT RECLINER DOWN DRIVER
11	P117 14LG/LB	SEAT HORIZONTAL REARWARD DRIVER
12	-	-



MEMORY SEAT/MIRROR MODULE C4

MEMORY SEAT/MIRROR MODULE C4

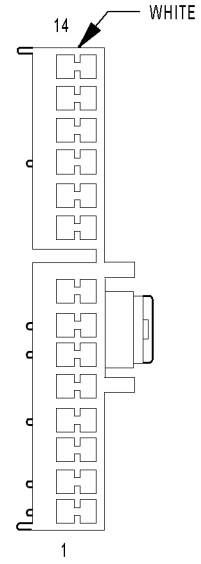
CAV	CIRCUIT	FUNCTION
1	Z849 14BK/OR	GROUND
2	A210 14OR/RD	FUSED B(+)



MEMORY SET SWITCH

MEMORY SET SWITCH

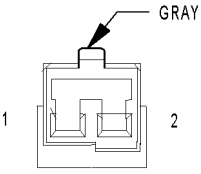
CAV	CIRCUIT	FUNCTION
1	G200 20VT/BR	MEMORY SELECT SWITCH MUX
2	G920 20VT/YL	MEMORY SELECT SWITCH RETURN



MESSAGE CENTER (HIGHLINE)

MESSAGE CENTER (HIGHLINE)

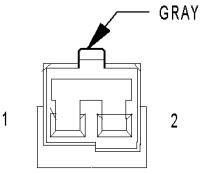
CAV	CIRCUIT	FUNCTION
1	L160 20WT/TN (LHD)	RIGHT TURN INDICATOR DRIVER
2	G3 20VT/LB (LHD EX-PORT)	MALFUNCTION INDICATOR LAMP DRIVER
3	L134 20WT/GY (RHD)	HIGH BEAM INDICATOR DRIVER
4	L160 20WT/TN (RHD)	RIGHT TURN INDICATOR DRIVER
5	-	-
6	G7 20VT/GY (LHD EX-PORT)	LOW OIL PRESSURE INDICATOR DRIVER
7	A701 18BR/RD (LHD)	FUSED B(+) (HAZARD)
8	A701 18BR/RD (RHD)	FUSED B(+) (HAZARD)
9	G7 20VT/GY (RHD)	LOW OIL PRESSURE INDICATOR DRIVER
10	-	-
11	L161 20WT/LG (LHD)	LEFT TURN INDICATOR DRIVER
12	L134 20WT/GY (LHD)	HIGH BEAM INDICATOR DRIVER
13	G3 20VT/LB (RHD)	MALFUNCTION INDICATOR LAMP DRIVER
14	L161 20WT/LG (RHD)	LEFT TURN INDICATOR DRIVER



MODE DOOR ACTUATOR (ATC)

MODE DOOR ACTUATOR (ATC)

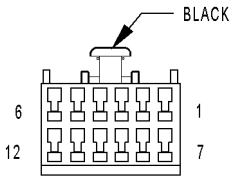
CAV	CIRCUIT	FUNCTION
1	C135 20DB/GY	MODE DOOR DRIVER (B)
2	C35 20LB/OR	MODE DOOR DRIVER (A)



MODE DOOR ACTUATOR (MTC)

MODE DOOR ACTUATOR (MTC)

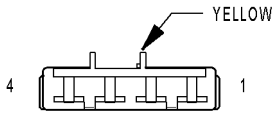
CAV	CIRCUIT	FUNCTION
1	C34 20DB/LB	COMMON DOOR DRIVER (B)
2	C35 20LB/OR	MODE DOOR DRIVER (A)



OVERHEAD CONSOLE (EXCEPT BASE)

OVERHEAD CONSOLE (EXCEPT BASE)

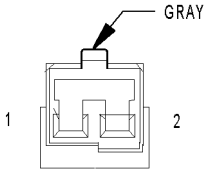
CAV	CIRCUIT	FUNCTION
1	G23 20VT/DB (EXCEPT SUNROOF)	SLIDING DOORS OVERHEAD SWITCH MUX
1	G23 22VT/DB (SUNROOF)	SLIDING DOORS OVERHEAD SWITCH MUX
2	G25 20VT/TN (EXCEPT SUNROOF)	LIFTGATE SWITCH MUX
2	G25 22VT/TN (SUNROOF)	LIFTGATE SWITCH MUX
3	D25 20WT/VT	PCI BUS
4	Z113 20BK/DB	GROUND
5	A114 20GY/RD	FUSED B(+) (I.O.D.)
6	F503 20WT/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
7	Z13 20BK/WT	GROUND
8	E15 20OR/DB	ASH/RECEIVER LAMP FEED
9	-	-
10	-	-
11	L24 20BK/GY (EXCEPT EXPORT/PREMIUM/ LUXURY)	AUTOMATIC HEADLAMP SWITCH SENSOR
12	L1 20BK/WT (PREMIUM/ LUXURY)	BACK-UP LAMP FEED



PASSENGER AIRBAG

PASSENGER AIRBAG

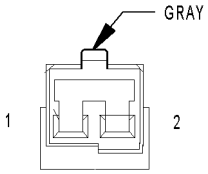
CAV	CIRCUIT	FUNCTION
1	R42 18LB/BR	PASSENGER SQUIB 1 LINE 2
2	R44 18LB/OR	PASSENGER SQUIB 1 LINE 1
3	R62 18LB/VT (EXCEPT LHD EXPORT)	PASSENGER SQUIB 2 LINE 2
3	R62 18LG/DB (LHD EX-PORT)	PASSENGER SQUIB 2 LINE 2
4	R64 18LB/WT	PASSENGER SQUIB 2 LINE 1



PASSENGER BLEND DOOR ACTUATOR (ATC)

PASSENGER BLEND DOOR ACTUATOR (ATC)

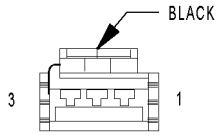
CAV	CIRCUIT	FUNCTION
1	C133 20DB/WT	PASSENGER BLEND DOOR DRIVER (B)
2	C33 20LB/BR	PASSENGER BLEND DOOR DRIVER (A)



PASSENGER BLEND DOOR ACTUATOR (MTC)

PASSENGER BLEND DOOR ACTUATOR (MTC)

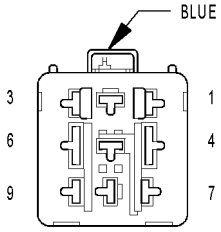
CAV	CIRCUIT	FUNCTION
1	C34 20DB/LB (LHD)	COMMON DOOR DRIVER (B)
1	C33 20LB/BR (RHD)	PASSENGER BLEND DOOR DRIVER (A)
2	C33 20LB/BR (LHD)	PASSENGER BLEND DOOR DRIVER (A)
2	C34 20DB/LB (RHD)	COMMON DOOR DRIVER (B)



PASSENGER DOOR LOCK SWITCH

PASSENGER DOOR LOCK SWITCH

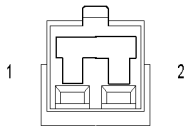
CAV	CIRCUIT	FUNCTION
1	F304 16WT/PK (POWER WINDOWS)	FUSED WINDOW CIRCUIT BREAKER OUTPUT
1	F304 16WT/PK (EXCEPT POWER WINDOWS)	FUSED ACCESSORY RELAY OUTPUT
2	G160 20VT/LG (LHD)	RIGHT DOOR LOCK SWITCH MUX
2	G161 20VT/DG (RHD)	LEFT DOOR LOCK SWITCH MUX
3	Z460 20BK/LG (LHD)	GROUND
3	Z461 20BK/DG (RHD)	GROUND



PASSENGER FOLDING MIRROR RELAY (EXPORT)

PASSENGER FOLDING MIRROR RELAY (EXPORT)

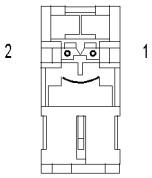
CAV	CIRCUIT	FUNCTION
1	-	-
2	-	-
3	-	-
4	A108 20LG/RD	FUSED B(+)
5	P164 18LG/DB	PASSENGER FOLDING MIRROR RELAY INPUT
6	P162 18LG/DG	PASSENGER FOLDING MIRROR RELAY CONTROL
7	-	-
8	P160 18TN/LG	PASSENGER FOLDING MIRROR RELAY OUTPUT
9	-	-



PASSENGER SEAT BELT SWITCH

PASSENGER SEAT BELT SWITCH

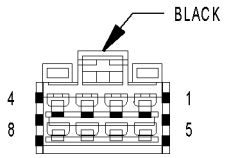
CAV	CIRCUIT	FUNCTION
1	R60 18LB/TN	PASSENGER SEAT BELT SWITCH LINE 1
2	R58 18LB/GY	PASSENGER SEAT BELT SWITCH LINE 2



PASSENGER SEAT BELT TENSIONER

PASSENGER SEAT BELT TENSIONER

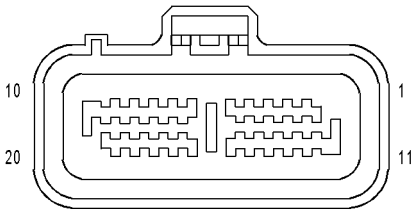
CAV	CIRCUIT	FUNCTION
1	R54 18LB/YL	PASSENGER SEAT BELT TENSIONER LINE 2
2	R56 18LB/DG	PASSENGER SEAT BELT TENSIONER LINE 1



POWER
LIFTGATE
MODULE C1

POWER LIFTGATE MODULE C1

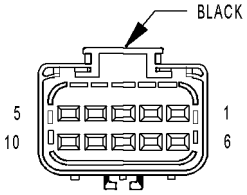
CAV	CIRCUIT	FUNCTION
1	Q83 18OR/GY	LIFTGATE LATCH CLUTCH DRIVER
2	Q88 14TN/BR (EXPORT)	LIFTGATE OPEN DRIVER
2	Q88 16TN/BR (EXCEPT EXPORT)	LIFTGATE OPEN DRIVER
3	Q89 16TN/OR (EXCEPT EXPORT)	LIFTGATE CLOSE DRIVER
3	Q89 14TN/OR (EXPORT)	LIFTGATE CLOSE DRIVER
4	-	-
5	A115 12YL/RD	FUSED B(+)
6	-	-
7	-	-
8	Z125 14BK/WT	GROUND



POWER
LIFTGATE
MODULE
C2

POWER LIFTGATE MODULE C2

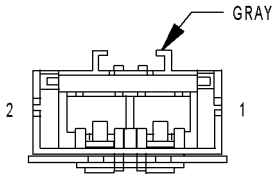
CAV	CIRCUIT	FUNCTION
1	Q90 20TN/VT	LIFTGATE HALL EFFECT SUPPLY
2	-	-
3	Q151 22TN/DB	LIFTGATE ENGAGE/DISENGAGE SWITCH SENSE
4	-	-
5	Q76 22OR/LB	PINCH SENSOR SIGNAL
6	-	-
7	Q86 18OR/DB	LIFTGATE GEAR ENGAGE DRIVER
8	Q84 18TN/GY	LIFTGATE LATCH CINCH DRIVER
9	Q85 18TN/WT	LIFTGATE LATCH RELEASE DRIVER
10	Q87 18OR/LG	LIFTGATE GEAR DISENGAGE DRIVER
11	D25 20WT/VT	PCI BUS
12	G78 20VT/OR	LIFTGATE AJAR SWITCH SENSE
13	Q60 22OR/YL	LIFTGATE PAWL SWITCH SENSE
14	Q51 22OR	LIFTGATE FULL OPEN SWITCH SENSE
15	-	-
16	G32 20VT/LB	LIFTGATE TEMPERATURE SENSOR SIGNAL
17	Q91 20TN/YL	LIFTGATE HALL EFFECT SIGNAL
18	Q94 22TN/LG	LIFTGATE CHIME DRIVER
19	G153 22VT/DG	LIFTGATE MODULE WAKE UP SIGNAL
20	Z87 20BK/LG	GROUND



POWER
LIFTGATE
MOTOR

POWER LIFTGATE MOTOR

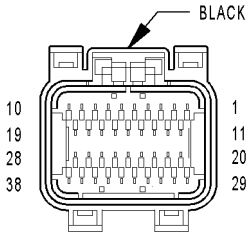
CAV	CIRCUIT	FUNCTION
1	Z87 20BK/LG	GROUND
2	Q51 22OR	LIFTGATE FULL OPEN SWITCH SENSE
3	Q151 20TN/DB (EXPORT)	LIFTGATE ENGAGE/DISENGAGE SWITCH SENSE
3	Q151 22TN/DB (EXCEPT EXPORT)	LIFTGATE ENGAGE/DISENGAGE SWITCH SENSE
4	Q87 18OR/LG	LIFTGATE GEAR DISENGAGE DRIVER
5	Q86 18OR/DB	LIFTGATE GEAR ENGAGE DRIVER
6	Q88 14TN/BR (EXPORT)	LIFTGATE OPEN DRIVER
6	Q88 16TN/BR (EXCEPT EXPORT)	LIFTGATE OPEN DRIVER
7	Q90 20TN/VT	LIFTGATE HALL EFFECT SUPPLY
8	Q91 20TN/YL	LIFTGATE HALL EFFECT SIGNAL
9	Z87 20BK/LG	GROUND
10	Q89 14TN/OR (EXPORT)	LIFTGATE CLOSE DRIVER
10	Q89 16TN/OR (EXCEPT EXPORT)	LIFTGATE CLOSE DRIVER



POWER SEAT CIRCUIT BREAKER (30A)

POWER SEAT CIRCUIT BREAKER (30A)

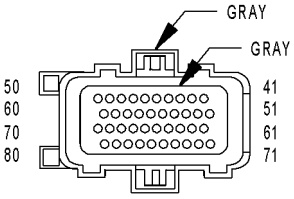
CAV	CIRCUIT	FUNCTION
1	A110 12OR/RD	FUSED B(+)
2	A210 14OR/RD	FUSED SEAT SWITCH DRIVER
2	A210 14OR/RD	FUSED SEAT SWITCH DRIVER



POWERTRAIN CONTROL MODULE C1 (NGC)

POWERTRAIN CONTROL MODULE C1 (NGC)

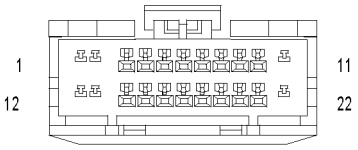
CAV	CIRCUIT	FUNCTION
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	Z130 18BK/BR	GROUND
10	-	-
11	F202 20PK/GY	FUSED IGNITION SWITCH OUTPUT (RUN-START)
12	F1 18PK/WT (EXCEPT EX-PORT)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
13	N7 18DB/OR (MTX)	VEHICLE SPEED SIGNAL
14	-	-
15	-	-
16	-	-
17	-	-
18	Z131 18BK/DG	GROUND
19	-	-
20	G6 16VT/GY	OIL PRESSURE SIGNAL
21	-	-
22	G31 18VT/LG	AAT SIGNAL
23	-	-
24	-	-
25	D20 20WT/LG	SCI RECEIVE (PCM)
26	D123 20WT/BR	FLASH PROGRAM ENABLE
27	-	-
28	-	-
29	A109 18OR/RD	FUSED B(+)
30	T751 18YL	FUSED IGNITION SWITCH OUTPUT (START)
31	K141 18DB/YL	O2 1/2 SIGNAL
32	K904 18DB/DG	O2 RETURN (DOWN)
33	-	-
34	-	-
35	-	-
36	D21 20WT/BR	SCI TRANSMIT (PCM)
37	D15 18DG/YL	SCI TRANSMIT (TCM)
38	D25 18WT/VT	PCI BUS



POWERTRAIN CONTROL MODULE C2 (SBEC)

POWERTRAIN CONTROL MODULE C2 (SBEC)

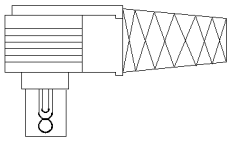
CAV	CIRCUIT	FUNCTION
41	V37 18VT	SPEED CONTROL SWITCH SIGNAL
42	C18 18LB/BR	A/C PRESSURE SENSOR SIGNAL
43	K900 18DB/DG	SENSOR GROUND
44	F888 18BR/PK	8 VOLT SUPPLY
45	-	-
46	A109 18OR/RD	FUSED B(+)
47	-	-
48	-	-
49	K39 18VT/DG	IDLE AIR CONTROL NO. 1 DRIVER
50	Z131 18BK/DG	GROUND
51	K141 18DB/YL	OXYGEN SENSOR 1/2 SIGNAL
52	-	-
53	-	-
54	-	-
55	-	-
56	V36 18VT/YL	SPEED CONTROL VACUUM SOLENOID CONTROL
57	K60 18VT/LG	IDLE AIR CONTROL NO. 2 DRIVER
58	-	-
59	D25 18WT/VT	PCI BUS
60	-	-
61	F855 18PK/YL (EXPORT)	5 VOLT SUPPLY
61	F855 20PK/YL (EXCEPT EXPORT)	5 VOLT SUPPLY
62	B29 18DG/WT	SECONDARY BRAKE SWITCH SIGNAL
63	T10 18DG/LG	TORQUE MANAGEMENT REQUEST SENSE
64	C13 18LB/OR	A/C COMPRESSOR CLUTCH RELAY CONTROL
65	D21 18WT/BR (EXPORT)	SCI TRANSMIT (PCM)
65	D21 20WT/BR (EXCEPT EXPORT)	SCI TRANSMIT (PCM)
66	N7 18DB/OR	VEHICLE SPEED SENSOR SIGNAL
67	K51 18BR/WT	AUTOMATIC SHUT DOWN RELAY CONTROL
68	K52 18DB/WT	EVAPORATIVE EMISSION SOLENOID CONTROL
69	-	-
70	K70 18DB/BR	EVAPORATIVE EMISSION SOLENOID SENSE
71	-	-
72	K107 20VT/WT (EXCEPT EXPORT)	LEAK DETECTION PUMP SWITCH SENSE
73	K173 18BR/VT	RADIATOR FAN RELAY CONTROL
74	K31 18BR	FUEL PUMP RELAY CONTROL
75	D20 20WT/LG	SCI RECEIVE (PCM)
76	T41 18YL/DB	PARK/NEUTRAL POSITION SWITCH SENSE (TRS T41)
77	K106 20VT/LB (EXCEPT EXPORT)	LEAK DETECTION PUMP SOLENOID CONTROL
78	-	-
79	-	-
80	V35 18VT/OR	SPEED CONTROL VENT SOLENOID CONTROL



RADIO C1

RADIO C1

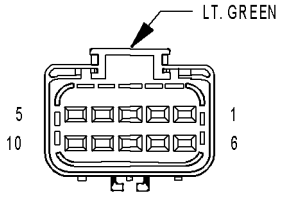
CAV	CIRCUIT	FUNCTION
1	A114 16GY/RD	FUSED B(+) (I.O.D.)
2	F306 18DB/PK	FUSED ACCESSORY RELAY OUTPUT
3	E14 20OR/TN	PANEL LAMPS DRIVER
4	-	-
5	-	-
6	-	-
7	X54 20GY (HIGHLINE)	RIGHT FRONT SPEAKER (+)
7	X154 20GY/YL (LOWLINE)	RIGHT INSTRUMENT PANEL SPEAKER (+)
8	X156 20GY/LB (LOWLINE)	RIGHT INSTRUMENT PANEL SPEAKER (-)
8	X56 20GY/BR (HIGHLINE)	RIGHT FRONT SPEAKER (-)
9	X55 20DG/BR (HIGHLINE)	LEFT FRONT SPEAKER (-)
9	X155 20DG/LB (LOWLINE)	LEFT INSTRUMENT PANEL SPEAKER (-)
10	X153 20DG/YL (LOWLINE)	LEFT INSTRUMENT PANEL SPEAKER (+)
10	X53 20DG (HIGHLINE)	LEFT FRONT SPEAKER (+)
11	Z514 16BK/LG	GROUND
12	A114 16GY/RD	FUSED B(+) (I.O.D.)
13	X60 20GY/YL	RADIO 12 VOLT OUTPUT
14	D25 20WT/VT	PCI BUS
15	-	-
16	-	-
17	-	-
18	X51 22DG/DB	LEFT REAR SPEAKER (+)
19	X57 22DG/OR	LEFT REAR SPEAKER (-)
20	X58 22GY/OR	RIGHT REAR SPEAKER (-)
21	X52 22GY/DB	RIGHT REAR SPEAKER (+)
22	Z515 16BK	GROUND



RADIO C2
(CD CHANGER)

RADIO C2 (CD CHANGER)

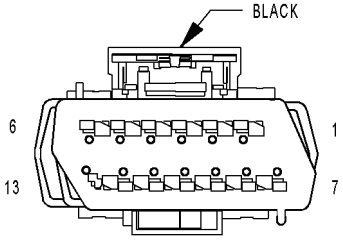
CAV	CIRCUIT	FUNCTION
1	X40 20GY/WT	AUDIO OUT RIGHT
2	E14 18OR/TN	PANEL LAMPS DRIVER
3	D25 20WT/VT (EXCEPT EXPORT)	PCI BUS
3	D25 20VT/YL (EXPORT)	PCI BUS
4	X112 20RD	IGNITION SWITCH OUTPUT
5	X41 20DG/WT	AUDIO OUT LEFT
6	Z140 18BK/OR	GROUND
7	Z141 18BK/TN	GROUND
8	X160 20GY/YL	B(+)



REAR
A/C-HEATER
UNIT
(3 ZONE MTC)

REAR A/C-HEATER UNIT (3 ZONE MTC)

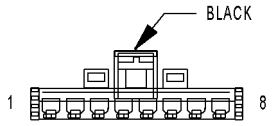
CAV	CIRCUIT	FUNCTION
1	C53 22LB	REAR MODE DOOR DRIVER
2	C154 20LB/OR	REAR COMMON DOOR DRIVER
3	C51 12LB/BR	FUSED REAR BLOWER MOTOR RELAY OUTPUT
4	C152 16LB/LG	REAR BLOWER MOTOR MED
5	C151 18LB/DG	REAR BLOWER MOTOR LOW
6	Z135 12BK/LB	REAR BLOWER MOTOR HIGH
7	C54 22LB/YL	REAR BLEND DOOR DRIVER
8	C154 20LB/OR	REAR COMMON DOOR DRIVER
9	-	-
10	-	-



REAR
AUTO TEMP
CONTROL
SWITCH
(3 ZONE ATC)

REAR AUTO TEMP CONTROL SWITCH (3 ZONE ATC)

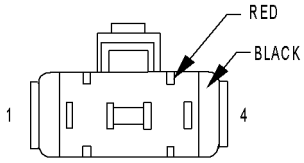
CAV	CIRCUIT	FUNCTION
1	F504 20GY/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
2	Z27 18BK/DG	GROUND
3	D22 20WT/TN (SWB)	KDB CLOCK
3	D22 22WT/TN (LWB)	KDB CLOCK
4	D17 20WT/DG (SWB)	KDB DATA
4	D17 22WT/DG (LWB)	KDB DATA
5	E10 20OR/DG	PANEL LAMPS DRIVER
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-
11	-	-
12	-	-
13	-	-



REAR
BLOWER FRONT
CONTROL SWITCH
(3 ZONE MTC)

REAR BLOWER FRONT CONTROL SWITCH (3 ZONE MTC)

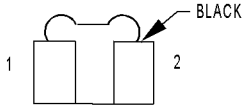
CAV	CIRCUIT	FUNCTION
1	-	-
2	Z440 12BK/DG	GROUND
3	-	-
4	C153 12DB/BR	REAR BLOWER MOTOR HIGH
5	-	-
6	C152 16LB/LG	REAR BLOWER MOTOR MED
7	C151 18LB/DG	REAR BLOWER MOTOR LOW
8	C50 12DB/OR	REAR BLOWER FRONT CONTROL FEED



REAR BLOWER
MOTOR
POWER MODULE
C1
(3 ZONE ATC)

REAR BLOWER MOTOR POWER MODULE C1 (3 ZONE ATC)

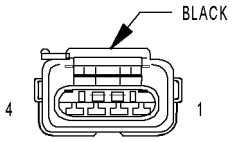
CAV	CIRCUIT	FUNCTION
1	C51 12DB/BR	FUSED REAR BLOWER MOTOR RELAY OUTPUT
1	C51 18DB/BR	FUSED REAR BLOWER MOTOR RELAY OUTPUT
2	C59 18DB/LB	BLOWER MOTOR CONTROL
3	Z135 12BK/LB	GROUND
4	-	-



REAR BLOWER
MOTOR
POWER MODULE
C2
(3 ZONE ATC)

REAR BLOWER MOTOR POWER MODULE C2 (3 ZONE ATC)

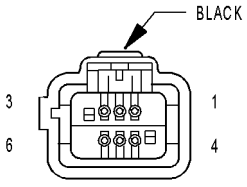
CAV	CIRCUIT	FUNCTION
1	12BK	GROUND
2	12DG	POWER FEED



REAR BLOWER
REAR CONTROL
SWITCH C1
(3 ZONE MTC)

REAR BLOWER REAR CONTROL SWITCH C1 (3 ZONE MTC)

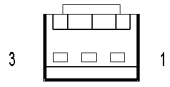
CAV	CIRCUIT	FUNCTION
1	C153 12DB/BR	REAR BLOWER MOTOR HIGH
2	C152 16LB/LG	REAR BLOWER MOTOR MED
3	C151 18LB/DG	REAR BLOWER MOTOR LOW
4	C50 12DB/OR	REAR BLOWER FRONT CONTROL FEED



REAR BLOWER
REAR CONTROL
SWITCH C2
(3 ZONE MTC)

REAR BLOWER REAR CONTROL SWITCH C2 (3 ZONE MTC)

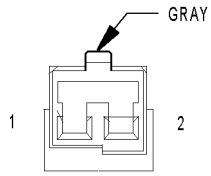
CAV	CIRCUIT	FUNCTION
1	-	-
2	C22 20LB/DB	REAR TEMPERATURE FEEDBACK SIGNAL
3	E10 20OR/DG	PANEL LAMPS DRIVER
4	F850 20LB/PK	5 VOLT SUPPLY
5	C121 20DB/DG	REAR TEMPERATURE RETURN
6	Z409 20BK/OR	GROUND



REAR INTRUSION
SENSOR
(UNITED KINGDOM)

REAR INTRUSION SENSOR (UNITED KINGDOM)

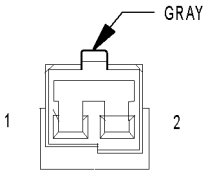
CAV	CIRCUIT	FUNCTION
1	B100 20TN	REAR INTRUSION SENSOR SIGNAL
2	B200 20BK	SENSOR GROUND
3	-	-



REAR
MODE
MOTOR
(3 ZONE ATC)

REAR MODE MOTOR (3 ZONE ATC)

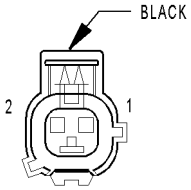
CAV	CIRCUIT	FUNCTION
1	C154 18LB/GY	REAR MODE DOOR DRIVER (B)
2	C53 18LB	REAR MODE DOOR DRIVER (A)



REAR
TEMPERATURE
MOTOR
(3 ZONE ATC)

REAR TEMPERATURE MOTOR (3 ZONE ATC)

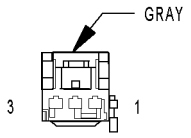
CAV	CIRCUIT	FUNCTION
1	C54 18LB/YL	REAR BLEND DOOR DRIVER (A)
2	C169 18LB/TN	REAR BLEND DOOR DRIVER (B)



REAR
WASHER
PUMP
MOTOR

REAR WASHER PUMP MOTOR

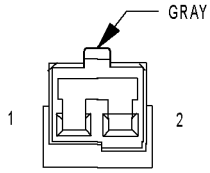
CAV	CIRCUIT	FUNCTION
1	W20 18BR/YL	REAR WASHER PUMP MOTOR CONTROL
2	F301 18VT/PK	FUSED ACCESSORY RELAY OUTPUT



REAR
WIPER
MOTOR

REAR WIPER MOTOR

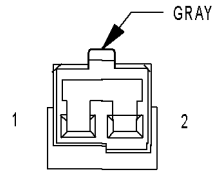
CAV	CIRCUIT	FUNCTION
1	Z213 18BK/LG	GROUND
2	F302 18GY/PK	FUSED ACCESSORY RELAY OUTPUT
3	W13 18BR/LG	REAR WIPER MOTOR CONTROL



RECIRCULATION
DOOR ACTUATOR
(ATC)

RECIRCULATION DOOR ACTUATOR (ATC)

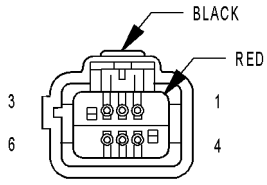
CAV	CIRCUIT	FUNCTION
1	C132 20DB/YL	RECIRCULATION DOOR DRIVER (B)
2	C32 20DB/TN	RECIRCULATION DOOR DRIVER (A)



RECIRCULATION DOOR ACTUATOR (MTC)

RECIRCULATION DOOR ACTUATOR (MTC)

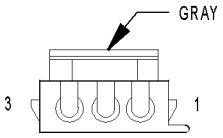
CAV	CIRCUIT	FUNCTION
1	C34 20DB/LB (LHD)	COMMON DOOR DRIVER (B)
1	C32 20DB/TN (RHD)	RECIRCULATION DOOR DRIVER (A)
2	C32 20DB/TN (LHD)	RECIRCULATION DOOR DRIVER (A)
2	C34 20DB/LB (RHD)	COMMON DOOR DRIVER (B)



REMOTE KEYLESS ENTRY MODULE

REMOTE KEYLESS ENTRY MODULE

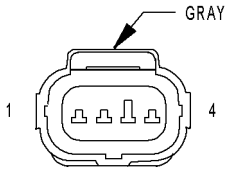
CAV	CIRCUIT	FUNCTION
1	G96 22VT/DG	REMOTE KEYLESS ENTRY INTERFACE
2	D9 22WT/GY	REMOTE KEYLESS ENTRY PROGRAM ENABLE
3	Z109 22BK/GY	GROUND
4	D10 18WT (JAPAN)	REMOTE KEYLESS ENTRY ANTENNA (+)
5	D10 18WT/LB (JAPAN)	REMOTE KEYLESS ENTRY ANTENNA (-)
6	A114 18GY/RD	FUSED B(+) (I.O.D.)



RIGHT B-PILLAR SWITCH (POWER SLIDING DOOR)

RIGHT B-PILLAR SWITCH (POWER SLIDING DOOR)

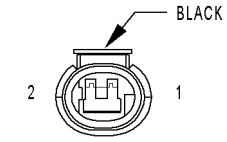
CAV	CIRCUIT	FUNCTION
1	Z62 22BK/YL	GROUND
2	F302 18GY/PK	FUSED ACCESSORY RELAY OUTPUT
3	G42 22VT/YL	RIGHT SLIDING DOOR PILLAR SWITCH MUX



RIGHT CINCH/RELEASE MOTOR (POWER SLIDING DOOR)

RIGHT CINCH/RELEASE MOTOR (POWER SLIDING DOOR)

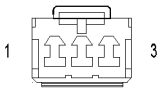
CAV	CIRCUIT	FUNCTION
1	Q46 18TN/GY	RIGHT CINCH/RELEASE MOTOR LATCH DRIVER
2	Z248 18BK/WT	GROUND
3	Q44 18OR/GY	RIGHT CINCH/RELEASE MOTOR CLUTCH DRIVER
4	Q48 18TN/WT	RIGHT CINCH/RELEASE MOTOR UNLATCH DRIVER



RIGHT CYLINDER LOCK SWITCH (EXPORT)

RIGHT CYLINDER LOCK SWITCH (EXPORT)

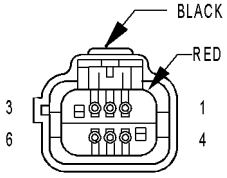
CAV	CIRCUIT	FUNCTION
1	Z462 20BK/WT	GROUND
2	G162 20VT/WT	RIGHT CYLINDER LOCK SWITCH MUX



RIGHT DOOR SPEAKER (LOWLINE)

RIGHT DOOR SPEAKER (LOWLINE)

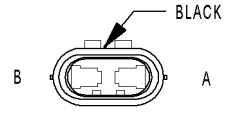
CAV	CIRCUIT	FUNCTION
1	X56 20GY/BR	RIGHT FRONT SPEAKER (-)
2	-	-
3	X54 20GY	RIGHT FRONT SPEAKER (+)



RIGHT DOOR SPEAKER (MIDLINE/ HIGHLINE)

RIGHT DOOR SPEAKER (MIDLINE/HIGHLINE)

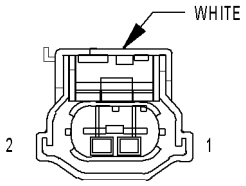
CAV	CIRCUIT	FUNCTION
1	X154 20GY/YL (HIGHLINE)	RIGHT INSTRUMENT PANEL SPEAKER (+)
2	X15 16GY/DG (HIGHLINE)	AMPLIFIED SPEAKER GROUND
3	X156 20GY/LB (HIGHLINE)	RIGHT INSTRUMENT PANEL SPEAKER (-)
4	X54 20GY	RIGHT FRONT SPEAKER (+)
5	X13 16DG/GY (HIGHLINE)	NAME BRAND SPEAKER RELAY OUTPUT
6	X56 20GY/BR	RIGHT FRONT SPEAKER (-)



RIGHT FOG LAMP (EXCEPT EXPORT)

RIGHT FOG LAMP (EXCEPT EXPORT)

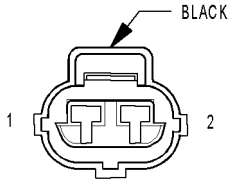
CAV	CIRCUIT	FUNCTION
A	L90 18WT/OR	FRONT FOG LAMP RELAY OUTPUT
B	Z348 18BK/OR	GROUND



RIGHT
FOG LAMP
(EXPORT)

RIGHT FOG LAMP (EXPORT)

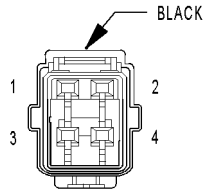
CAV	CIRCUIT	FUNCTION
1	L90 18WT/OR	FRONT FOG LAMP RELAY OUTPUT
2	Z348 18BK/OR	GROUND



RIGHT FRONT DOOR
AJAR SWITCH
(BASE)

RIGHT FRONT DOOR AJAR SWITCH (BASE)

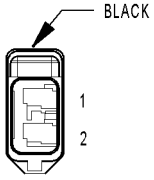
CAV	CIRCUIT	FUNCTION
1	G74 20VT/WT	RIGHT FRONT DOOR AJAR SWITCH SENSE
2	Z74 20BK/WT	GROUND



RIGHT FRONT
DOOR LOCK
MOTOR/AJAR
SWITCH
(EXCEPT BASE)

RIGHT FRONT DOOR LOCK MOTOR/AJAR SWITCH (EXCEPT BASE)

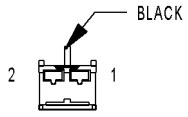
CAV	CIRCUIT	FUNCTION
1	G74 20VT/WT	RIGHT FRONT DOOR AJAR SWITCH SENSE
2	Z74 20BK/WT	GROUND
3	P4 20TN/BR	RIGHT FRONT DOOR UNLOCK DRIVER
4	P2 20TN/GY	RIGHT FRONT DOOR LOCK DRIVER



RIGHT FULL
OPEN SWITCH
(POWER SLIDING DOOR)

RIGHT FULL OPEN SWITCH (POWER SLIDING DOOR)

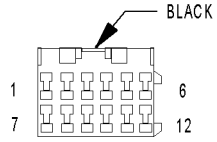
CAV	CIRCUIT	FUNCTION
1	Q52 20OR	RIGHT FULL OPEN SWITCH SENSE
2	Z76 20BK/YL	GROUND



RIGHT INSTRUMENT PANEL SPEAKER

RIGHT INSTRUMENT PANEL SPEAKER

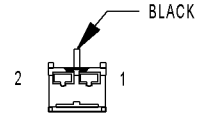
CAV	CIRCUIT	FUNCTION
1	X154 20GY/YL	RIGHT INSTRUMENT PANEL SPEAKER (+)
1	X54 20GY (LOWLINE)	RIGHT FRONT SPEAKER (+)
2	X56 20GY/BR (LOWLINE)	RIGHT FRONT SPEAKER (-)
2	X156 20GY/LB	RIGHT INSTRUMENT PANEL SPEAKER (-)



RIGHT POWER MIRROR

RIGHT POWER MIRROR

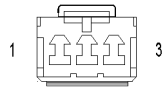
CAV	CIRCUIT	FUNCTION
1	P174 20TN/LB (EXPORT)	RIGHT FOLDING MIRROR UNFOLD DRIVER
2	-	-
3	-	-
4	P68 20TN/YL (MEMORY)	RIGHT MIRROR HORIZONTAL POSITION SIGNAL
5	P66 20TN/LG (MEMORY)	RIGHT MIRROR SENSOR GROUND
6	P67 20TN/OR (MEMORY)	RIGHT MIRROR VERTICAL POSITION SIGNAL
7	P160 20TN/LG (LHD EX-PORT)	PASSENGER FOLDING MIRROR RELAY OUTPUT
7	P159 20TN/DG (RHD)	DRIVER FOLDING MIRROR FOLD DRIVER
8	Z216 20BK/DB (HEATED MIRRORS)	GROUND
9	C16 20DB/GY (HEATED MIRRORS)	FUSED REAR WINDOW DEFOGGER RELAY OUTPUT
10	P70 20TN/LB	RIGHT MIRROR COMMON DRIVER (RIGHT/DOWN)
11	P72 20TN/GY	RIGHT MIRROR UP DRIVER
12	P74 20TN/DB	RIGHT MIRROR LEFT DRIVER



RIGHT REAR PILLAR SPEAKER

RIGHT REAR PILLAR SPEAKER

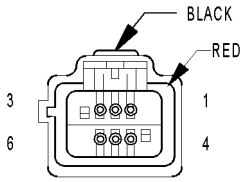
CAV	CIRCUIT	FUNCTION
1	X158 20GY/YL	RIGHT REAR PILLAR SPEAKER (-)
2	X152 20GY/WT	RIGHT REAR PILLAR SPEAKER (+)



RIGHT REAR SPEAKER (LOWLINE)

RIGHT REAR SPEAKER (LOWLINE)

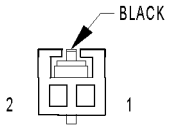
CAV	CIRCUIT	FUNCTION
1	X58 22GY/OR	RIGHT REAR SPEAKER (-)
2	-	-
3	X52 20GY/DB	RIGHT REAR SPEAKER (+)



RIGHT REAR SPEAKER (MIDLINE/ HIGHLINE)

RIGHT REAR SPEAKER (MIDLINE/HIGHLINE)

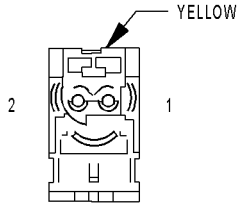
CAV	CIRCUIT	FUNCTION
1	X152 20GY/WT (HIGHLINE)	RIGHT REAR PILLAR SPEAKER (+)
2	X15 16GY/DG (HIGHLINE)	AMPLIFIED SPEAKER GROUND
3	X158 20GY/YL (HIGHLINE)	RIGHT REAR PILLAR SPEAKER (-)
4	X52 20GY/DB	RIGHT REAR SPEAKER (+)
5	X13 16DG/GY (HIGHLINE)	NAME BRAND SPEAKER RELAY OUTPUT
6	X58 22GY/OR	RIGHT REAR SPEAKER (-)



RIGHT REMOTE RADIO SWITCH

RIGHT REMOTE RADIO SWITCH

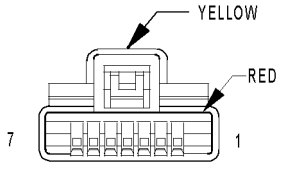
CAV	CIRCUIT	FUNCTION
1	X20 20RD/BK	RADIO CONTROL MUX
2	X920 20RD/DB	RADIO CONTROL MUX RETURN



RIGHT SEAT AIRBAG

RIGHT SEAT AIRBAG

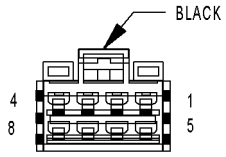
CAV	CIRCUIT	FUNCTION
1	R34 18WT/BK (EXPORT)	RIGHT SEAT SQUIB LINE 2
1	R32 18LB/OR (EXCEPT EXPORT)	RIGHT SEAT SQUIB LINE 1
2	R34 18LB/WT (EXCEPT EXPORT)	RIGHT SEAT SQUIB LINE 2
2	R32 18DG/WT (EXPORT)	RIGHT SEAT SQUIB LINE 1



RIGHT SIDE IMPACT AIRBAG CONTROL MODULE

RIGHT SIDE IMPACT AIRBAG CONTROL MODULE

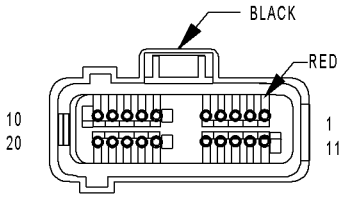
CAV	CIRCUIT	FUNCTION
1	R32 18LB/OR	RIGHT SEAT SQUIB LINE 1
2	R34 18LB/WT	RIGHT SEAT SQUIB LINE 2
3	-	-
4	D25 20WT/VT	PCI BUS
5	F214 18PK/LG	SIACM RUN-START DRIVER
6	-	-
7	Z104 18BK/LG	GROUND



RIGHT SLIDING DOOR CONTROL MODULE C1 (POWER SLIDING DOOR)

RIGHT SLIDING DOOR CONTROL MODULE C1 (POWER SLIDING DOOR)

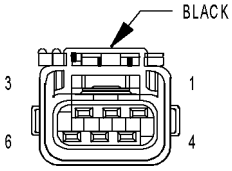
CAV	CIRCUIT	FUNCTION
1	Q44 18OR/GY	RIGHT CINCH/RELEASE MOTOR CLUTCH DRIVER
2	Q68 16TN/BR	RIGHT SLIDING DOOR OPEN DRIVER
3	Q70 16TN/OR	RIGHT SLIDING DOOR CLOSE DRIVER
4	-	-
5	A113 14WT/RD	FUSED B(+)
6	-	-
7	-	-
8	Z124 14BK	GROUND



RIGHT SLIDING DOOR CONTROL MODULE C2 (POWER SLIDING DOOR)

RIGHT SLIDING DOOR CONTROL MODULE C2 (POWER SLIDING DOOR)

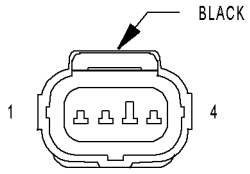
CAV	CIRCUIT	FUNCTION
1	Q72 20TN/VT	RIGHT DOOR MOTOR HALL EFFECT SUPPLY
2	-	-
3	Q34 20OR/GY	RIGHT DOOR LOCK SENSE
4	Q54 20OR/BR	RIGHT DOOR IN/OUT HANDLE SWITCH SENSE
5	-	-
6	-	-
7	Q64 18OR/TN	RIGHT DOOR MOTOR CLUTCH DRIVER
8	Q46 18TN/GY	RIGHT CINCH/RELEASE MOTOR LATCH DRIVER
9	Q48 18TN/WT	RIGHT CINCH/RELEASE MOTOR UNLATCH DRIVER
10	-	-
11	D25 20WT/VT	PCI BUS
12	G76 20TN/OR	RIGHT SLIDING DOOR AJAR SWITCH SENSE
13	Q58 20OR/YL	RIGHT PAWL SWITCH SENSE
14	Q52 20OR	RIGHT FULL OPEN SWITCH SENSE
15	-	GROUND-DRIVER SIDE IDENTIFIER (LHD/RHD)
16	-	-
17	Q74 20TN/YL	RIGHT DOOR MOTOR HALL EFFECT SIGNAL
18	-	-
19	G152 20VT/GY	RIGHT SLIDING DOOR WAKE UP SIGNAL
20	Z26 20BK/TN	GROUND



RIGHT SLIDING DOOR LATCH SENSING SWITCH (POWER SLIDING DOOR)

RIGHT SLIDING DOOR LATCH SENSING SWITCH (POWER SLIDING DOOR)

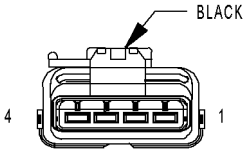
CAV	CIRCUIT	FUNCTION
1	Z76 20BK/YL	GROUND
2	Q58 20OR/YL	RIGHT PAWL SWITCH SENSE
3	G76 20TN/OR	RIGHT SLIDING DOOR AJAR SWITCH SENSE
4	Z76 20BK/YL	GROUND
5	Q54 20OR/BR	RIGHT DOOR IN/OUT HANDLE SWITCH SENSE
6	-	-



RIGHT SLIDING DOOR LOCK MOTOR (POWER SLIDING DOOR)

RIGHT SLIDING DOOR LOCK MOTOR (POWER SLIDING DOOR)

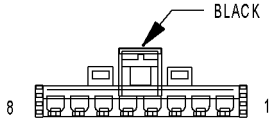
CAV	CIRCUIT	FUNCTION
1	P38 20TN/DB	RIGHT SLIDING DOOR LOCK DRIVER
2	P34 20TN/LB	RIGHT SLIDING DOOR UNLOCK DRIVER
3	Q34 20OR/GY	RIGHT DOOR LOCK SENSE
4	Z76 20BK/YL	GROUND



RIGHT SLIDING DOOR LOCK MOTOR/ AJAR SWITCH (MANUAL SLIDING DOOR)

RIGHT SLIDING DOOR LOCK MOTOR/AJAR SWITCH (MANUAL SLIDING DOOR)

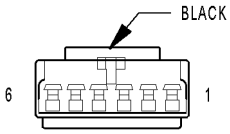
CAV	CIRCUIT	FUNCTION
1	P38 20BK/DB	RIGHT SLIDING DOOR LOCK DRIVER
2	P34 20BK/TN	RIGHT SLIDING DOOR UNLOCK DRIVER
3	G76 20BK/DG	RIGHT SLIDING DOOR AJAR SWITCH SENSE
4	Z76 20BK	GROUND



RIGHT SLIDING DOOR MOTOR (POWER SLIDING DOOR)

RIGHT SLIDING DOOR MOTOR (POWER SLIDING DOOR)

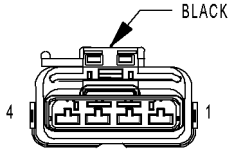
CAV	CIRCUIT	FUNCTION
1	-	-
2	Q72 20TN/VT	RIGHT DOOR MOTOR HALL EFFECT SUPPLY
3	Q68 16TN/BR	RIGHT SLIDING DOOR OPEN DRIVER
4	Z164 18BK/TN	GROUND
5	Q64 18OR/TN	RIGHT DOOR MOTOR CLUTCH DRIVER
6	Q70 16TN/OR	RIGHT SLIDING DOOR CLOSE DRIVER
7	Z34 20BK/TN	GROUND
8	Q74 20TN/YL	RIGHT DOOR MOTOR HALL EFFECT SIGNAL



SENTRY KEY IMMOBILIZER MODULE

SENTRY KEY IMMOBILIZER MODULE

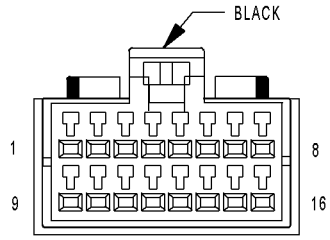
CAV	CIRCUIT	FUNCTION
1	-	-
2	D25 20WT/VT	PCI BUS
3	-	-
4	F20 20PK/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)
5	Z120 22BK/WT	GROUND
6	A114 20GY/RD (LHD)	FUSED B(+) (I.O.D.)
6	A114 18GY/RD (RHD)	FUSED B(+) (I.O.D.)



SIREN (UNITED KINGDOM)

SIREN (UNITED KINGDOM)

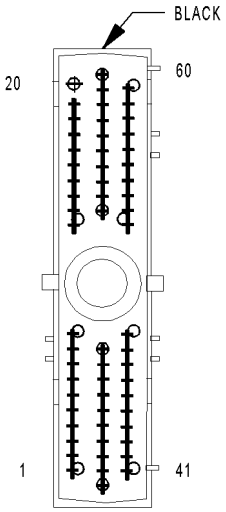
CAV	CIRCUIT	FUNCTION
1	D97 18WT/OR	SIREN SIGNAL OUTPUT
2	D96 18WT/LB	SIREN SIGNAL CONTROL
3	A600 18RD/LB	SIREN SUPPLY
4	G944 18LB/BR	SIREN SIGNAL RETURN



THATCHAM ALARM MODULE (UNITED KINGDOM)

THATCHAM ALARM MODULE (UNITED KINGDOM)

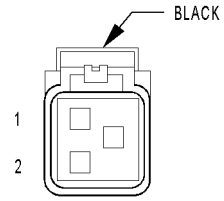
CAV	CIRCUIT	FUNCTION
1	A645 20RD/VT	REAR INTRUSION SENSOR SIGNAL
2	G640 20DG/VT	FRONT INTRUSION SENSOR SIGNAL
3	G22 20YL	VTSS INDICATOR SUPPLY
4	-	-
5	D97 20WT/OR	SIREN SIGNAL OUTPUT
6	D96 20WT/LB	SIREN SIGNAL CONTROL
7	F20 20PK/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)
8	G944 20LB/BR	SIREN SIGNAL RETURN
9	G945 20VT/DG	SENSOR GROUND
10	G946 20LG/VT	SENSOR GROUND
11	G922 20GY	VTSS INDICATOR DRIVER
12	-	-
13	D25 20WT/VT	PCI BUS
14	-	-
15	L91 22WT/DB	HAZARD SWITCH SENSE
16	A600 20RD/LB	SIREN SUPPLY



TRANSMISSION CONTROL MODULE (3.3L/3.8L)

TRANSMISSION CONTROL MODULE (3.3L/3.8L)

CAV	CIRCUIT	FUNCTION
1	T1 18DG/LB	TRS T1 SENSE
2	-	-
3	T3 18DG/DB	TRS T3 SENSE
4	-	-
5	-	-
6	K24 18BR/LB	CRANKSHAFT POSITION SENSOR SIGNAL
7	D15 20DG/YL	SCI TRANSMIT (TCM)
8	T751 18YL	FUSED IGNITION SWITCH OUTPUT (START)
9	T9 18DG/TN	OVERDRIVE PRESSURE SWITCH SENSE
10	T10 18DG/LG	TORQUE MANAGEMENT REQUEST SENSE
11	F1 18PK/WT	FCM OUTPUT (UNLOCK-RUN-START)
12	K22 18BR/OR	THROTTLE POSITION SENSOR SIGNAL
13	T13 18DG/VT	SPEED SENSOR GROUND
14	T14 18DG/BR	OUTPUT SPEED SENSOR SIGNAL
15	T15 18YL/BR	TRANSMISSION CONTROL RELAY CONTROL
16	T16 18YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
17	T16 18YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
18	-	-
19	T19 18YL/DB	2-4 SOLENOID CONTROL
20	T20 18DG/WT	LOW/REVERSE SOLENOID CONTROL
21	-	-
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
29	-	-
30	-	-
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-
36	-	-
37	-	-
38	-	-
39	-	-
40	-	-
41	T41 18YL/DB	TRS T41 SENSE
42	T42 18DG/YL	TRS T42 SENSE
43	D25 18WT/VT	PCI BUS
44	-	-
45	-	-
46	D123 20WT/OR	FLASH PROGRAM ENABLE
47	T47 18YL/DG	2-4 PRESSURE SWITCH SENSE
48	-	-
49	-	-
50	T50 18YL/TN	LOW/REVERSE PRESSURE SWITCH SENSE
51	K900 18DB/DG	SENSOR GROUND
52	T52 18DG/WT	INPUT SPEED SENSOR SIGNAL
53	Z132 16BK/YL	GROUND
54	T54 18DG/OR	TRANSMISSION TEMPERATURE SENSOR SIGNAL
55	T55 18YL/VT (AUTOSTICK)	AUTOSTICK/OVERDRIVE OFF MUX INPUT
56	A104 18YL/RD	FUSED B(+)
57	Z133 16BK/LG	GROUND
58	N7 18DB/OG	VEHICLE SPEED SENSOR SIGNAL
59	T59 18YL/LB	UNDERDRIVE SOLENOID CONTROL
60	T60 18YL/GY	OVERDRIVE SOLENOID CONTROL



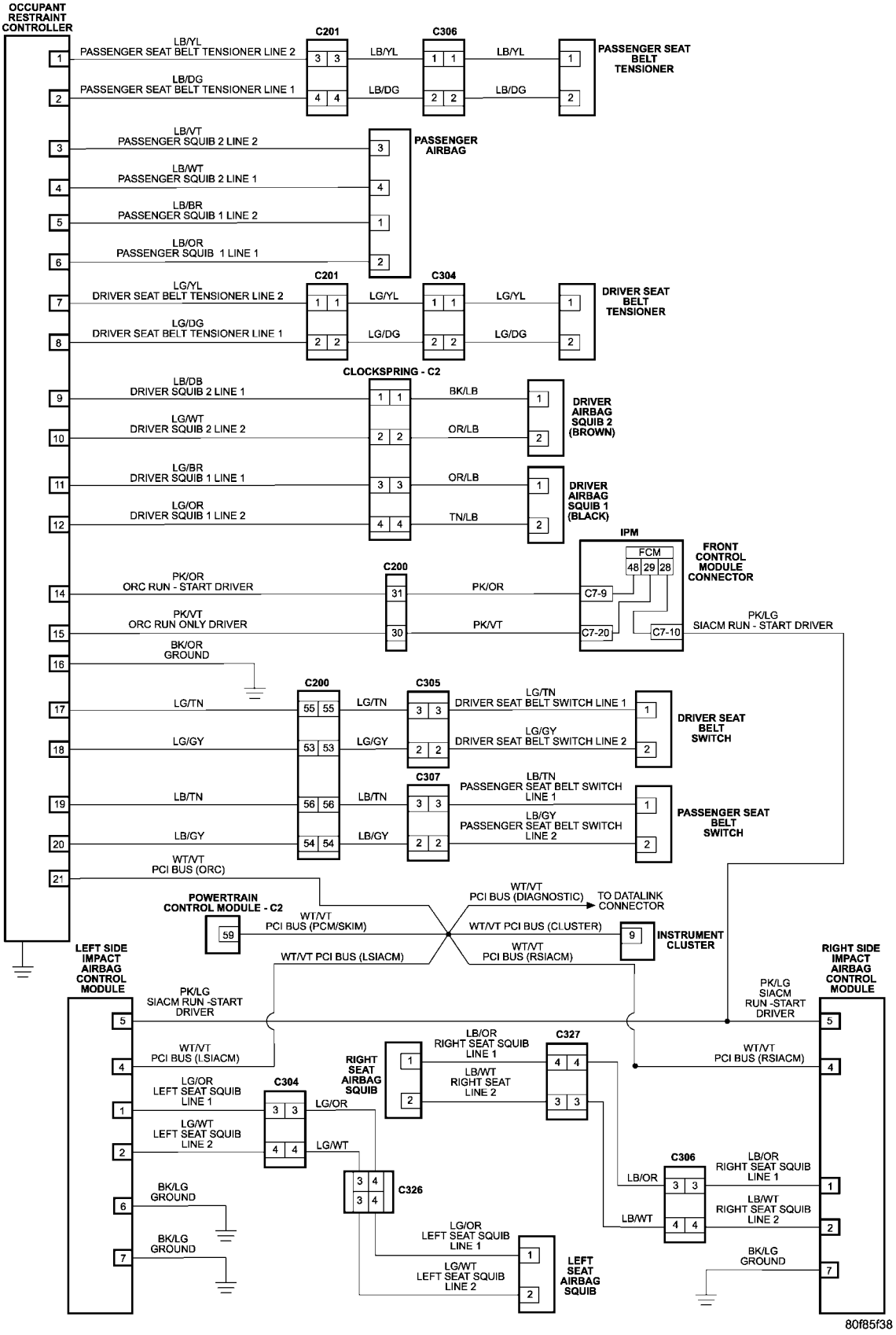
WASHER FLUID
LEVEL SWITCH

WASHER FLUID LEVEL SWITCH

CAV	CIRCUIT	FUNCTION
1	Z401 20BK/TN (EXPORT)	GROUND
1	Z401 18BK/TN (EXCEPT EXPORT)	GROUND
2	W1 18BR/TN	WASHER FLUID LEVEL SWITCH SENSE

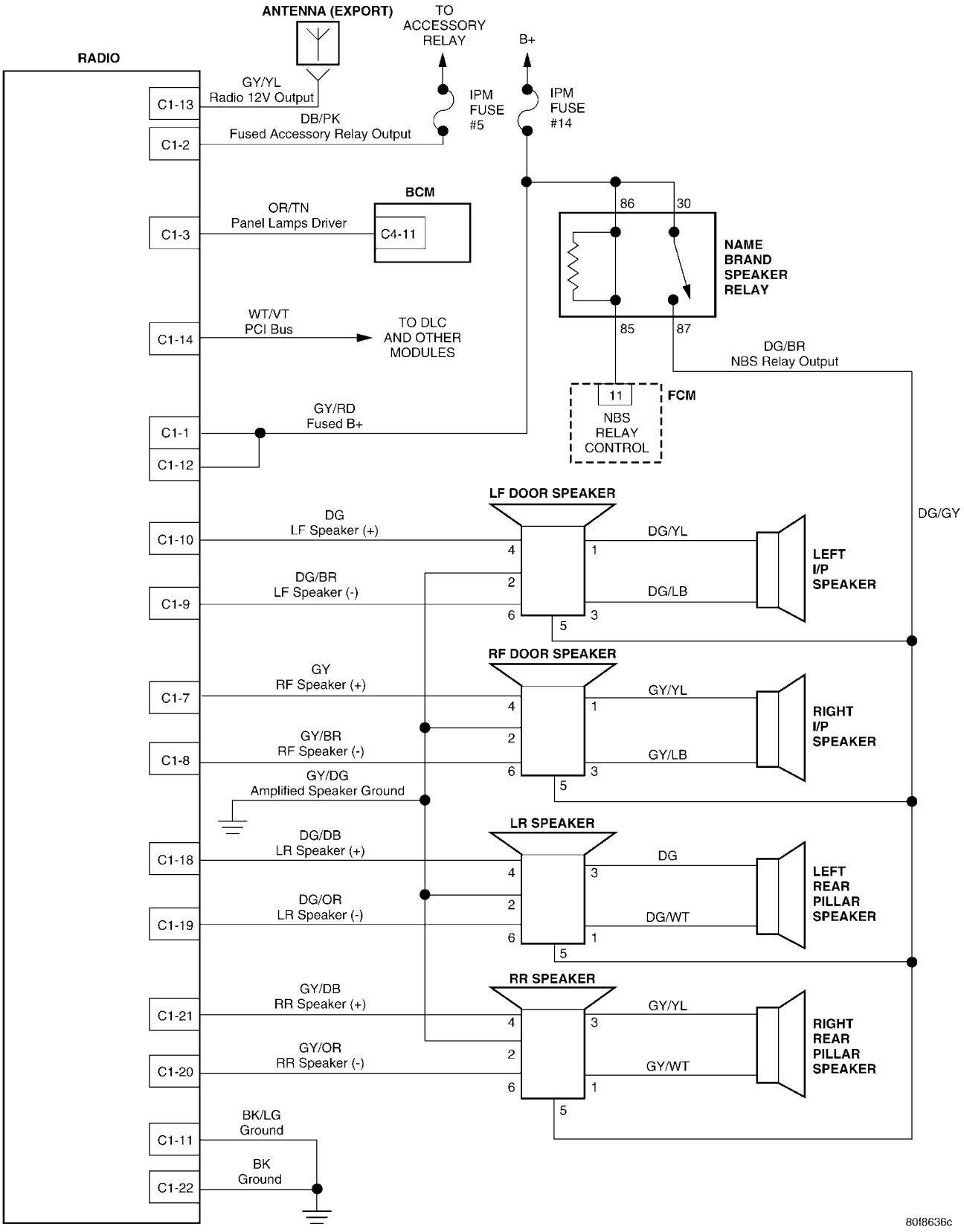
10.0 SCHEMATIC DIAGRAMS

10.1 AIRBAG SYSTEM

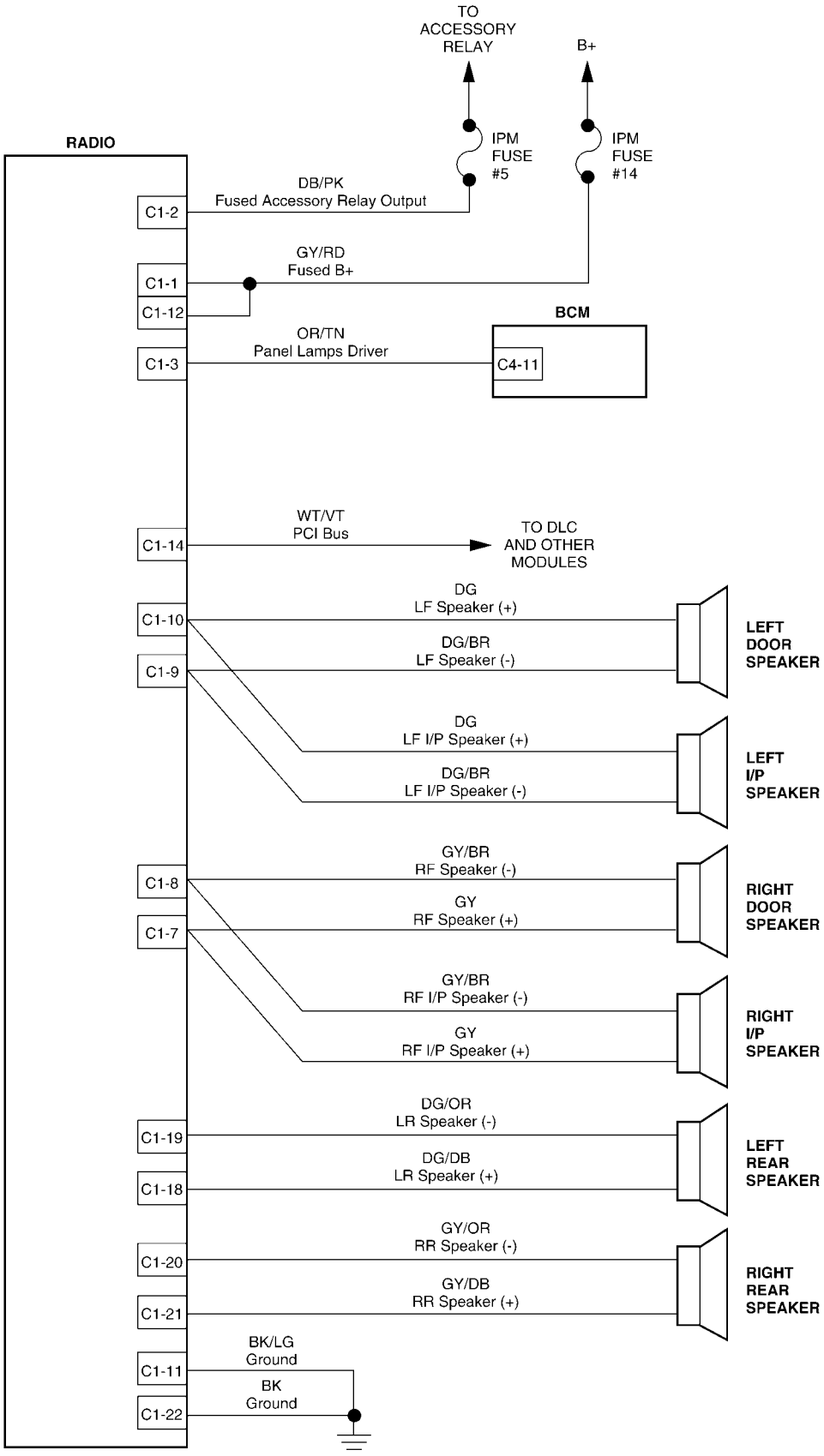


10.2 AUDIO SYSTEM

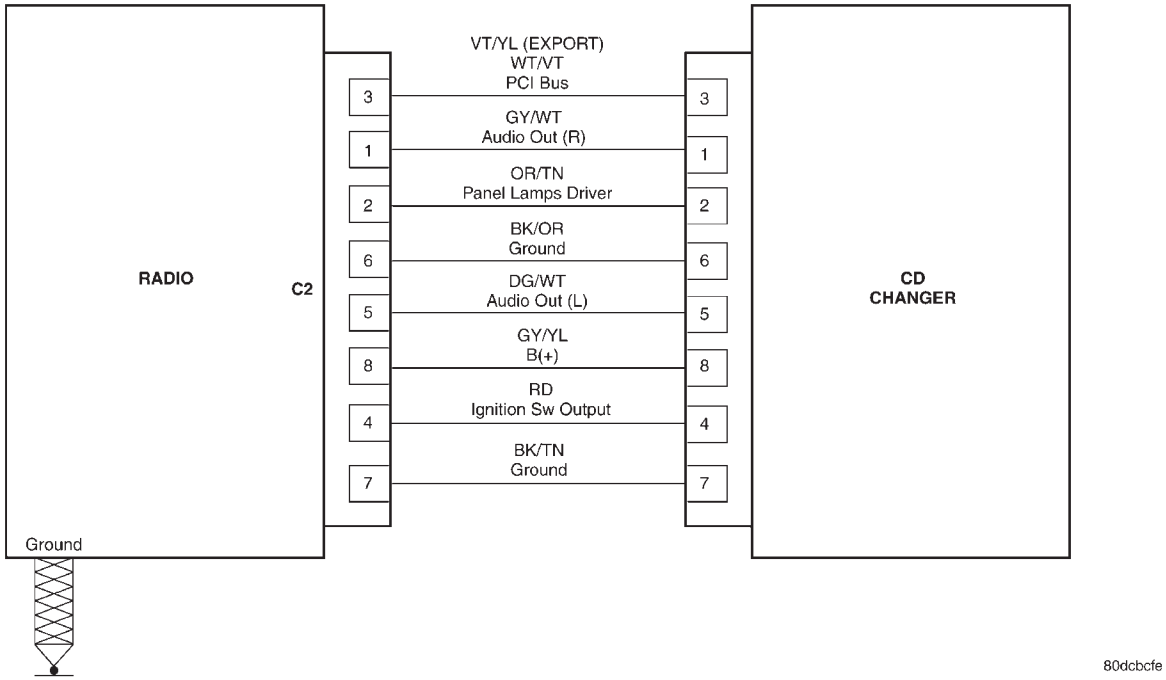
10.2.1 PREMIUM AUDIO SYSTEM



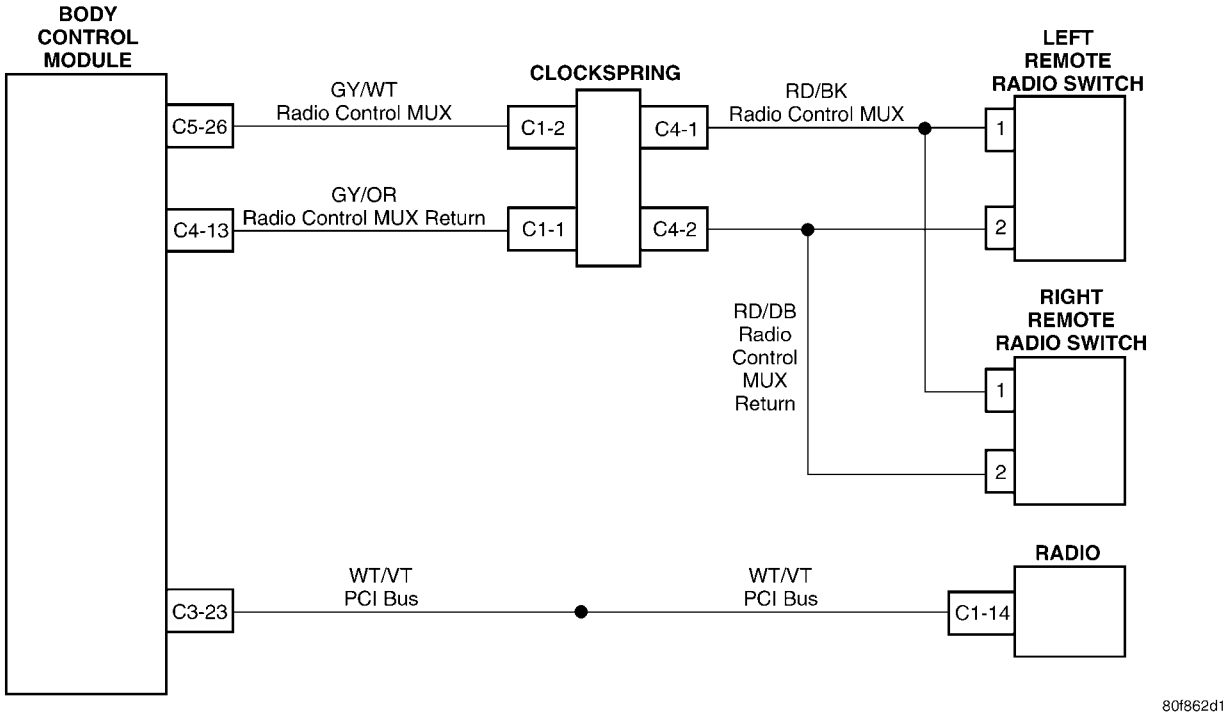
10.2.2 BASE AUDIO SYSTEM



10.2 AUDIO SYSTEM (Continued)
10.2.3 CD CHANGER

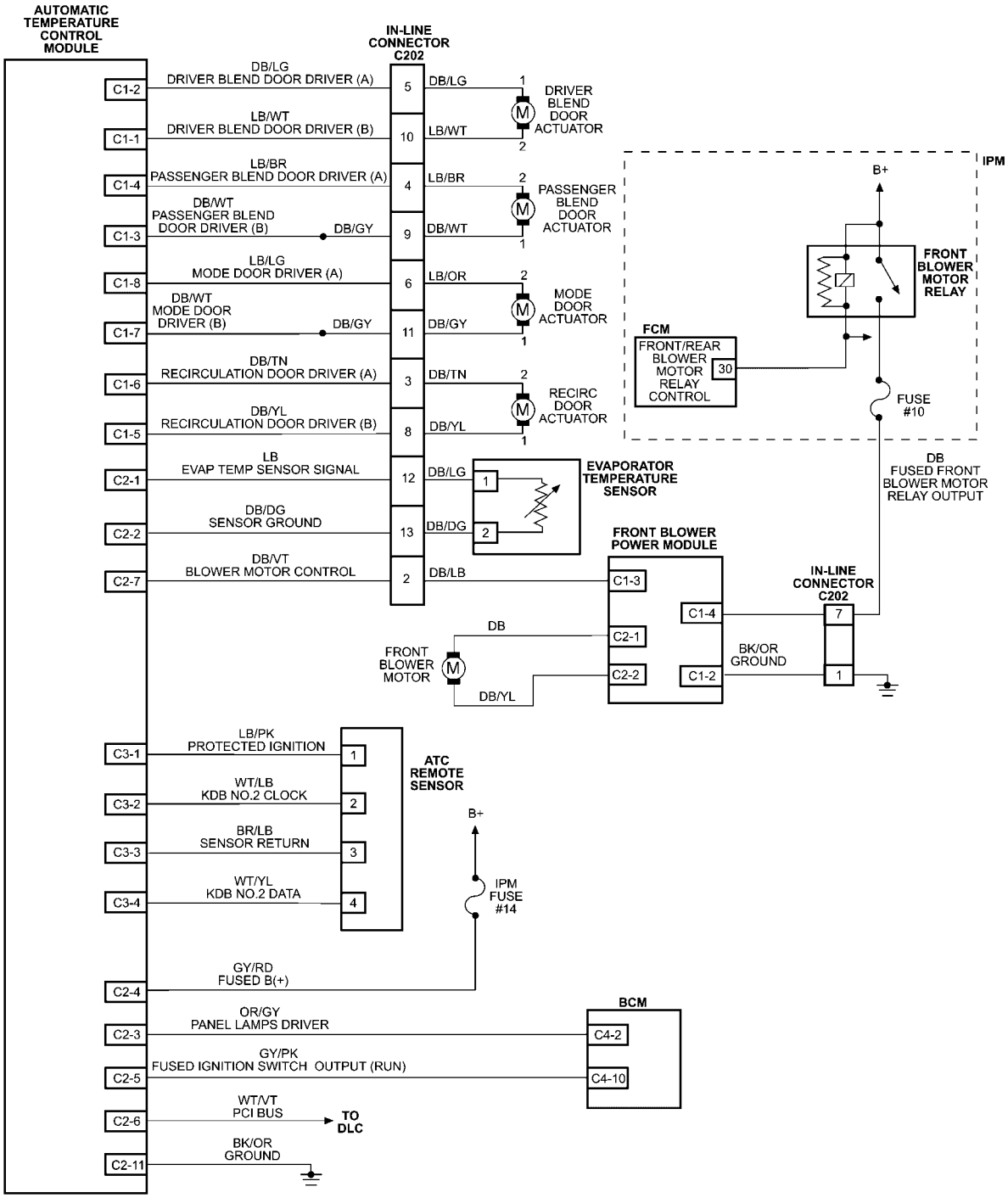


10.2.4 REMOTE RADIO CONTROLS



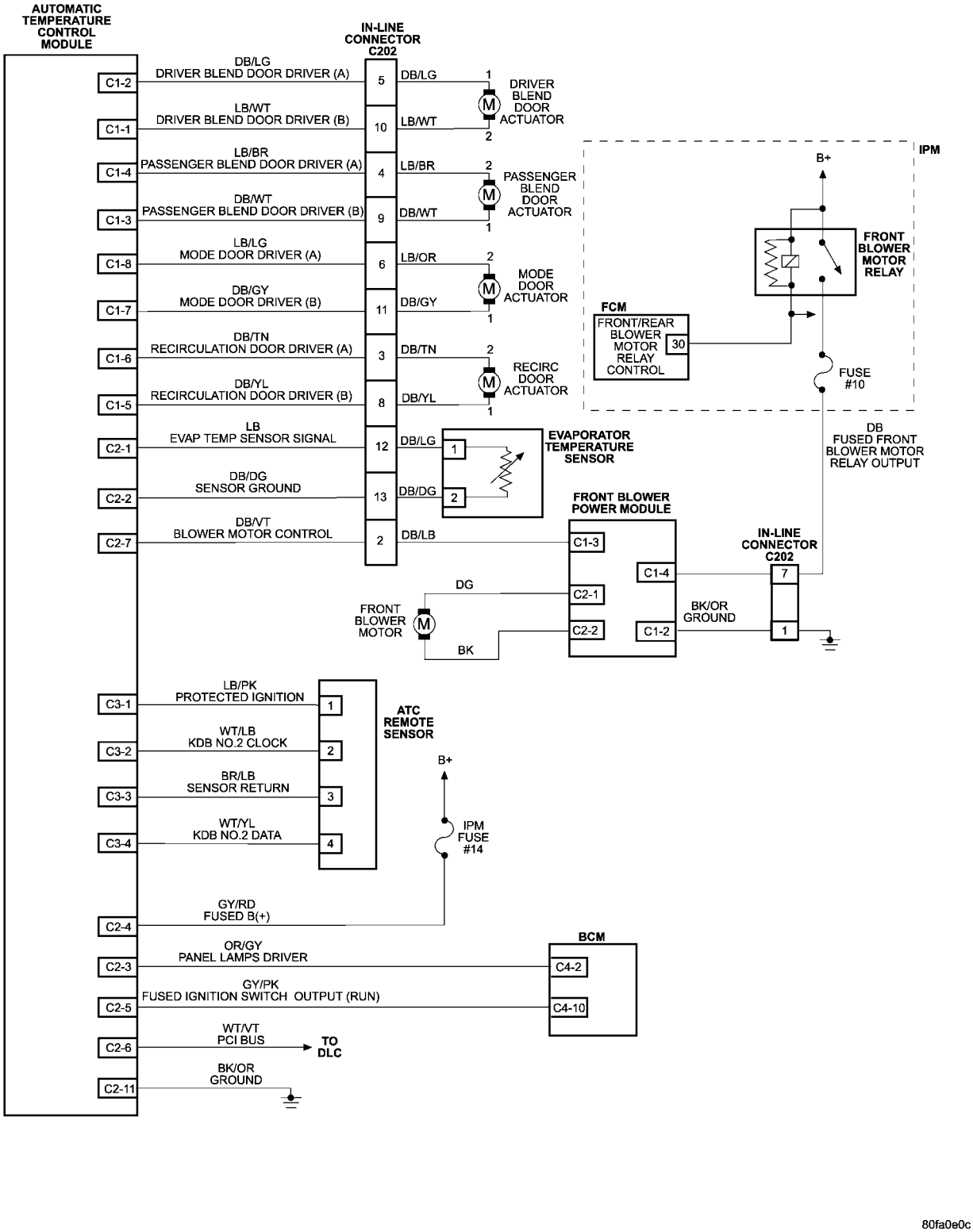
10.3 AUTOMATIC TEMPERATURE CONTROL SYSTEM

10.3.1 FRONT ATC - LHD, EXCEPT EXPORT



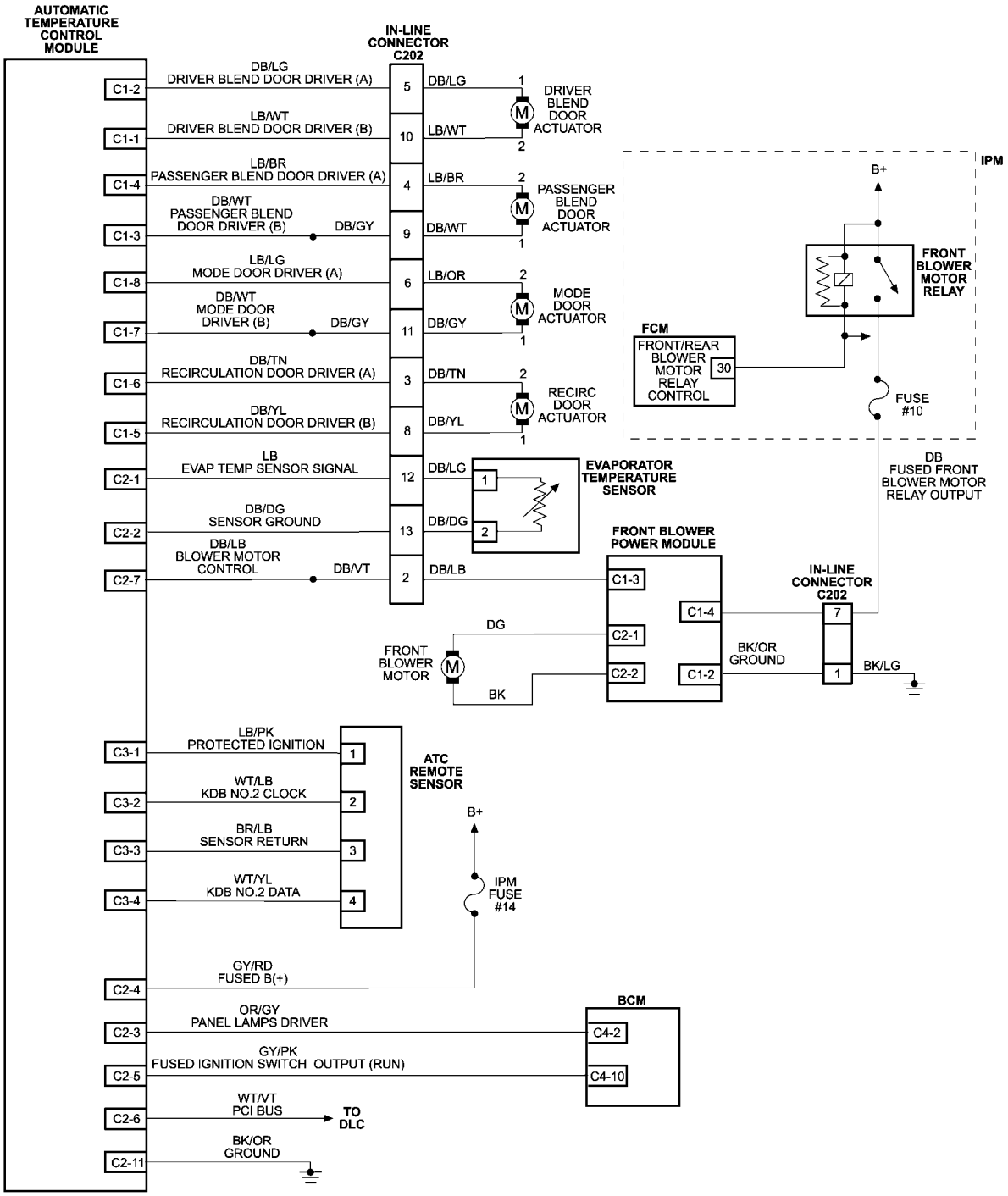
80fa0e08

10.3 AUTOMATIC TEMPERATURE CONTROL SYSTEM (Continued)
10.3.2 FRONT ATC - LHD, EXPORT



80fa0e0c

10.3.3 FRONT ATC - RHD



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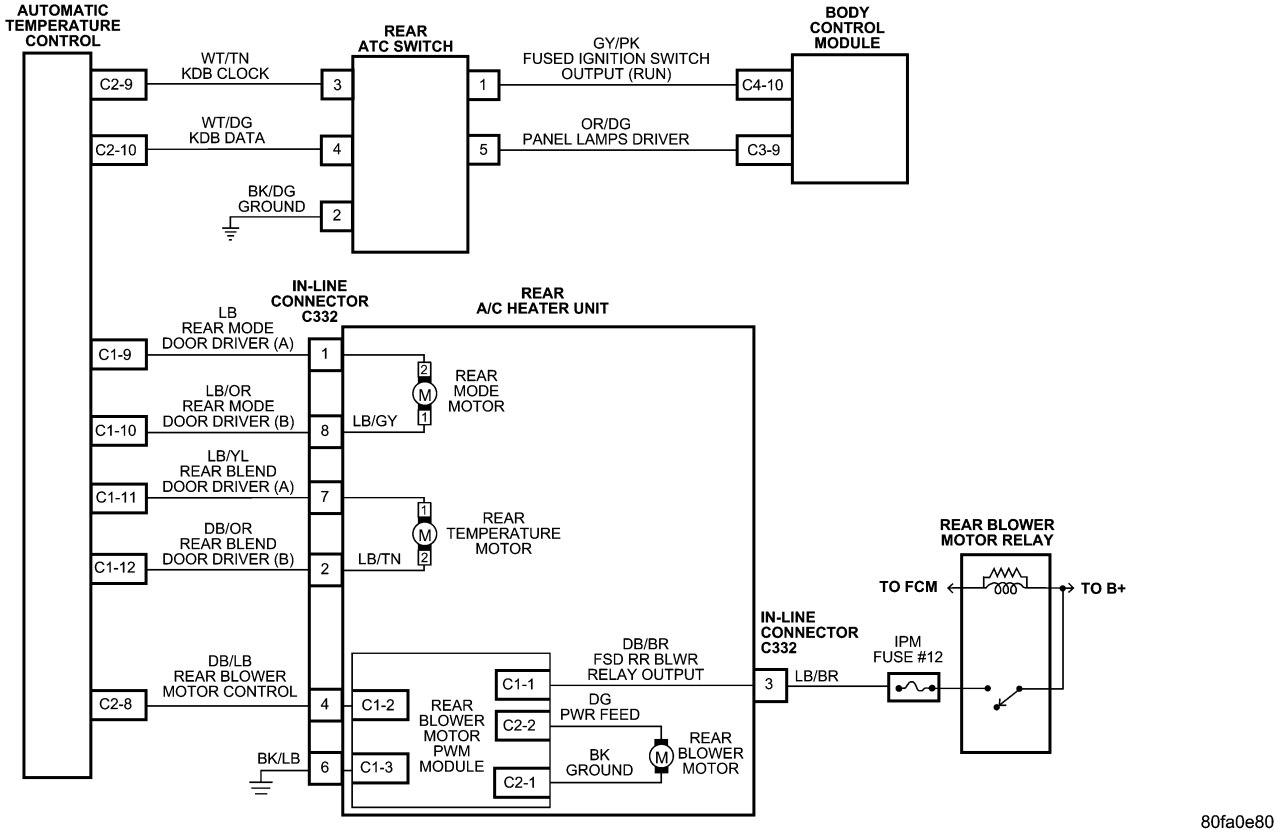
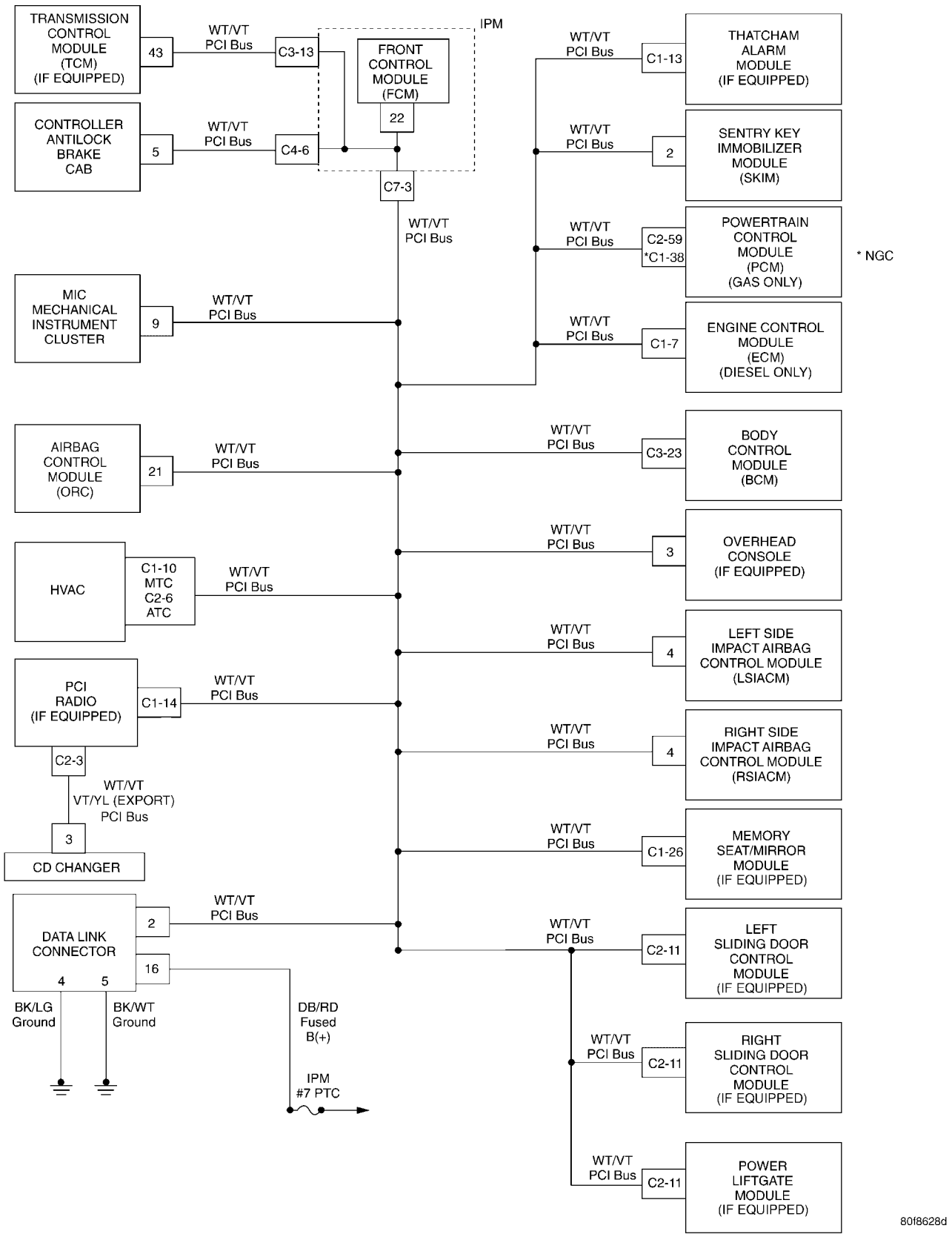
10.3 AUTOMATIC TEMPERATURE CONTROL SYSTEM (Continued)
10.3.4 REAR ATC - THREE ZONE

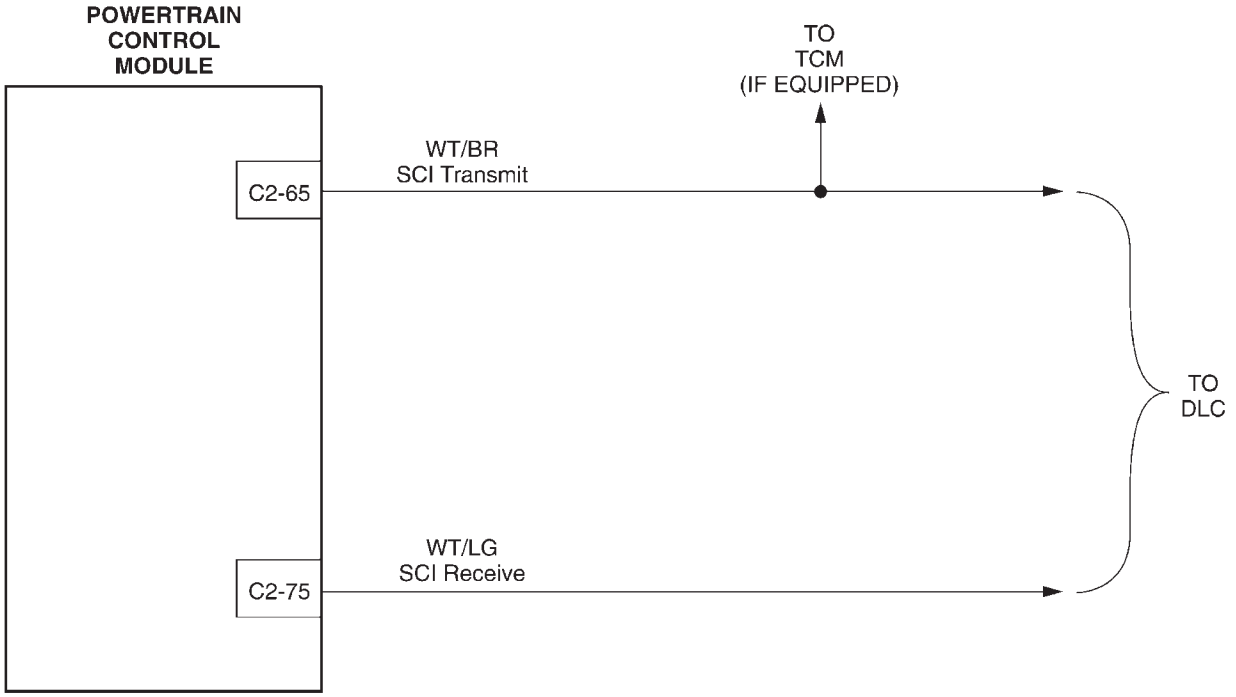


10.4 COMMUNICATION

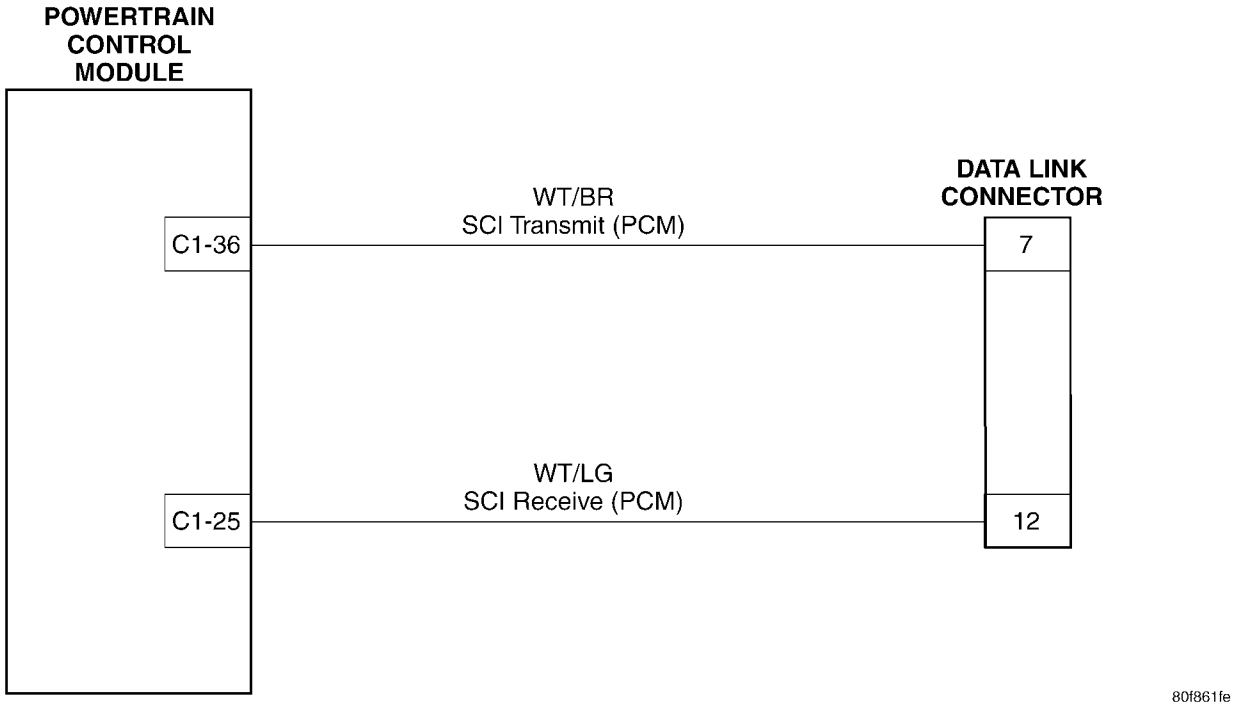


10.4 COMMUNICATION (Continued)

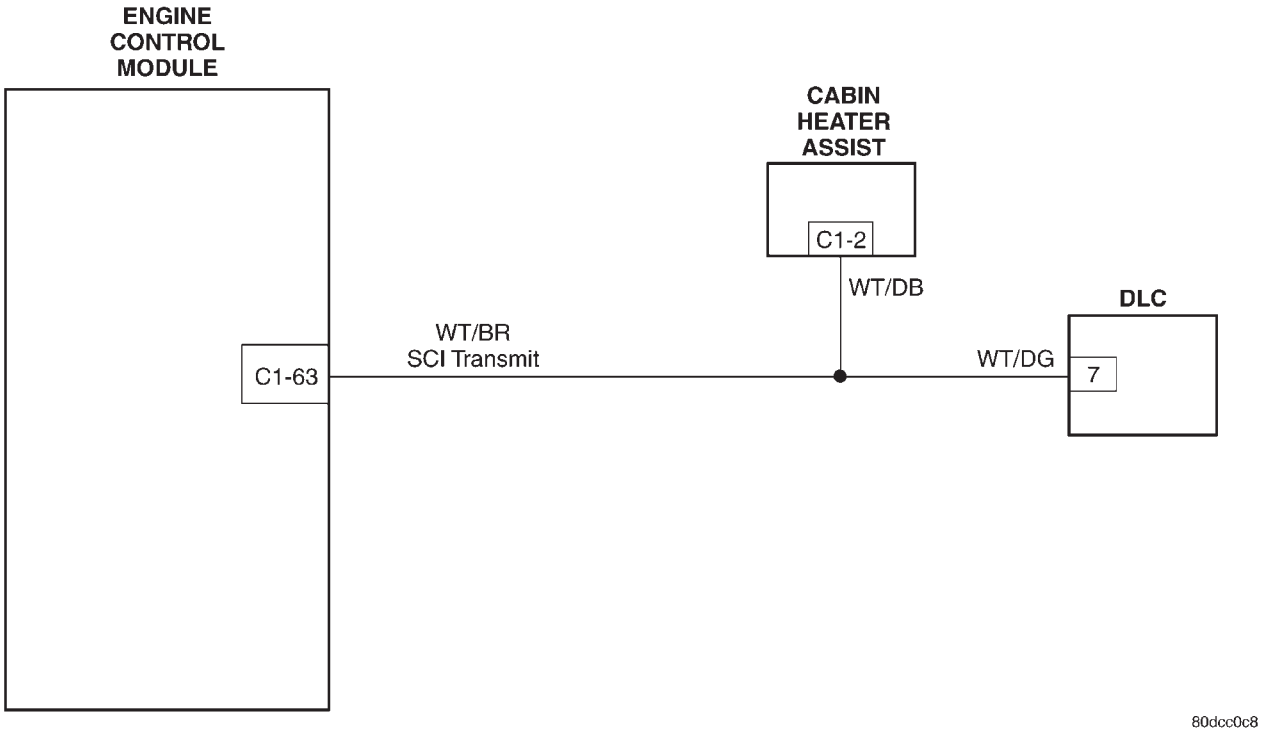
10.4.1 PCM COMMUNICATION – SBEC



10.4.2 PCM COMMUNICATION - NGC

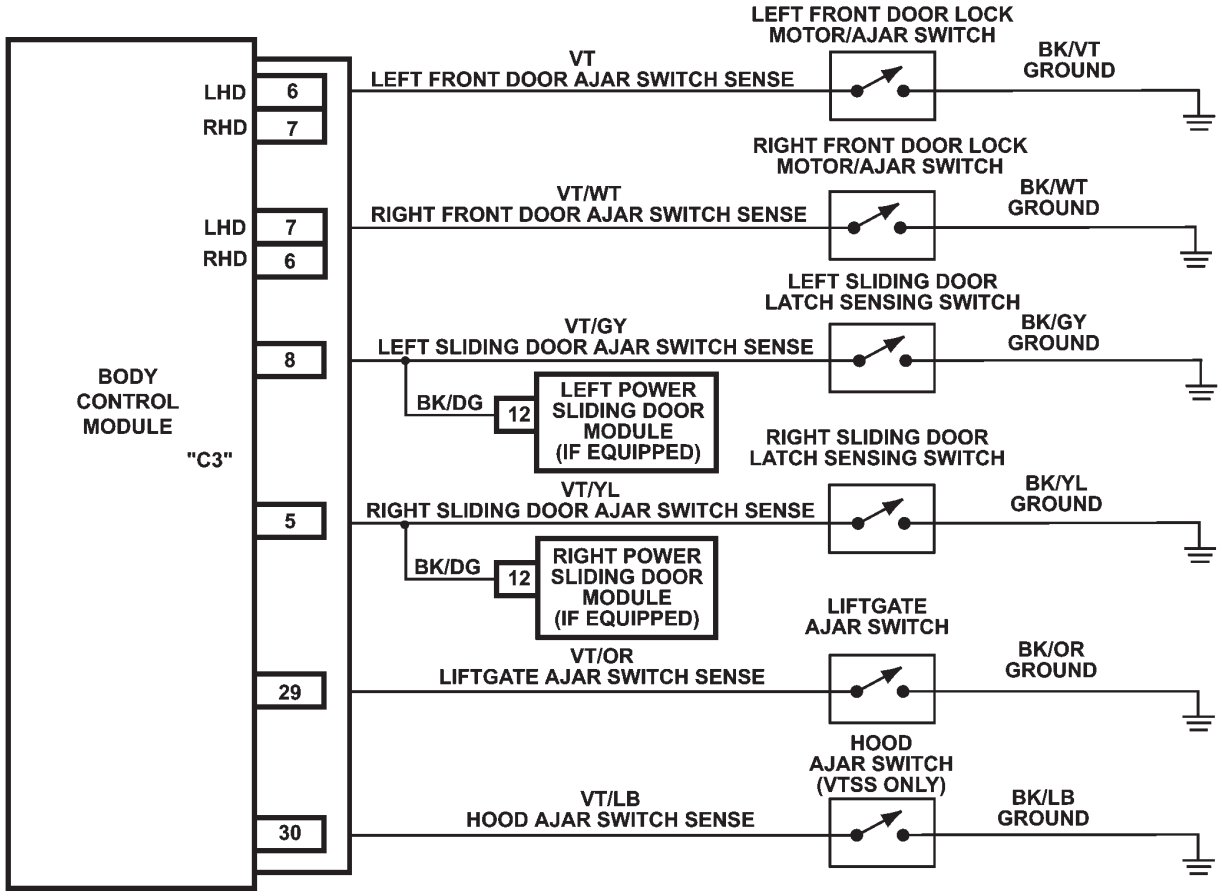


10.4.3 ECM & CABIN HEATER ASSIST COMMUNICATION - DIESEL ONLY



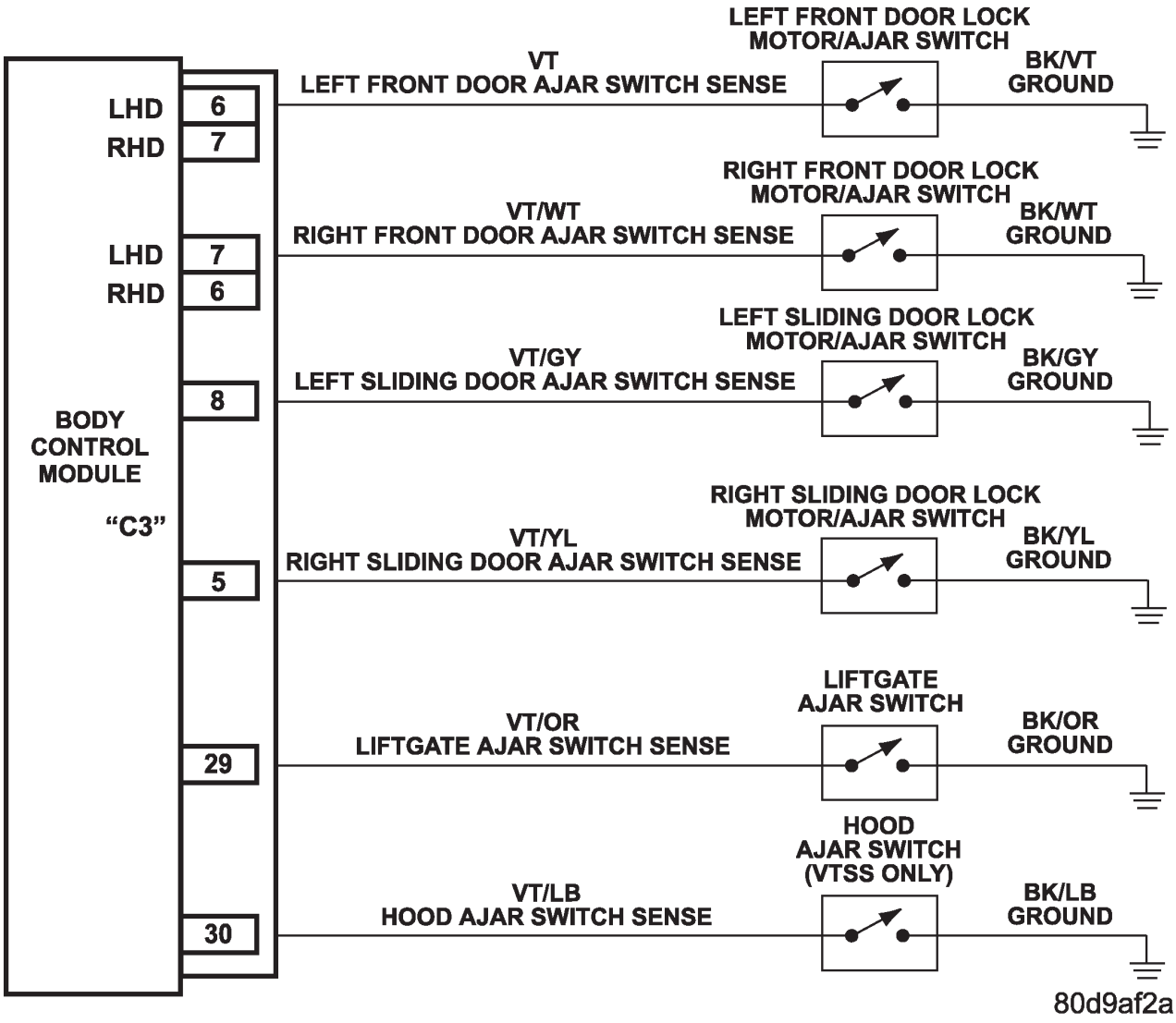
10.5 DOOR AJAR SYSTEM

10.5.1 DOOR AJAR SYSTEM WITH POWER SLIDING DOORS

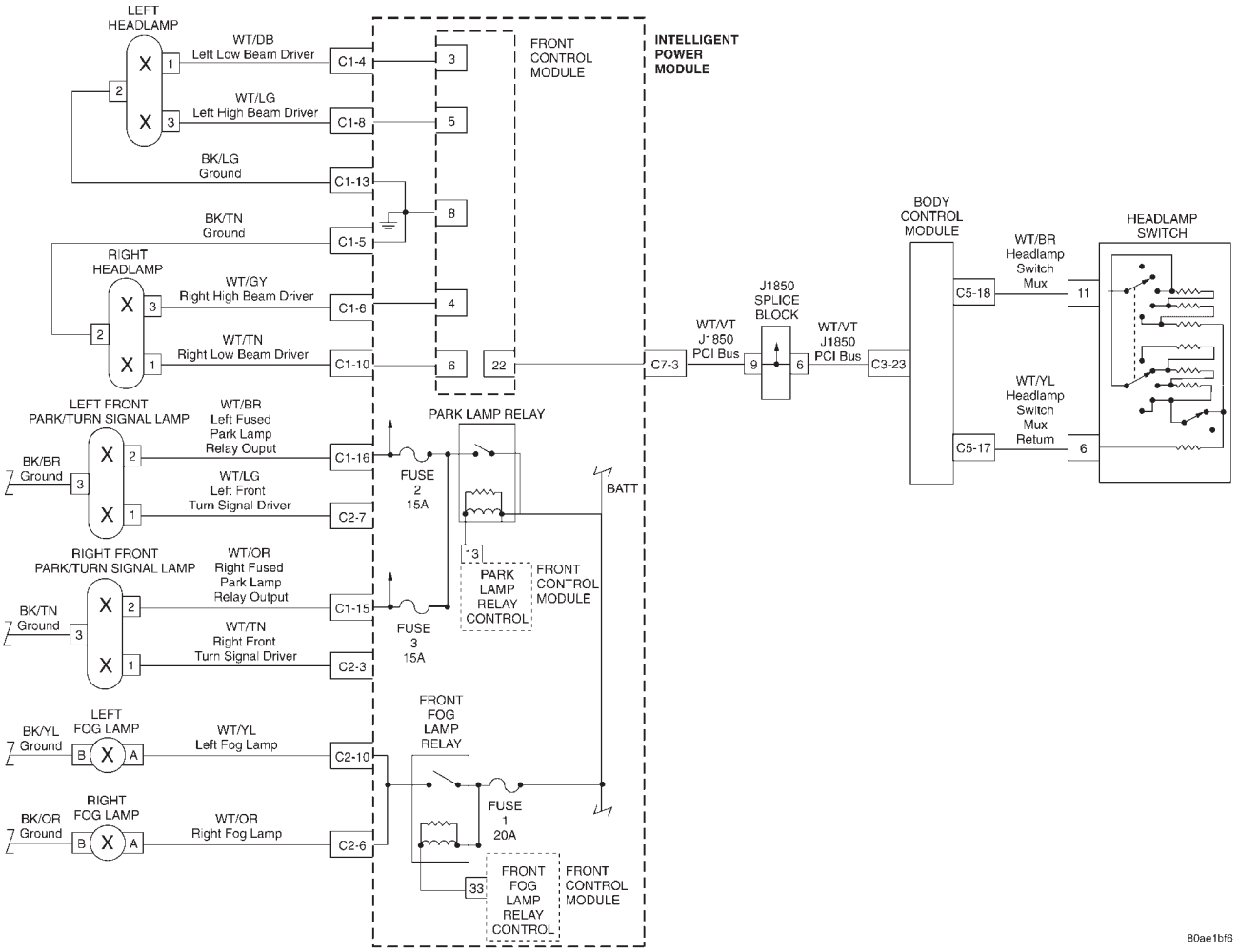


80d85f29

10.5.2 DOOR AJAR WITHOUT POWER SLIDING DOORS

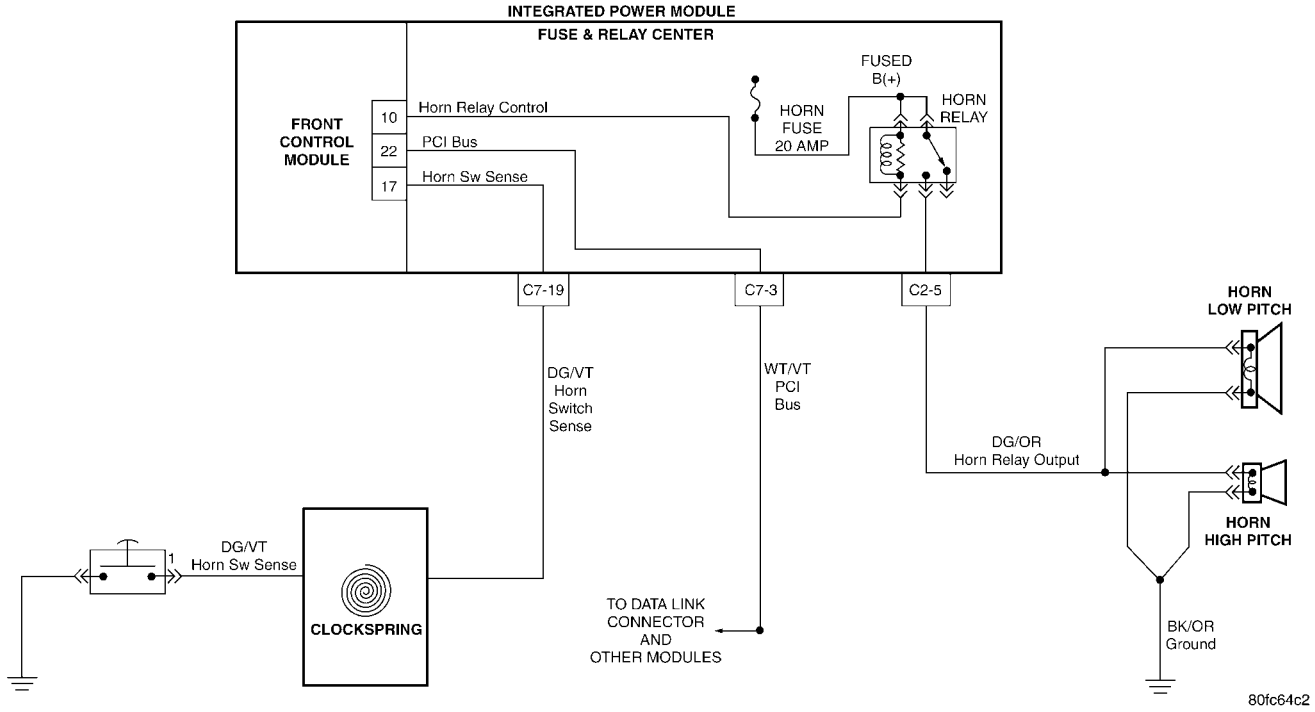


10.6 EXTERIOR LIGHTING

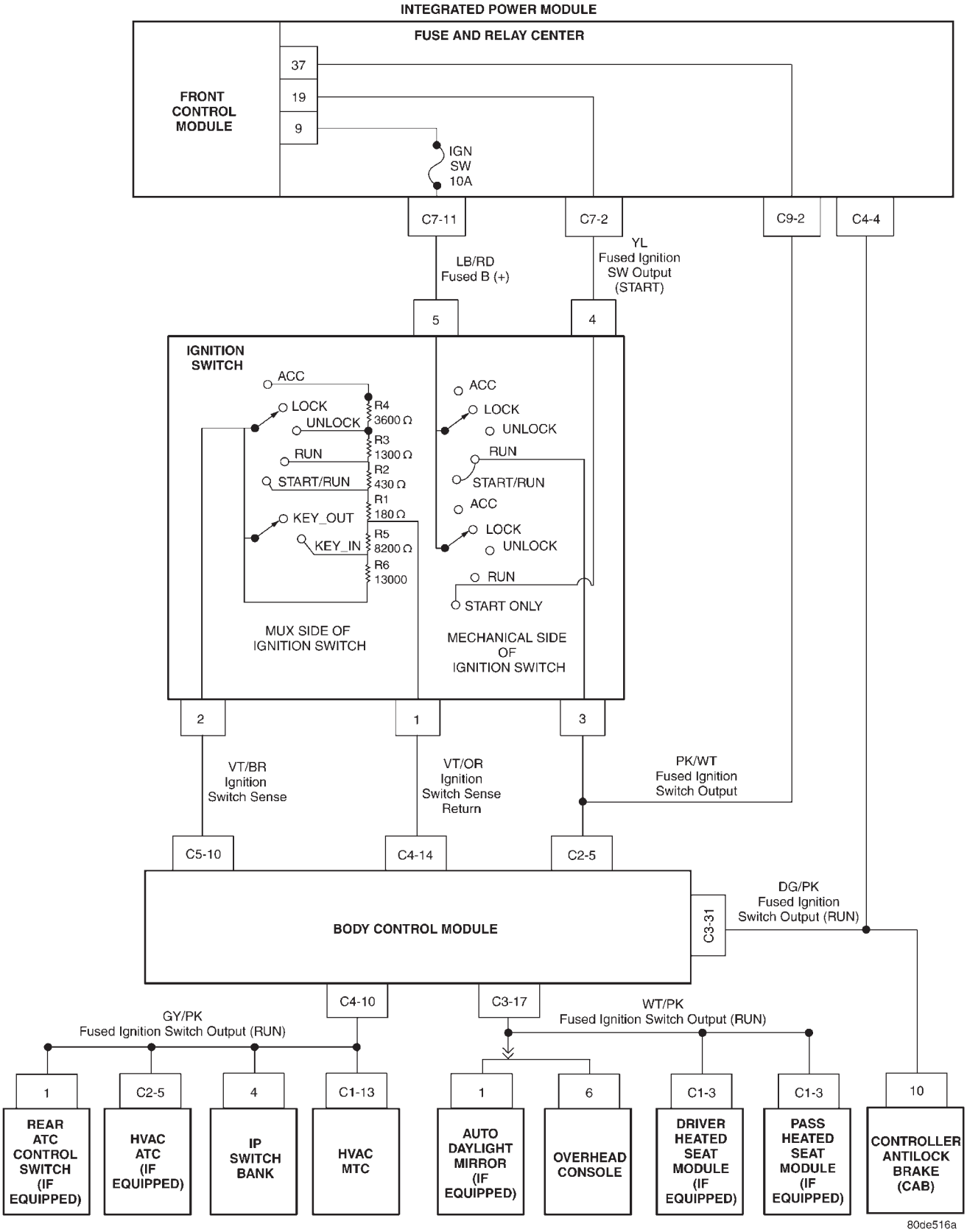


10.7 IGNITION, POWER, ACCESSORY

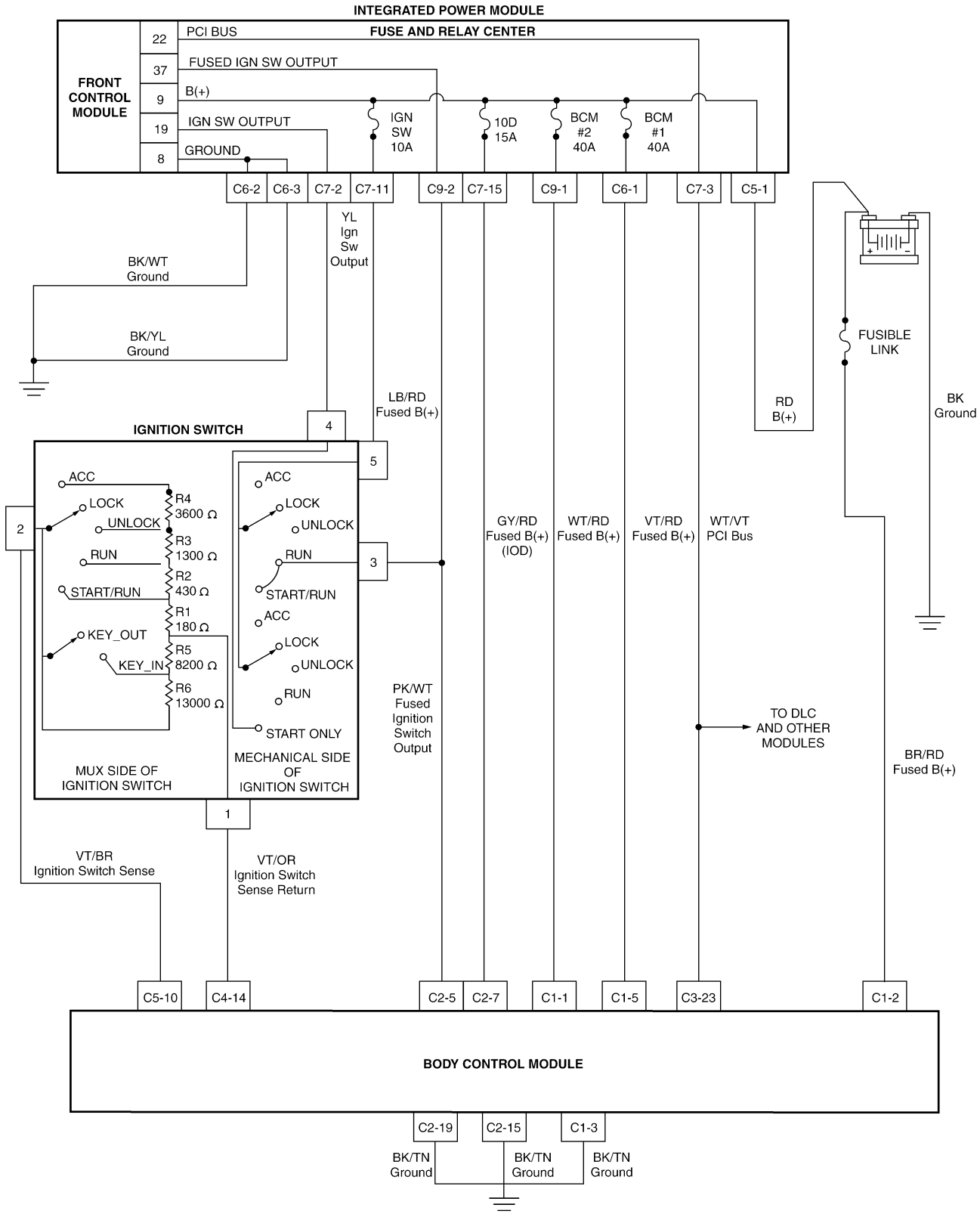
10.7.1 HORN SYSTEM



10.7 IGNITION, POWER, ACCESSORY (Continued)
10.7.2 IGNITION SWITCH



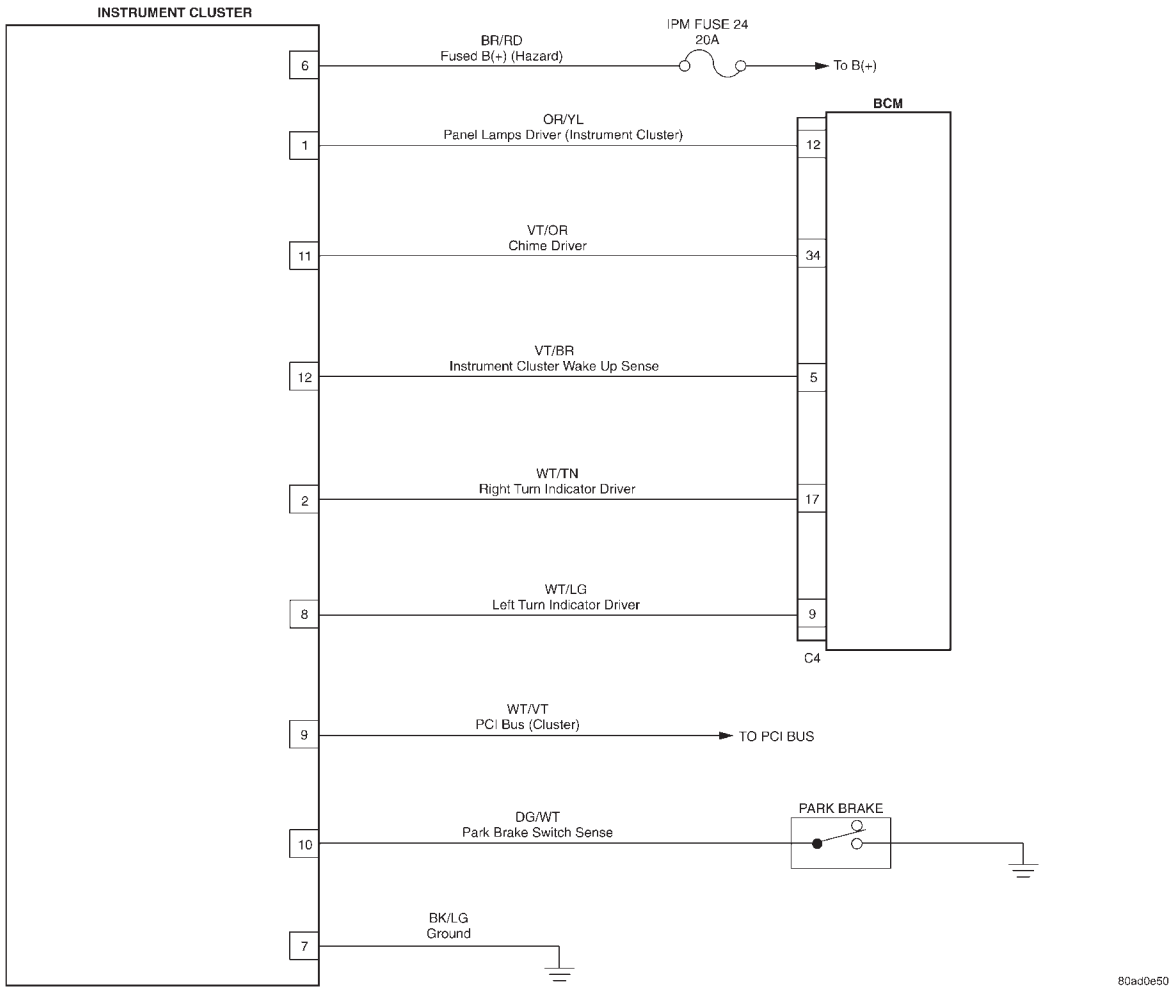
10.7.3 INTEGRATED POWER MODULE/BODY CONTROL MODULE POWER AND GROUNDS



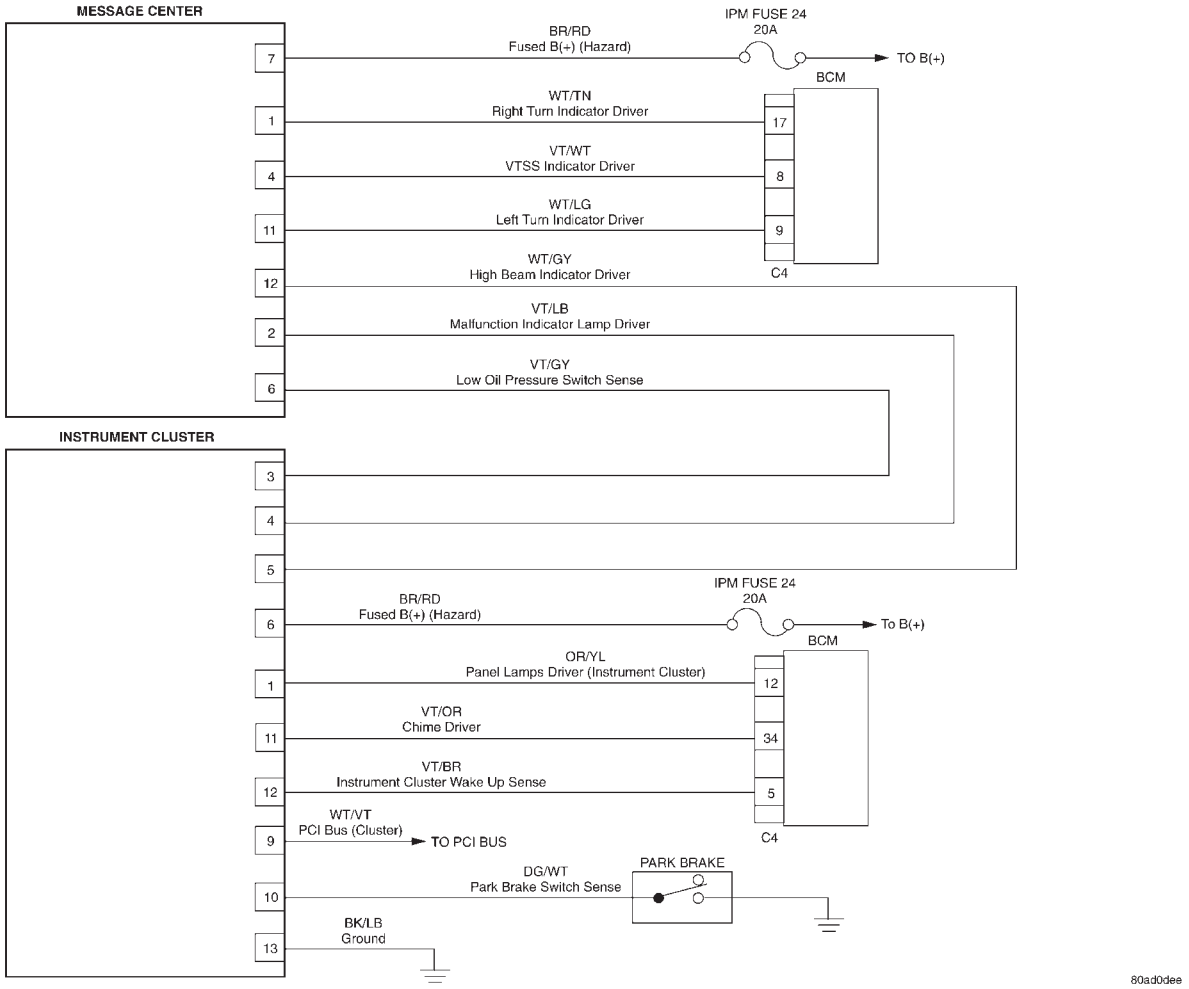
80fc6368

10.8 INSTRUMENT CLUSTER

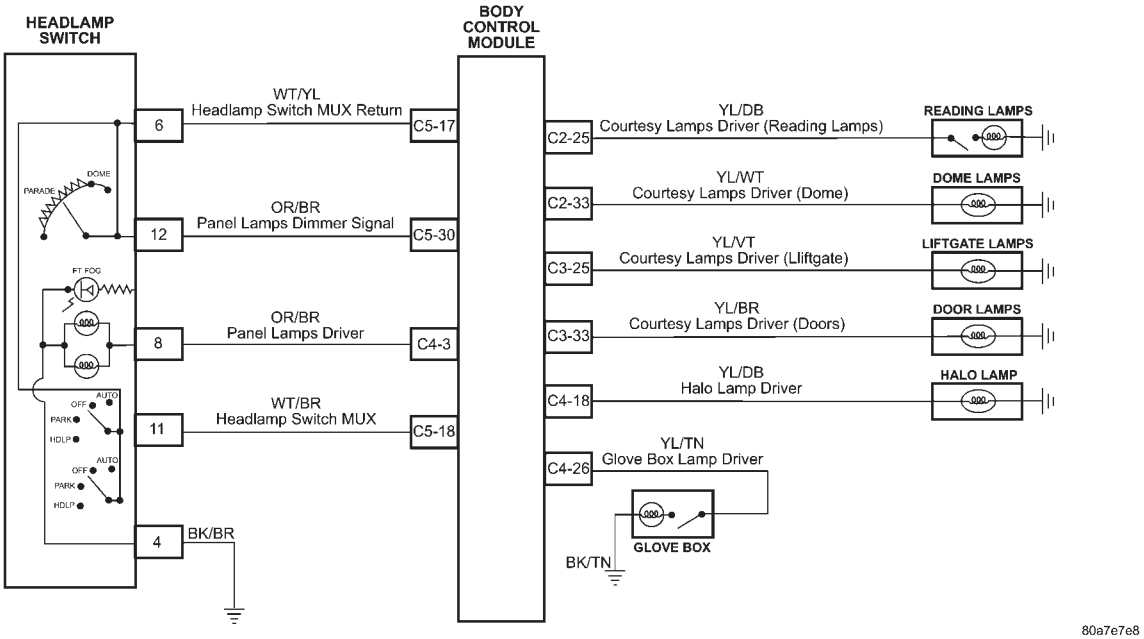
10.8.1 INSTRUMENT CLUSTER — BASE



10.8.2 INSTRUMENT CLUSTER & MESSAGE CENTER



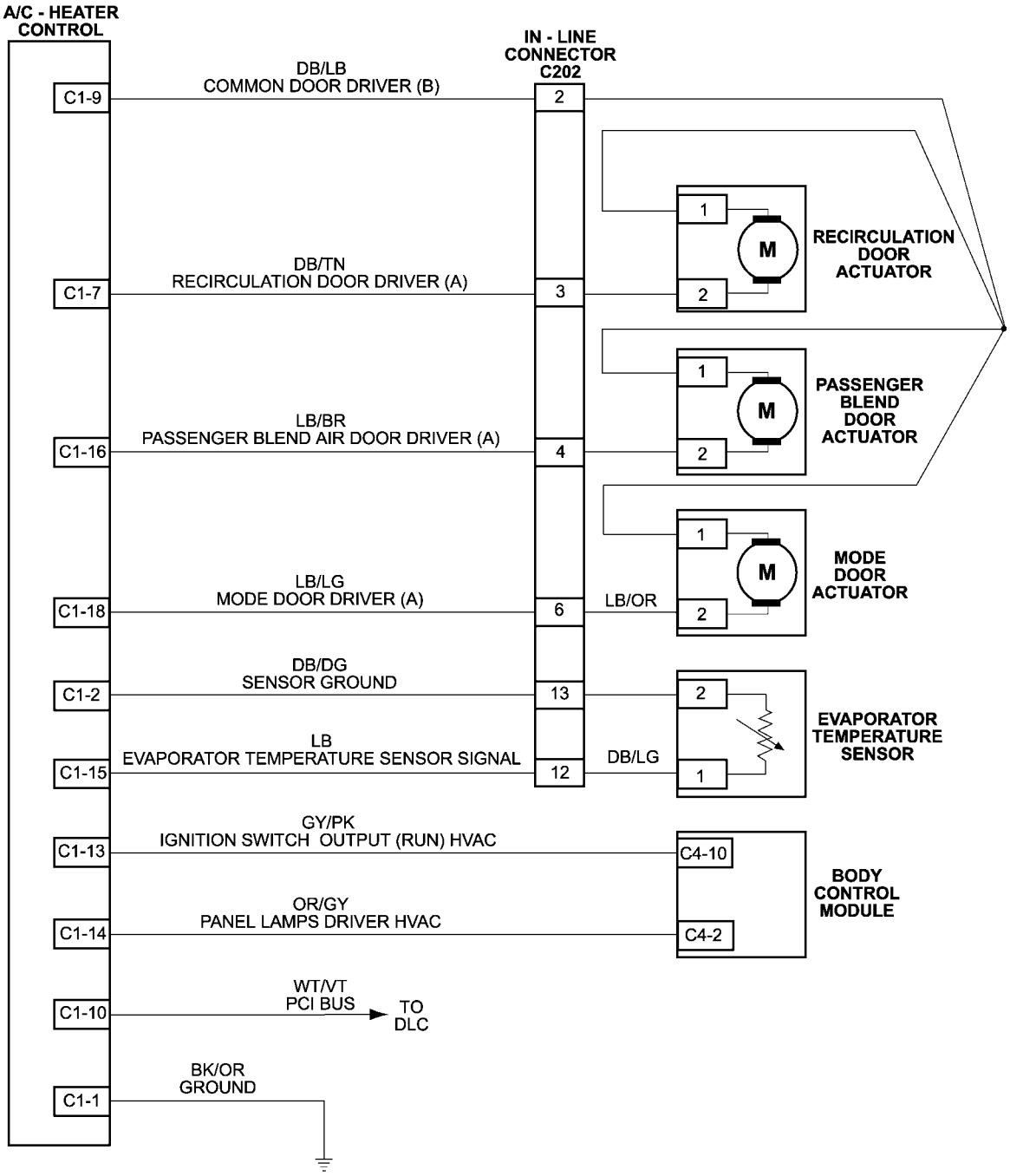
10.9 INTERIOR LIGHTING



80a7e7e8

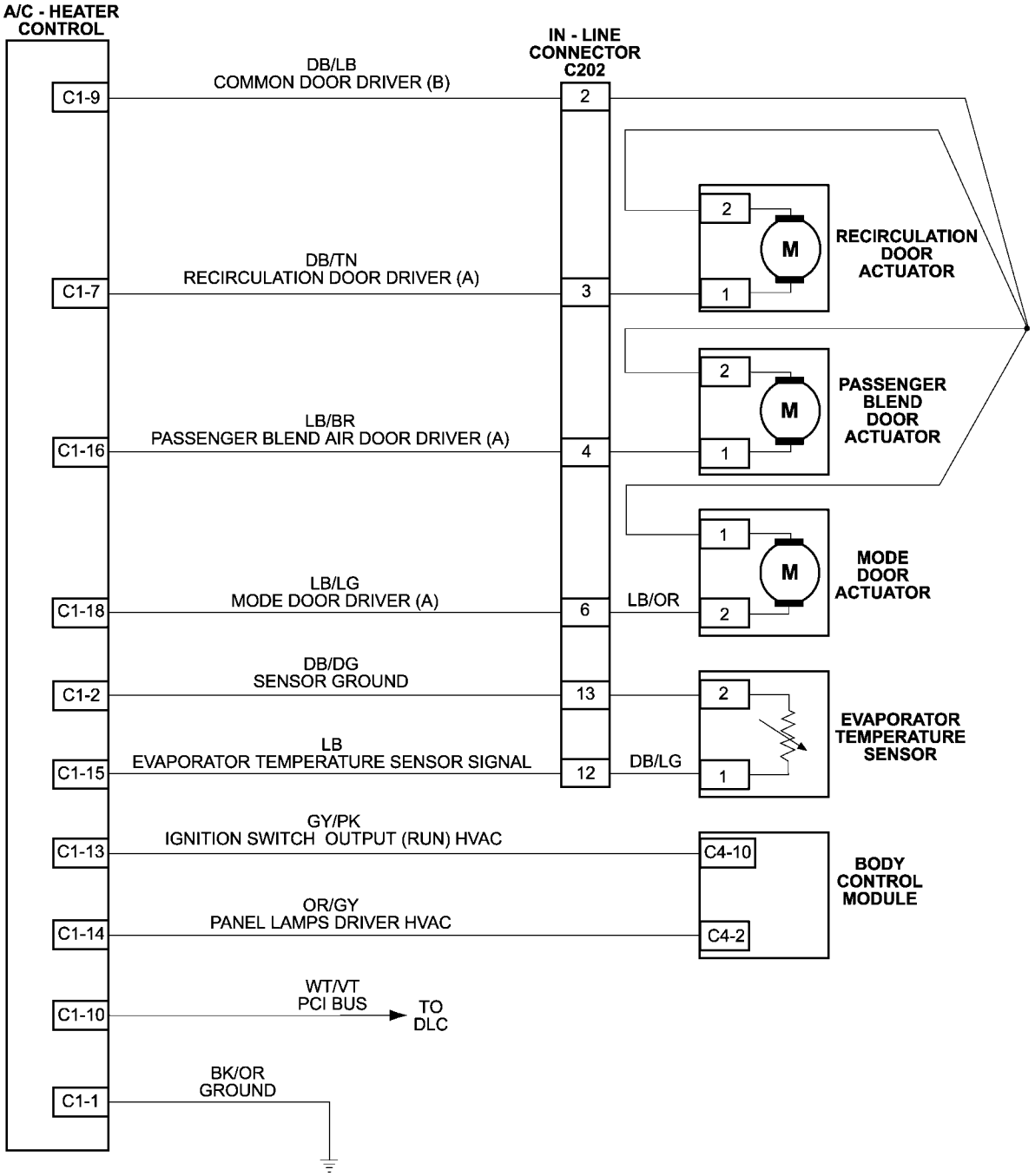
10.10 MANUAL TEMPERATURE CONTROLS

10.10.1 BASE MANUAL TEMPERATURE CONTROL SYSTEM, LHD



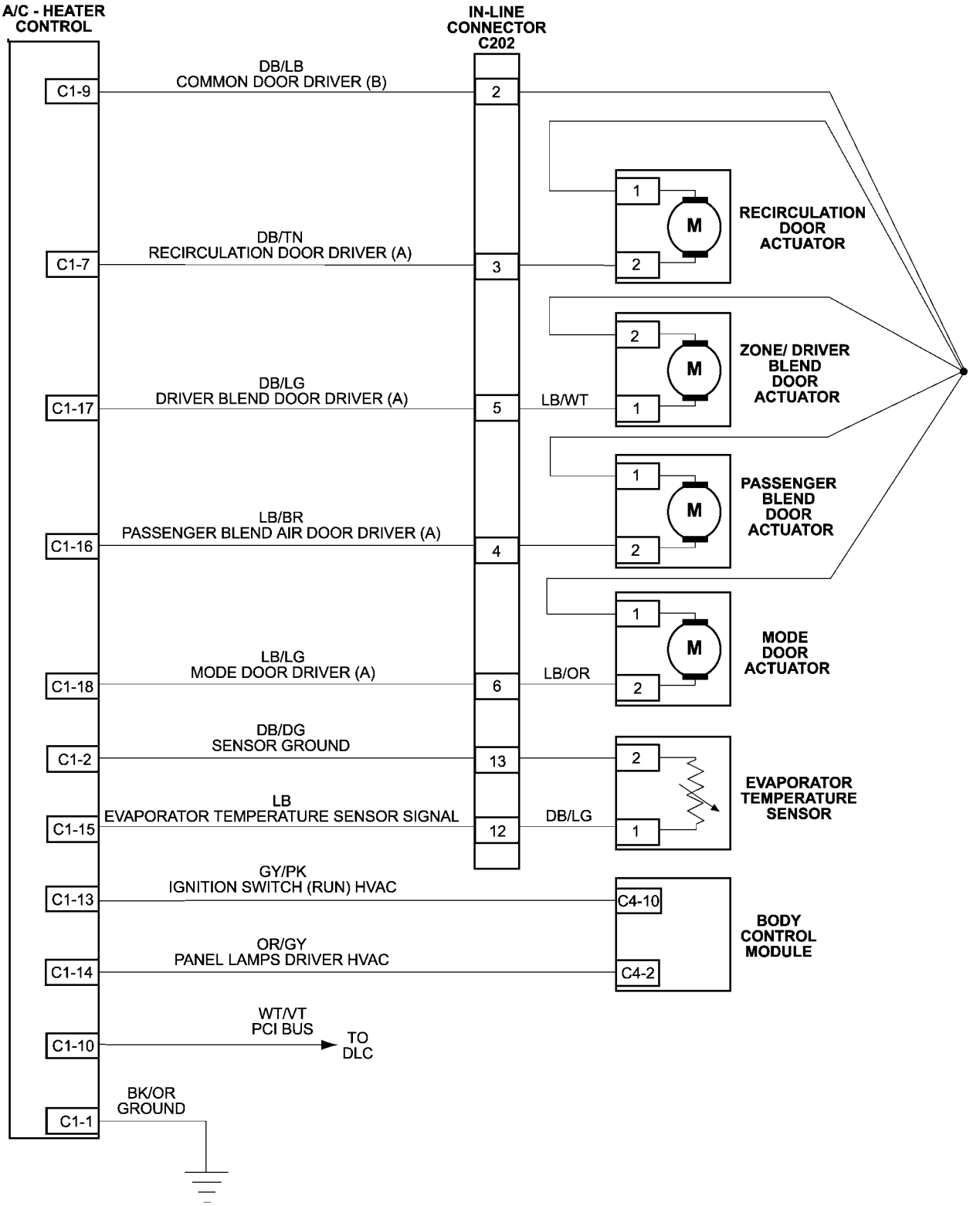
80f9dd78

10.10 MANUAL TEMPERATURE CONTROLS (Continued)
10.10.2 BASE MANUAL TEMPERATURE CONTROL SYSTEM, RHD



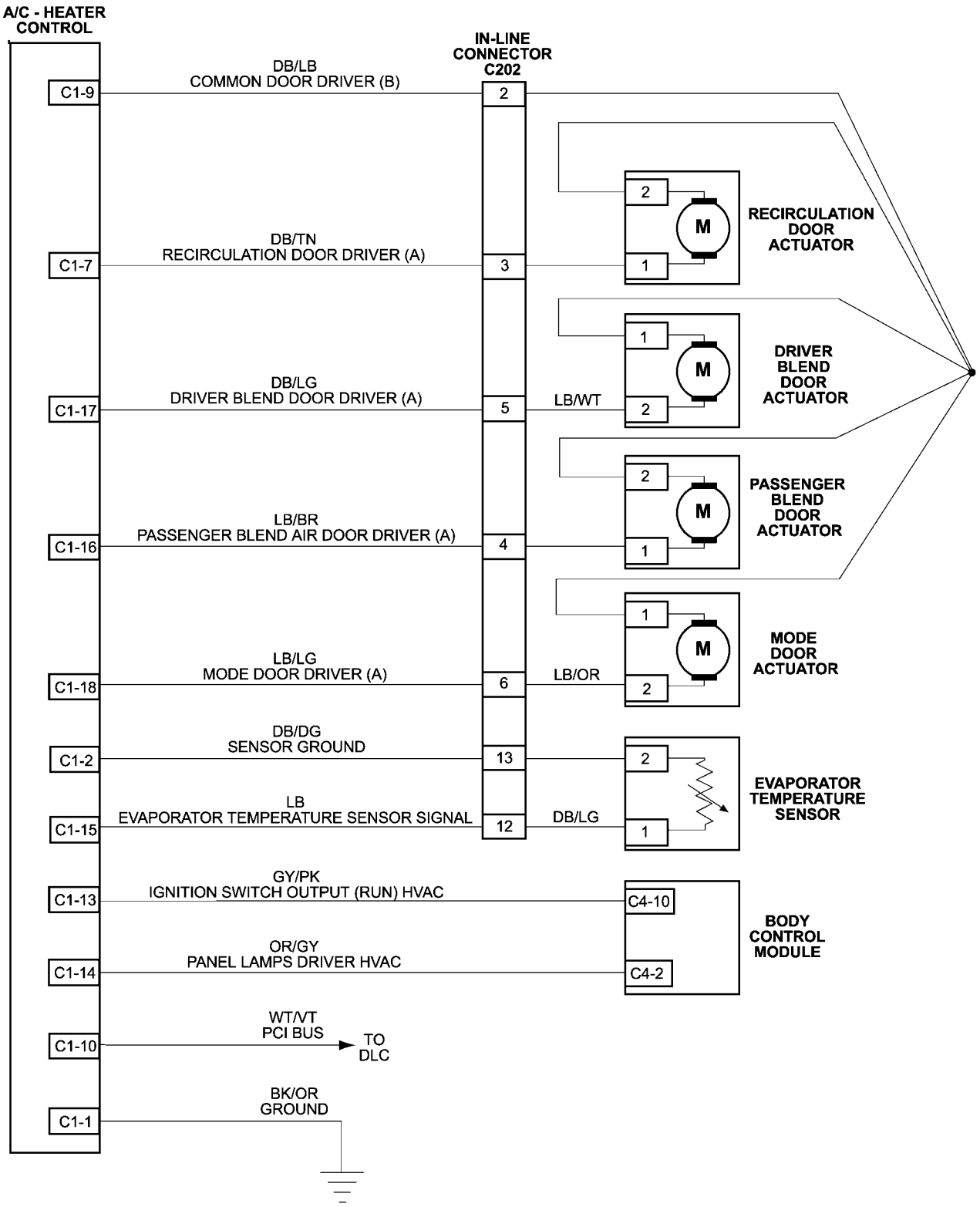
80f9dd90

10.10.3 DUAL-ZONE & THREE-ZONE (FRONT) MANUAL TEMPERATURE CONTROL SYSTEM, LHD

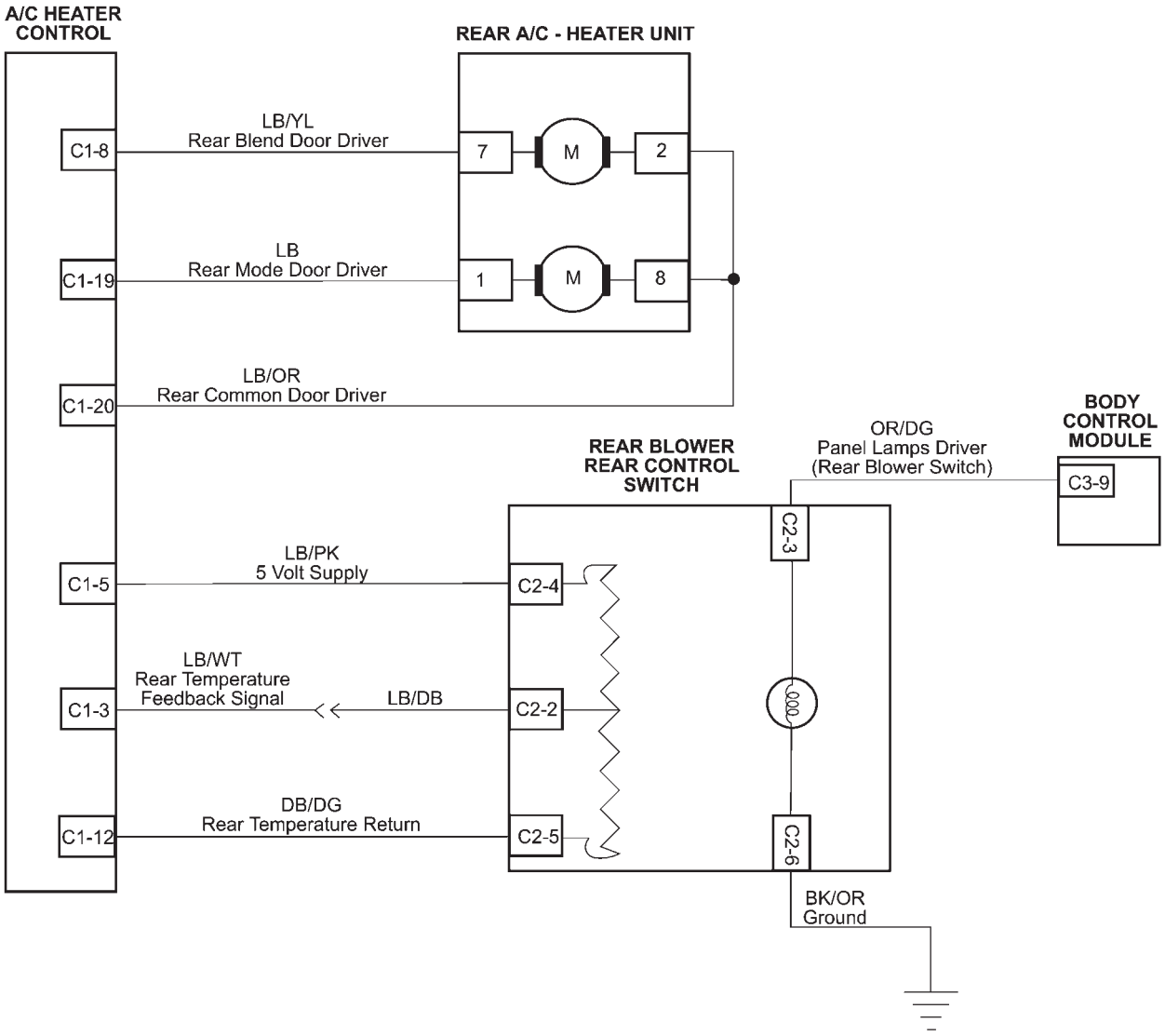


80f9ddad

10.10 MANUAL TEMPERATURE CONTROLS (Continued)
10.10.4 DUAL-ZONE (FRONT) MANUAL TEMPERATURE CONTROL SYSTEM, RHD



10.10.5 THREE ZONE REAR MANUAL TEMPERATURE CONTROL SYSTEM



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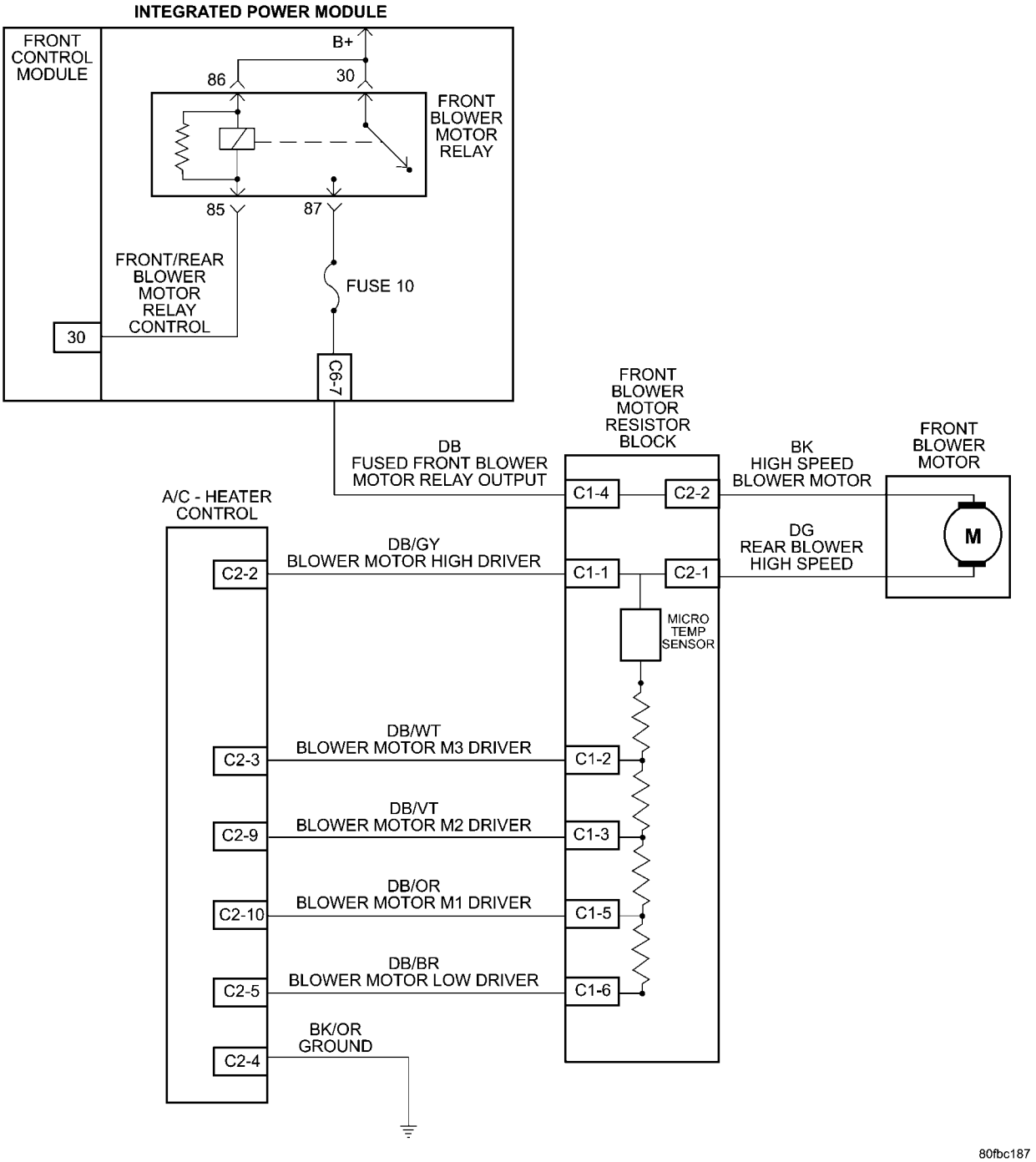
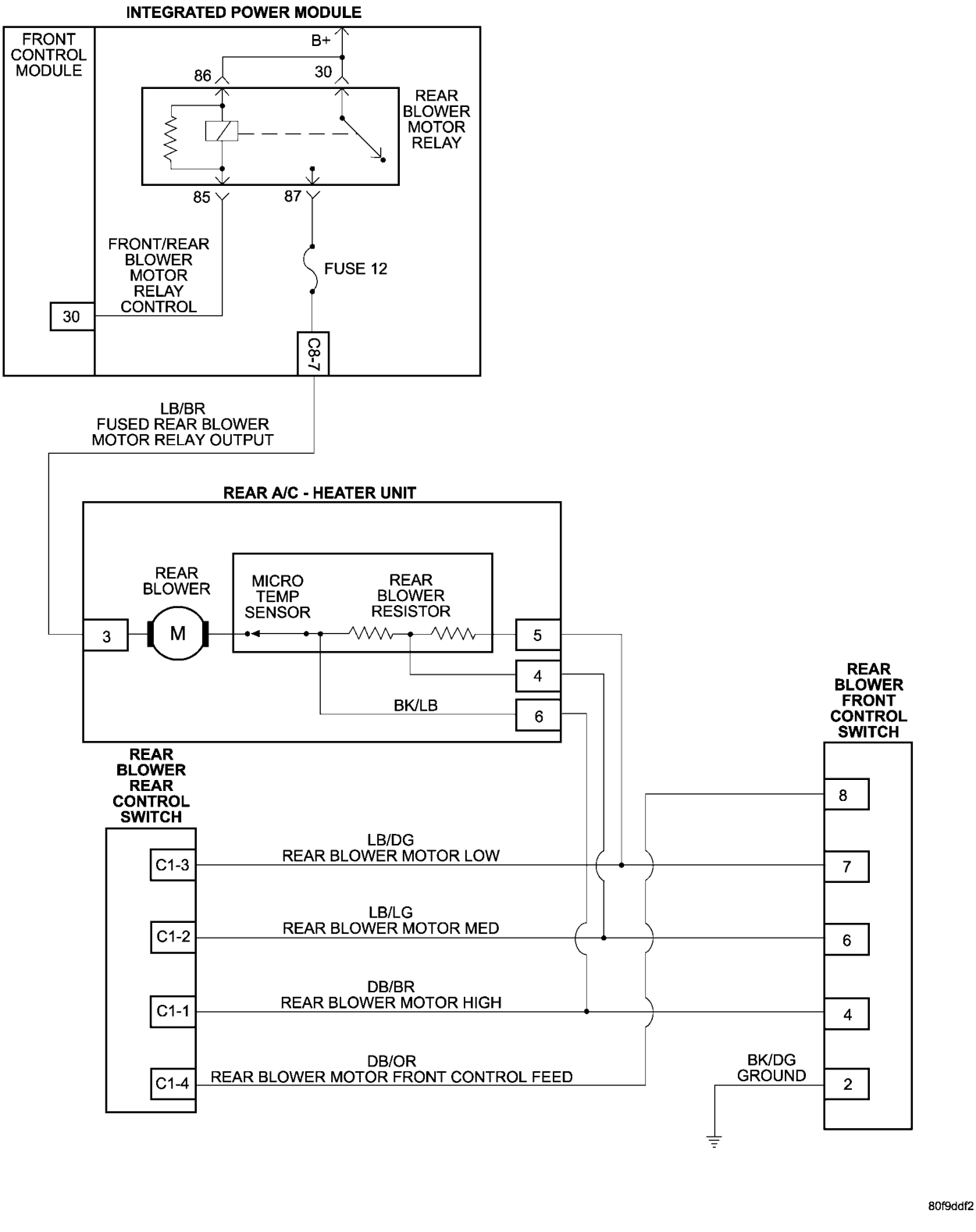
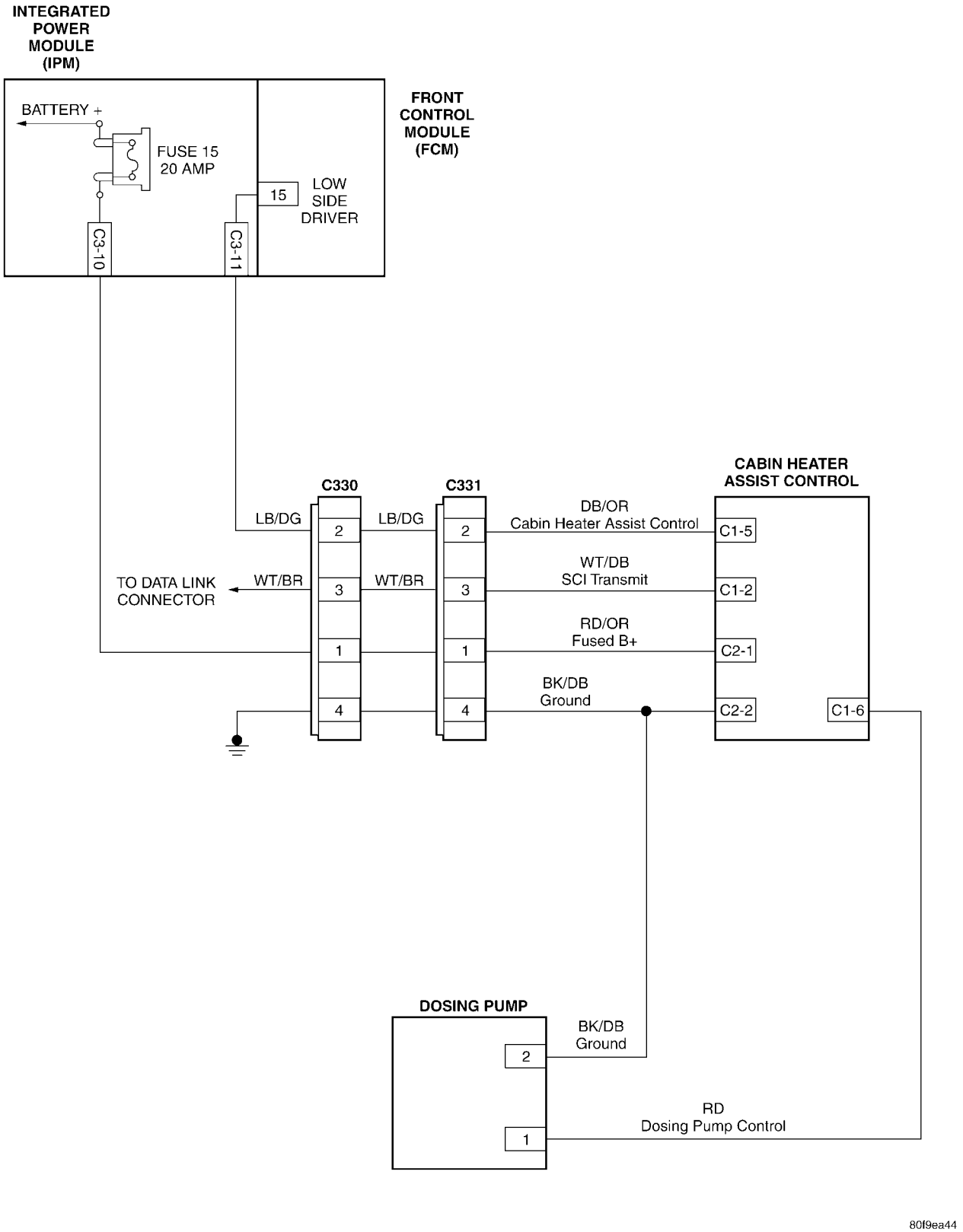
10.10 MANUAL TEMPERATURE CONTROLS (Continued)
10.10.6 FRONT BLOWER MOTOR



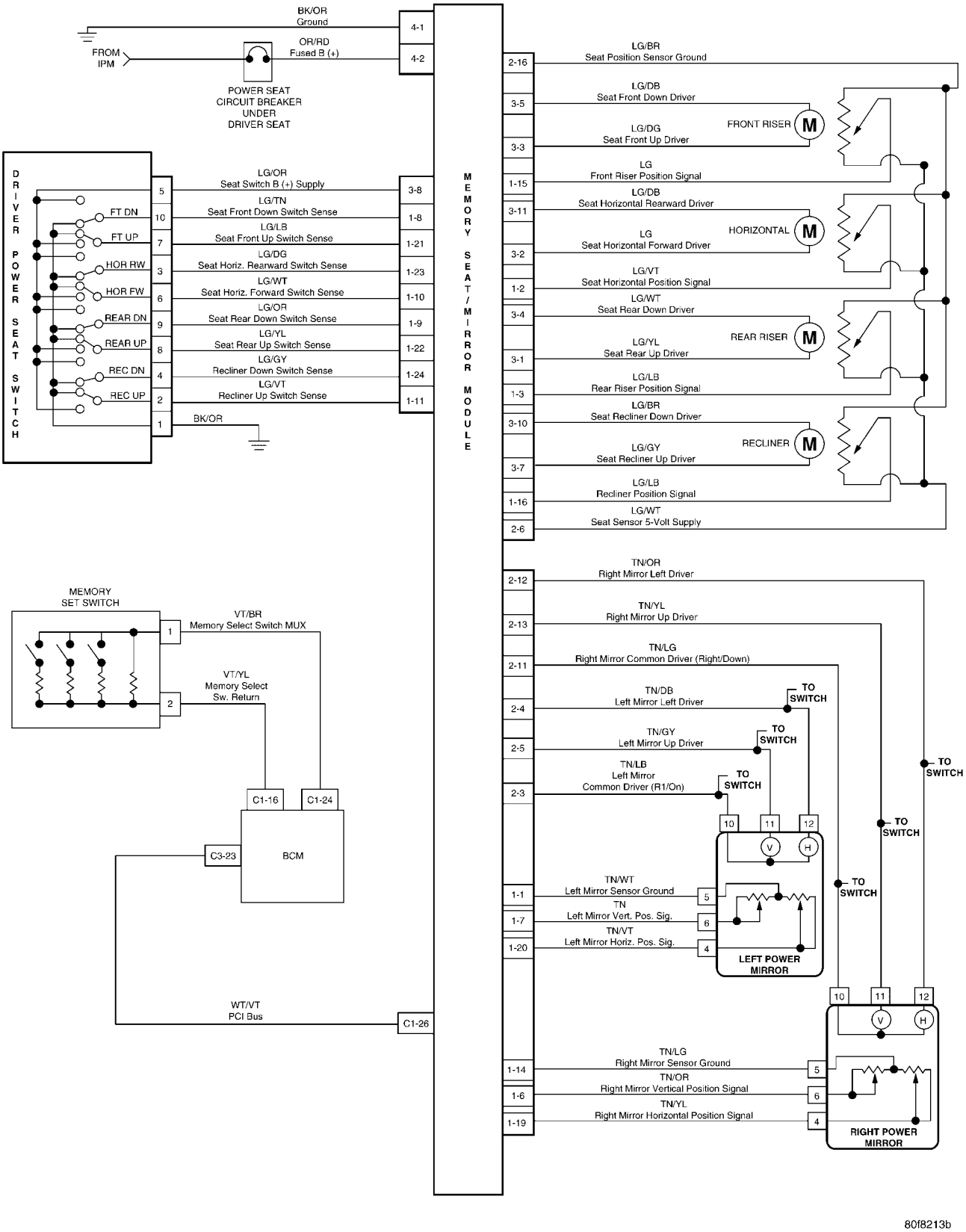
10.10.7 REAR BLOWER MOTOR



10.10 MANUAL TEMPERATURE CONTROLS (Continued)
10.10.8 DIESEL CABIN HEATER ASSIT (DCHA)



10.11 MEMORY SYSTEM



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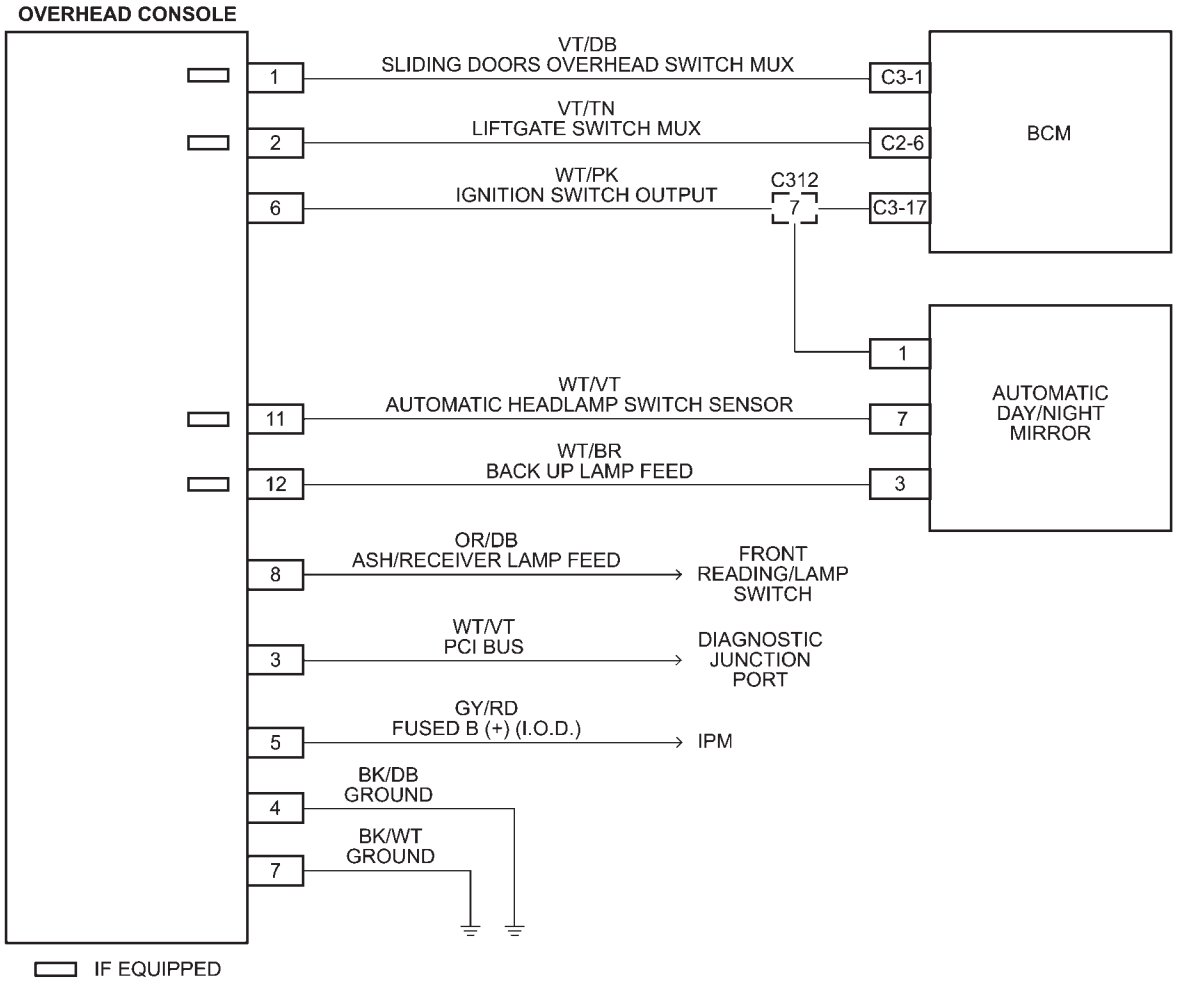
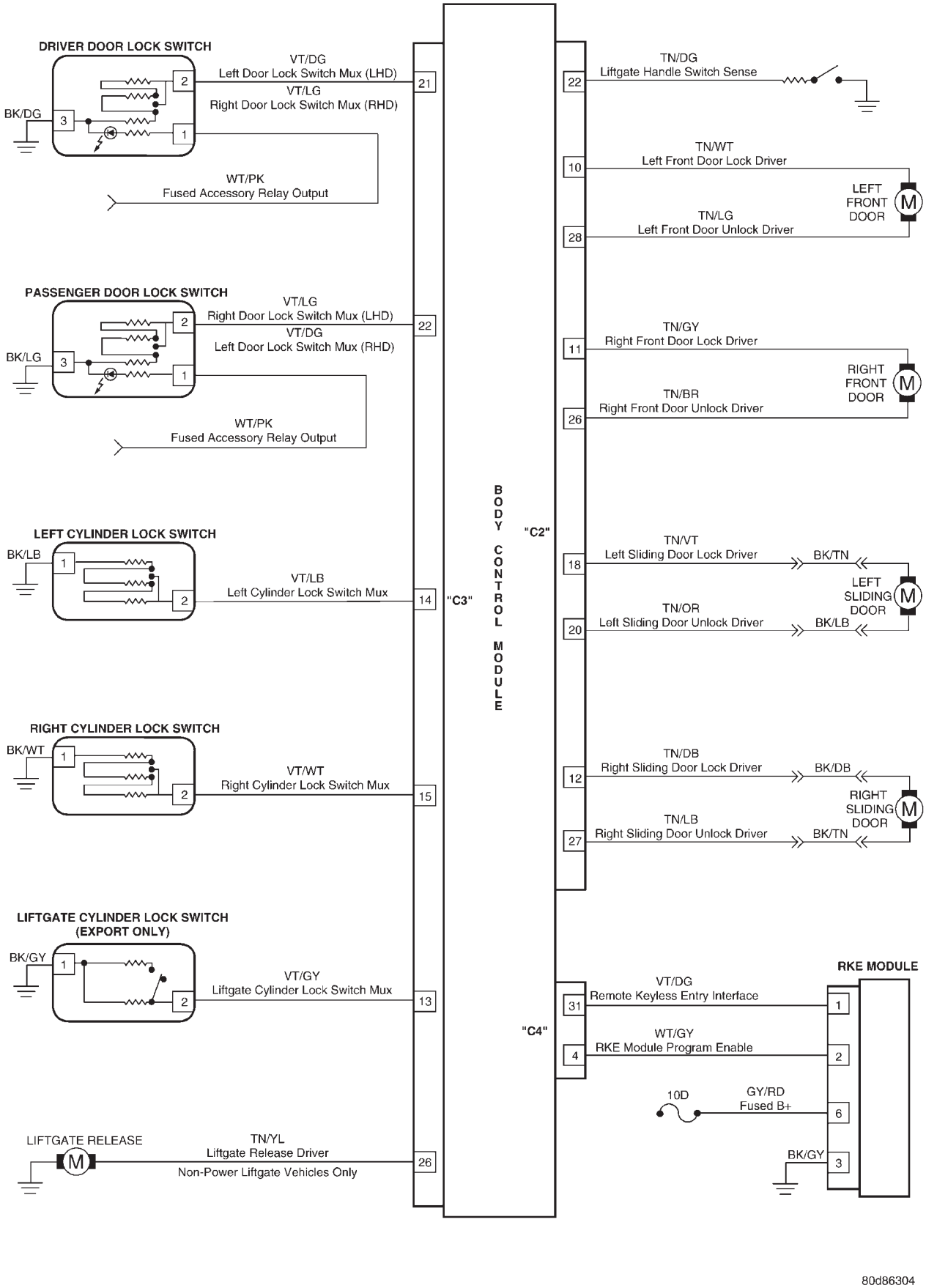
10.12 OVERHEAD CONSOLE

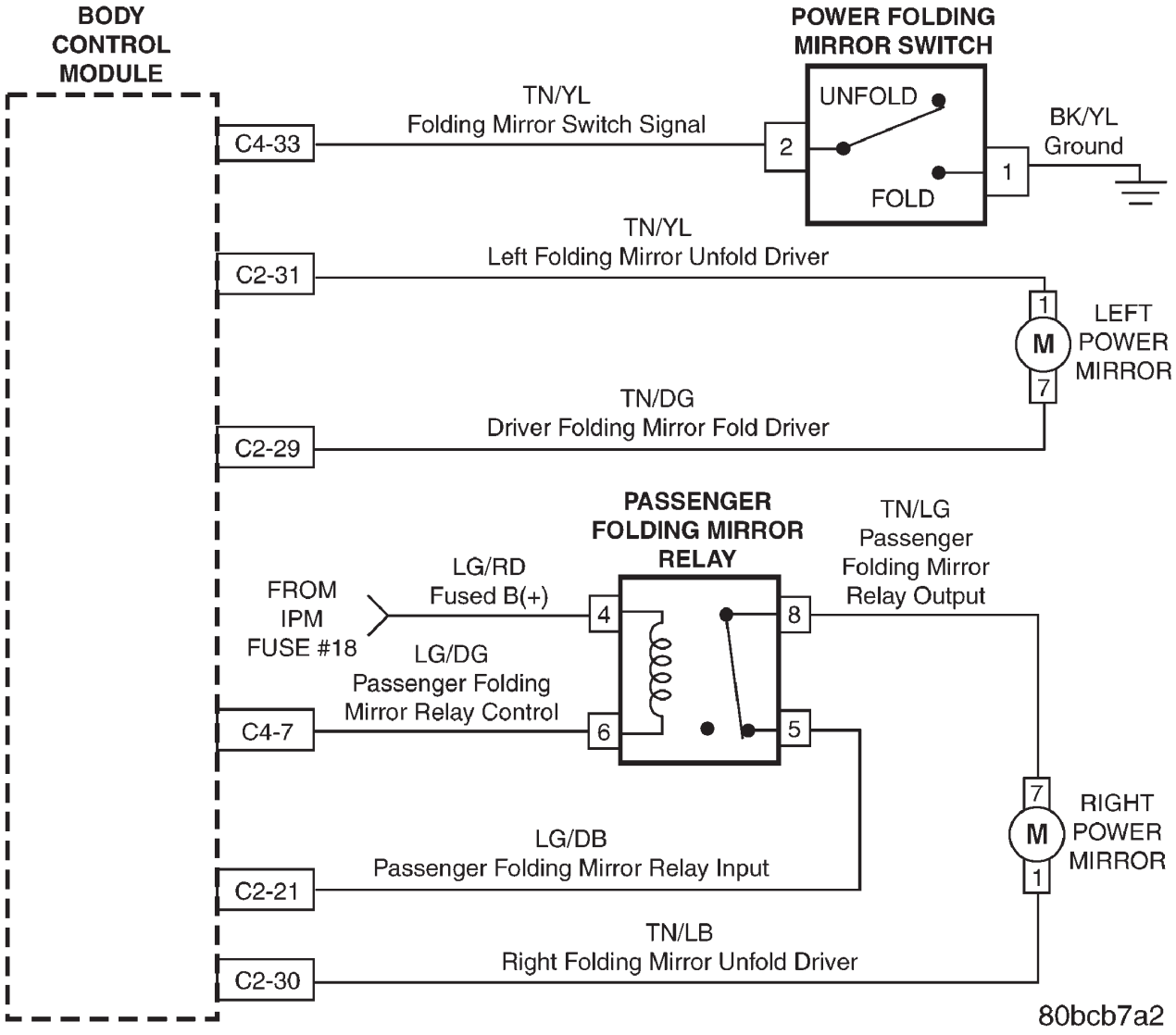


80af5332

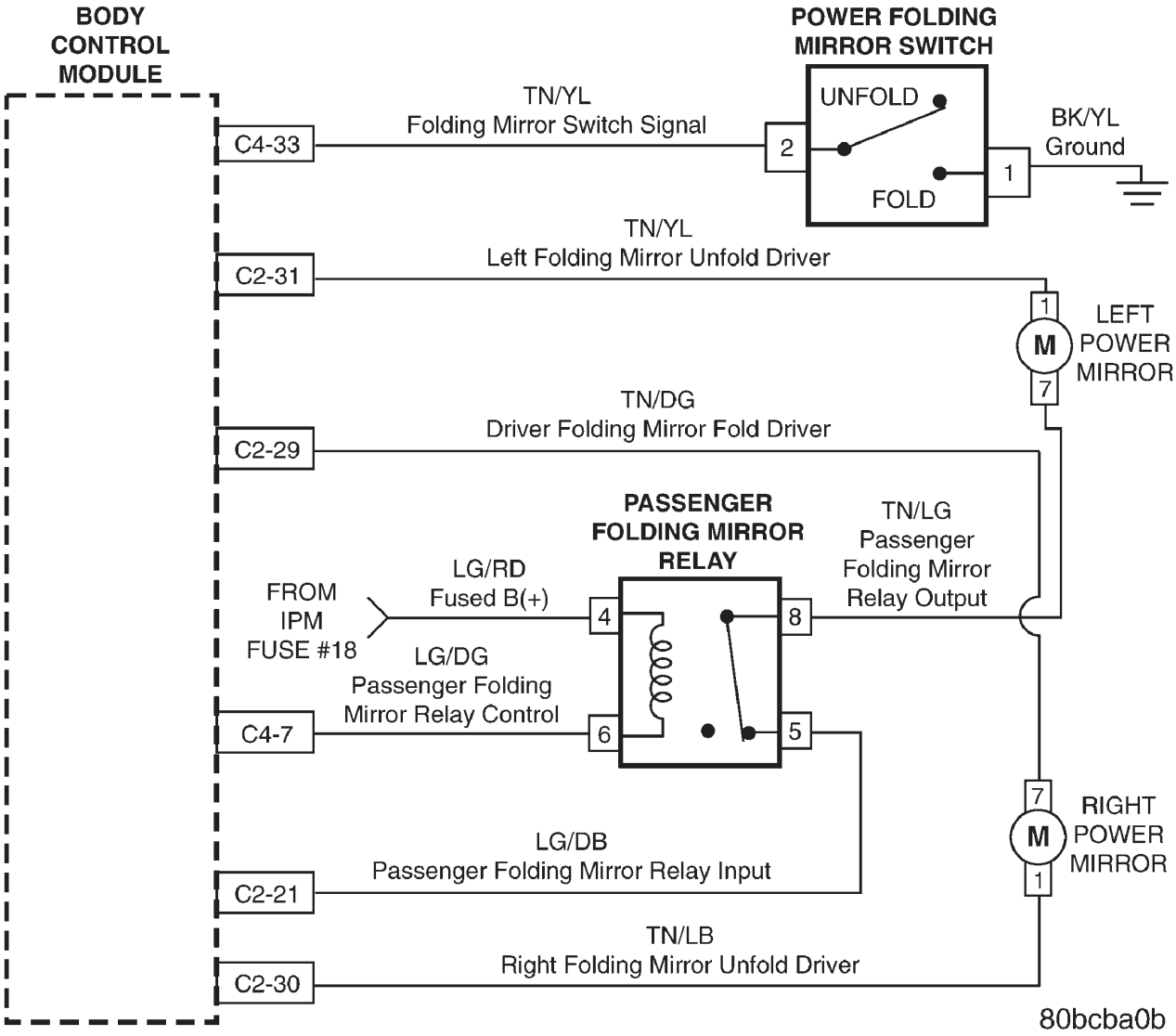
10.13 POWER DOOR LOCKS/RKE



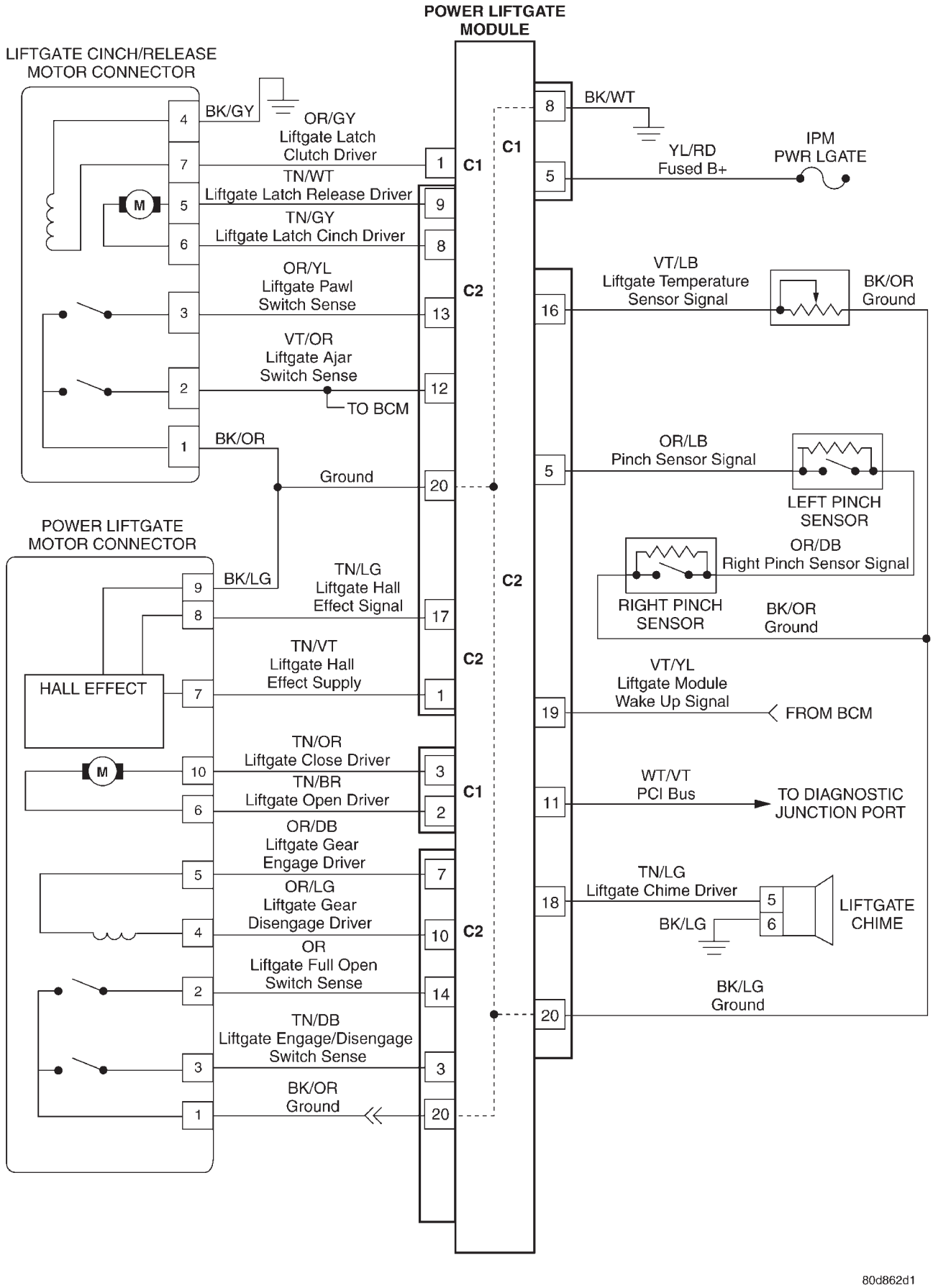
10.14 POWER FOLDING MIRROR LHD (EXPORT ONLY)



10.15 POWER FOLDING MIRROR RHD (EXPORT ONLY)

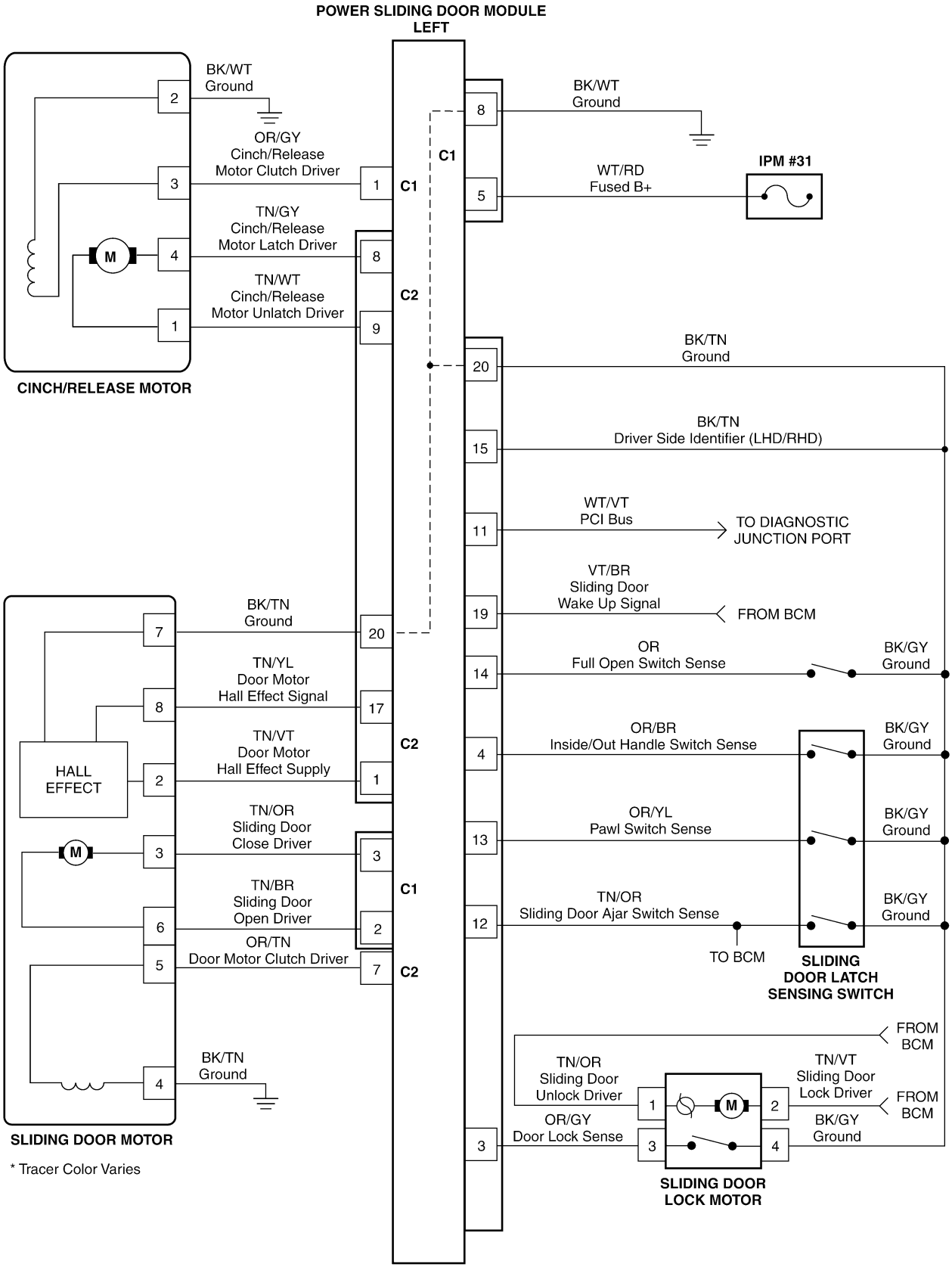


10.16 POWER LIFTGATE SYSTEM

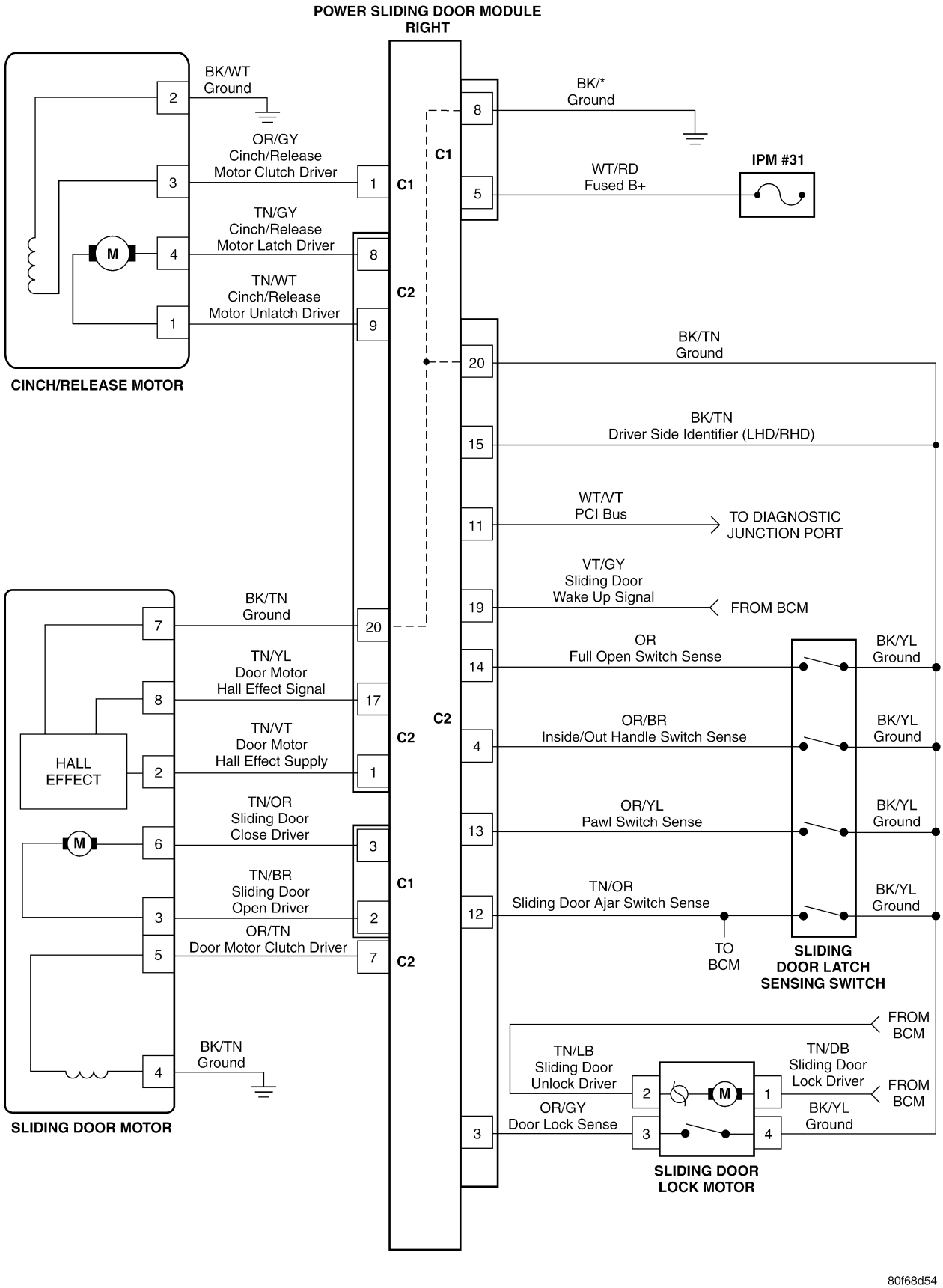


10.17 POWER SLIDING DOOR SYSTEM

10.17.1 LEFT POWER SLIDING DOOR

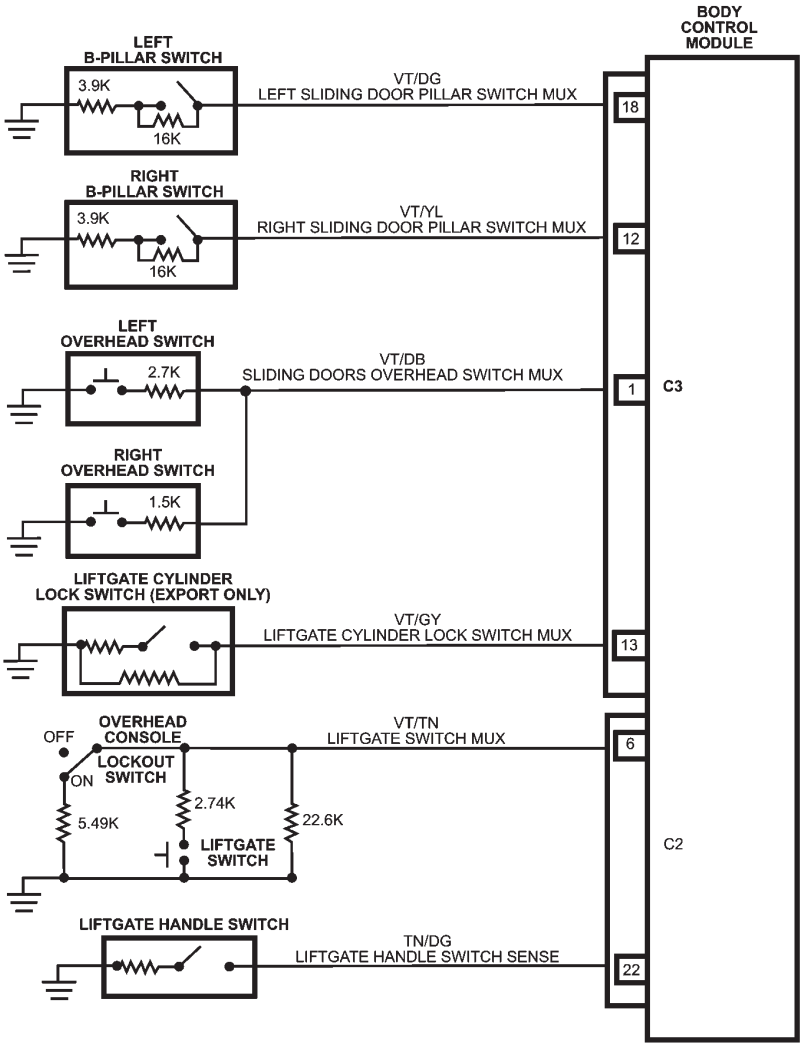


10.17 POWER SLIDING DOOR SYSTEM (Continued)
10.17.2 RIGHT POWER SLIDING DOOR



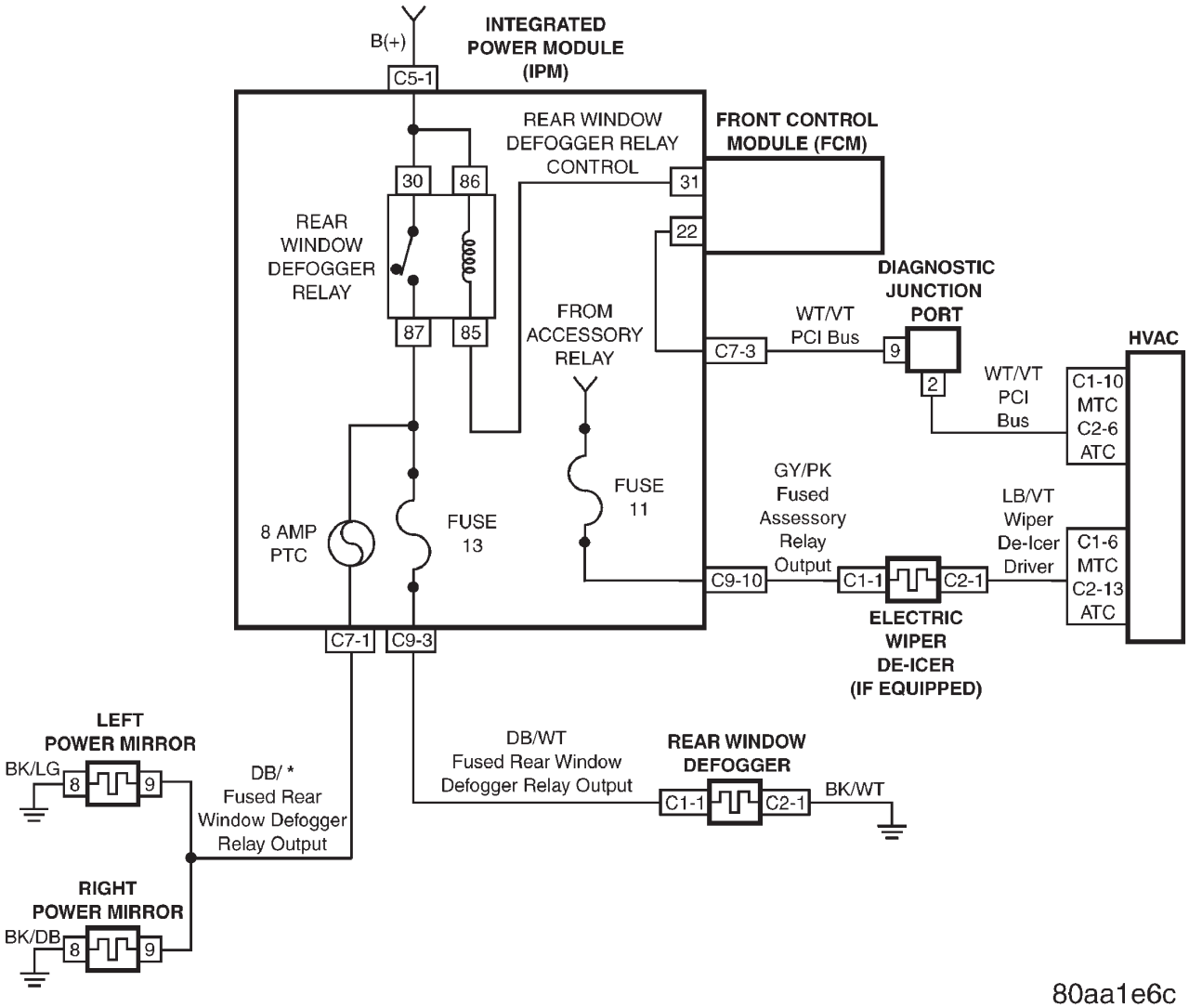
80f68d54

10.18 POWER SLIDING DOOR AND LIFTGATE SWITCHES



80d85f7d

10.19 REAR DEFOG/HEATED MIRROR/FRONT WIPER DE-ICE



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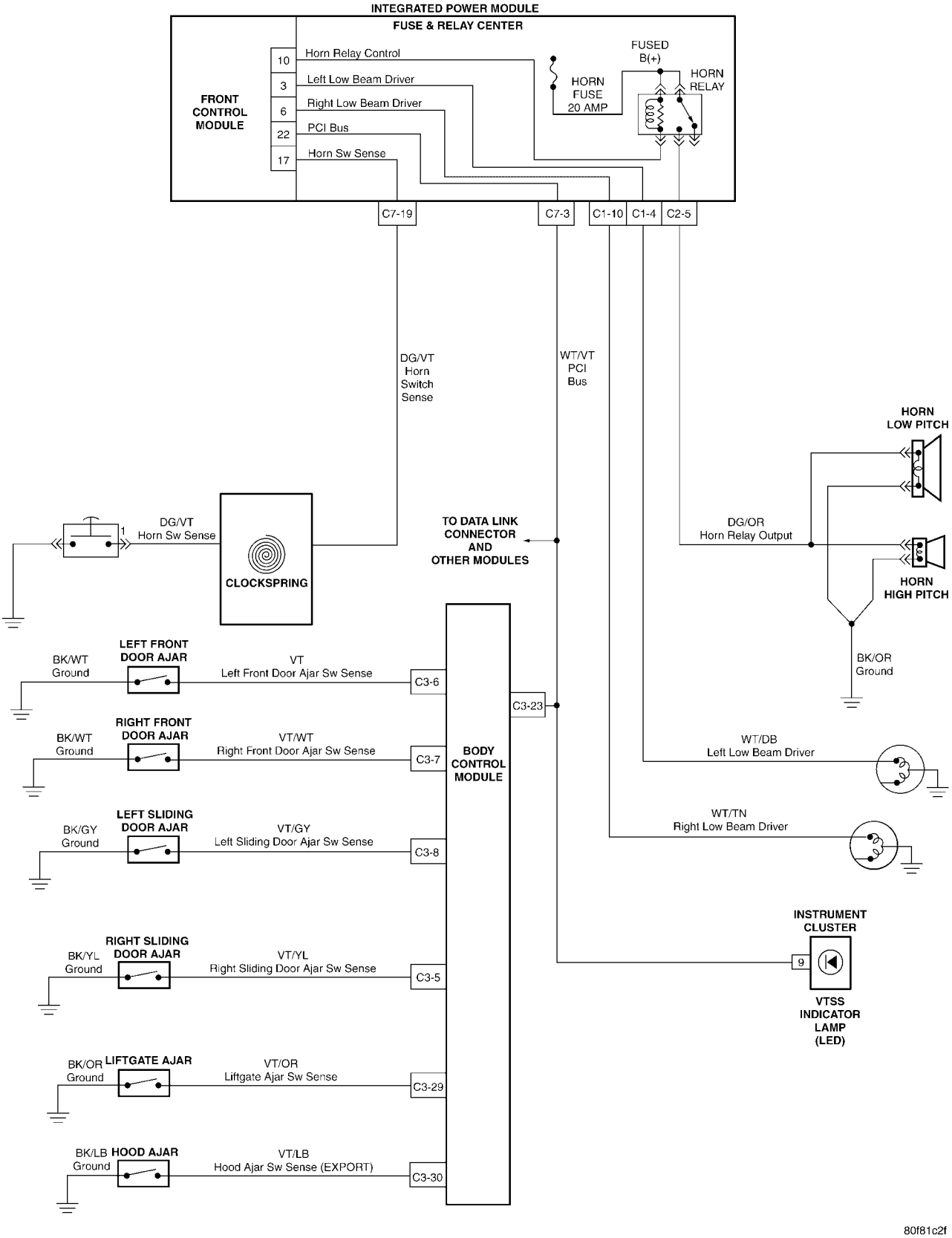
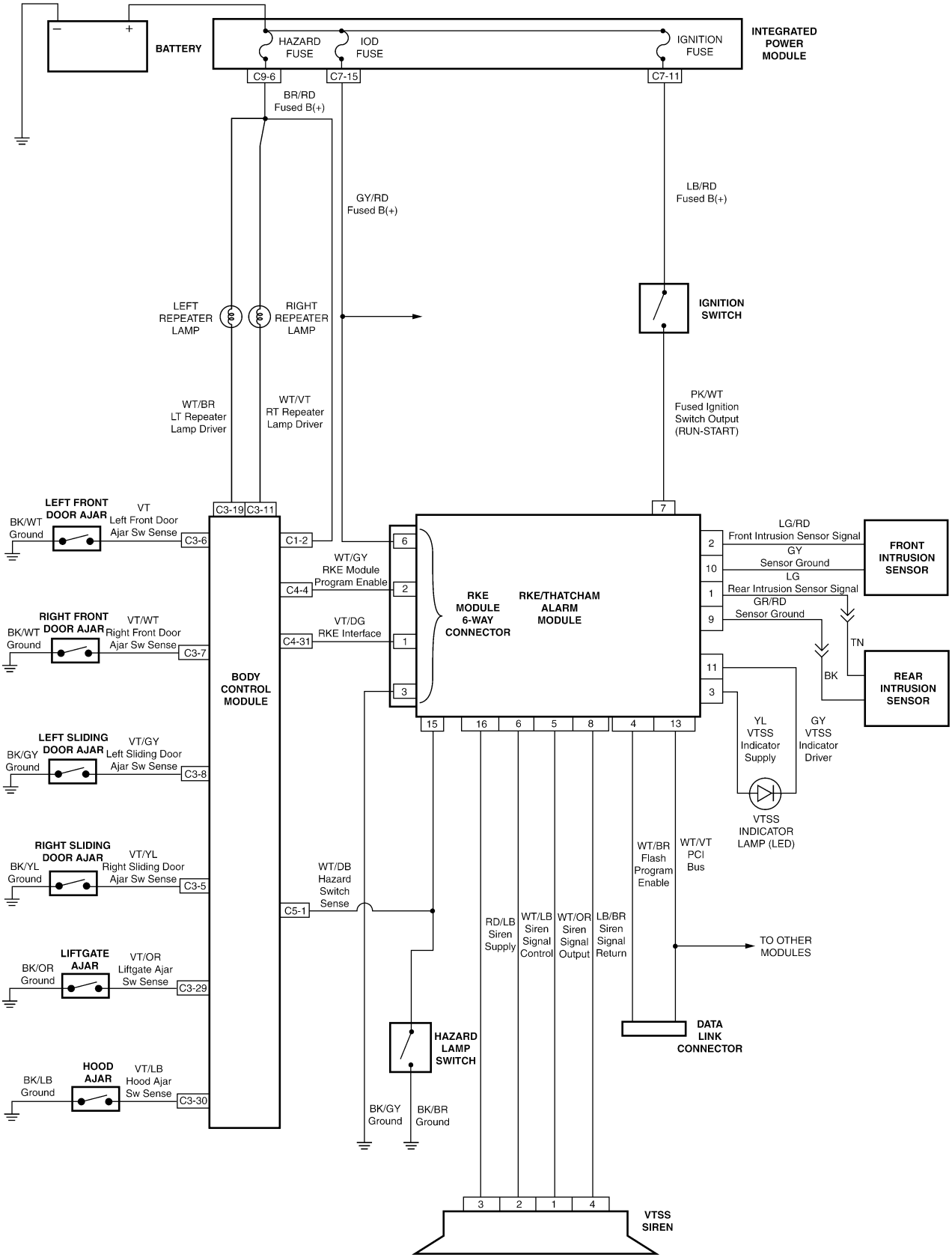
10.20 VEHICLE THEFT SECURITY SYSTEM

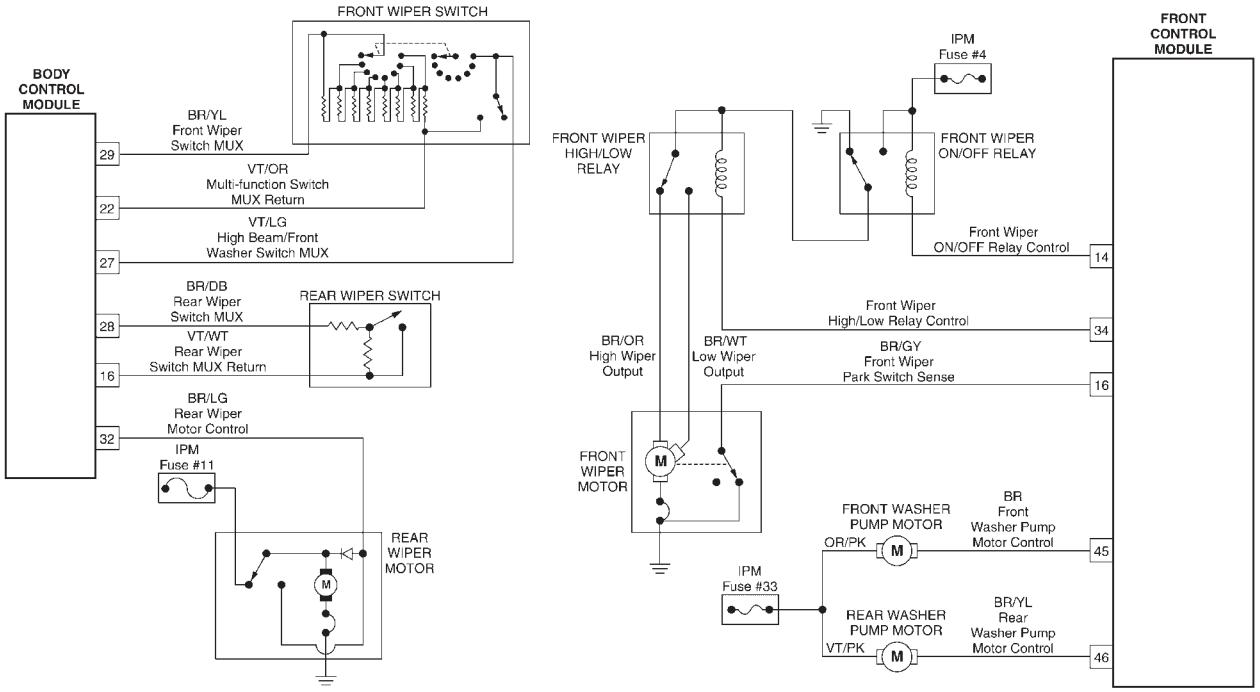


10.20 VEHICLE THEFT SECURITY SYSTEM (Continued)
10.20.1 THATCHAM ALARM SYSTEM (EXPORT ONLY)



80f8e349

10.21 WIPERS - FRONT AND REAR

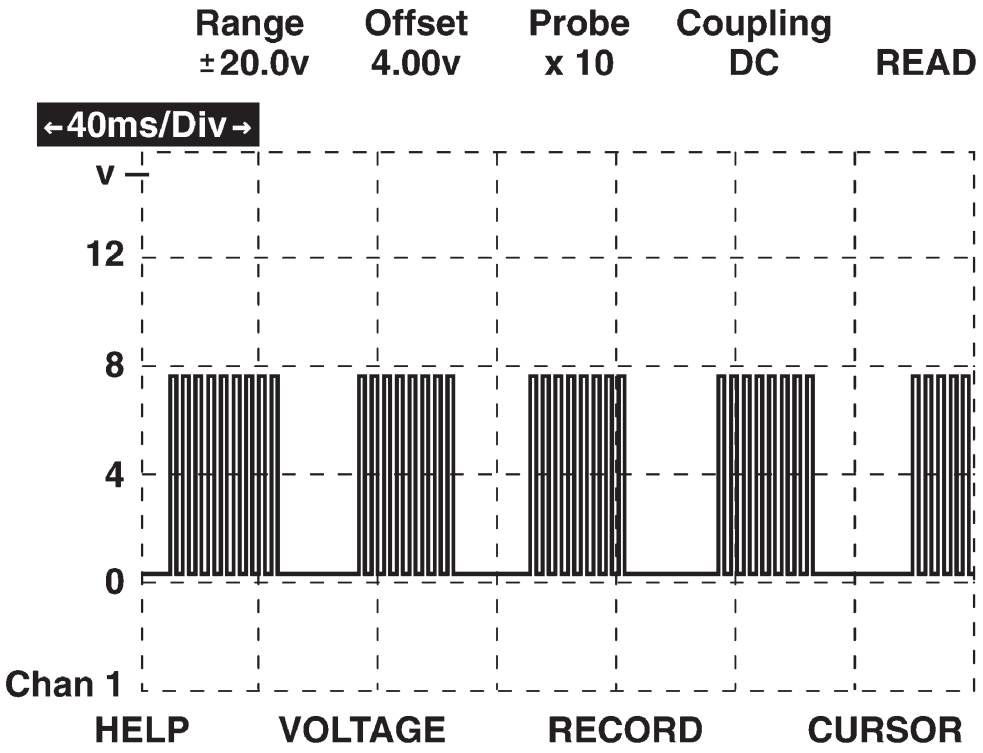


80a8a9ad

NOTES

11.0 CHARTS AND GRAPHS

11.1 KDB LAB SCOPE PATTERN



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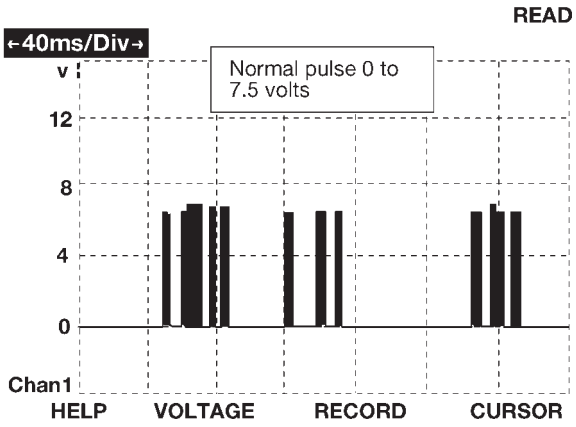
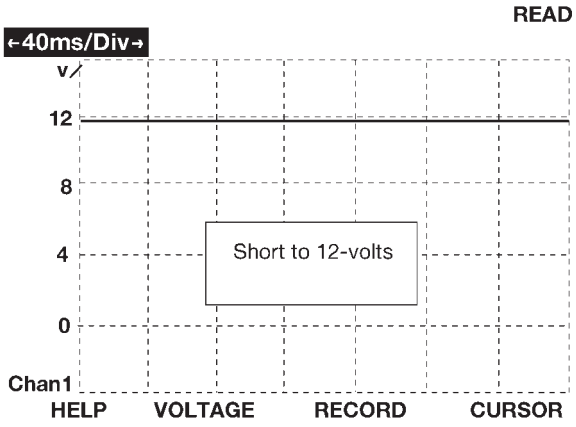
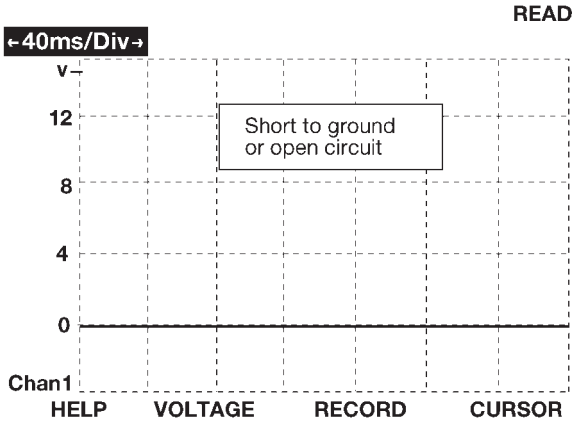
11.2 PCI BUS LAB SCOPE PATTERN







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1.0 INTRODUCTION

The procedures contained in this manual include all the specifications, instructions, and graphics needed to diagnose the 2003 Chrysler Town & Country, Dodge Caravan, and Chrysler Voyager Mark 20e Antilock Braking System (ABS), and Mark 20e Antilocke Braking System with Traction Control. The diagnostics in this manual are based on the failure condition or symptom being present at time of diagnosis.

Please follow the recommendations below when choosing your diagnostic path.

1. First make sure the DRBIII® is communicating with the CAB. If the DRBIII® displays a "No Response" condition, you must diagnose that first.
2. Read DTC's (diagnostic trouble codes) with the DRBIII®.
3. If no DTC's are present, identify the customer complaint.
4. Once the DTC or customer complaint is identified, locate the matching test in the Table of Contents and begin to diagnose the symptom.

All component location views are in Section 8.0. All connector pinouts are in Section 9.0. All schematics are in Section 10.0.

An asterisk (*) placed before the symptom description indicates a concern with no associated DTC.

When repairs are required, refer to the appropriate service manual for the proper removal and repair procedure.

Diagnostic procedures change every year. New diagnostic systems may be added; carry over systems may be enhanced. READ THIS MANUAL BEFORE TRYING TO DIAGNOSE A VEHICLE CODE. It is recommended that you review the entire manual to become familiar with all new and changed diagnostic procedures.

After using this book, if you have any comments or recommendations, please fill out the form at the back of the book and mail it back to us.

1.1 SYSTEM COVERAGE

This diagnostic procedure manual covers the antilock braking system (ABS), and the traction control system found on: Chrysler Town and Country, Dodge Caravan, and Chrysler Voyager.

1.2 SIX-STEP TROUBLESHOOTING PROCEDURE

Diagnosis of the controller antilock brake module is done in six basic steps:

- verification of complaint
- verification of any related symptoms
- symptom analysis
- problem isolation
- repair of isolated problem
- verification of proper operation

2.0 IDENTIFICATION OF SYSTEM

Vehicles equipped with the Teves Mark 20e antilock brake system can be identified by the presence of the controller antilock brake module located beneath the master cylinder.

The presence of the Traction Control system is indicated by the TRAC OFF switch on top of the steering column shroud.

3.0 SYSTEM DESCRIPTION AND FUNCTIONAL OPERATION

3.1 TEVES MARK 20e SYSTEM DESCRIPTION

The controller antilock brake module is used to monitor wheel speeds and to modulate (control) hydraulic pressure in each brake channel. The modulated hydraulic pressure is used to prevent wheel lock-up during braking.

The Teves Mark 20e system uses a diagonal split hydraulic brake system. In the standard brake mode the master cylinder primary circuit supplies pressure to the right front and left rear wheel brakes, and the secondary master cylinder circuit supplies pressure to the left front and right rear wheel brakes.

All vehicles equipped with ABS use Electronic Variable Brake Proportioning (EVPB) to balance front-to-rear braking when brakes are applied in the partial braking range.

3.2 TRACTION CONTROL SYSTEM (TCS) DESCRIPTION (IF EQUIPPED)

The main purpose of traction control is to reduce wheel slip and maintain traction at the driven wheels when road surfaces are slippery. The traction control system reduces wheel slip by braking the wheel that is losing traction. The system is designed to operate at speeds below 56 km/h (35 mph).

3.3 SYSTEM COMPONENTS

ABS

- controller antilock brake (CAB)
- vacuum booster
- master cylinder
- ABS integrated electronic control module/ hydraulic control unit (HCU), valve block assembly: 8 valve solenoids (4 inlet valves, 4 outlet valves, 2 accumulators) 1 pump.
- 4 wheel speed sensor/tone wheel assemblies
- ABS warning indicator
- fuses and wiring harness
- fluid reservoir

ABS With Traction Control

- CAB with Traction Control programming
- HCU with two additional control valves.
- TRAC ON/OFF Switch
- TRAC/TRAC OFF indicators

3.3.1 ABS AND BRAKE WARNING INDICATORS

The amber ABS warning indicator is located in the instrument cluster. It is used to inform the driver that the antilock function has been turned off. The ABS warning indicator is controlled by the CAB. The CAB controls the lamp with a command over the PCI bus.

The ABS Warning Indicator will remain lit during every key cycle until a circuit or component fault is repaired and the CAB no longer detects the fault. After repair of a sensor signal fault or a pump motor fault, the CAB must sense all four wheels at 25 km/h (15 mph) before it will extinguish the ABS and TRAC OFF Indicators.

The Instrument Cluster will illuminate the ABS Warning Indicator if it loses communication with the CAB.

The red BRAKE warning indicator is also located in the instrument cluster. It can be activated in several ways. Application of the parking brake or a low fluid signal from the fluid level switch located in the master cylinder reservoir will cause the indicator to come on.

3.3.2 CONTROLLER ANTILOCK BRAKE (CAB)

The Controller Antilock Brake (CAB) is a microprocessor-based device that monitors wheel speeds and controls the antilock functions. The CAB contains two microprocessors that receive identical sensor signals and then independently process the information. The results are then compared to make sure that they agree. Otherwise, the CAB will turn off the antilock and turn on the ABS amber warning indicator.

The primary functions of the CAB are to:

- detect wheel locking tendencies
- control fluid pressure modulation to the brakes during antilock stop
- monitor the system for proper operation
- manage traction control functions
- provide communication to the DRBIII® while in diagnostic mode
- store diagnostic information in non-volatile memory

The CAB continuously monitors the speed of each wheel. When a wheel locking tendency is detected, the CAB will command the appropriate valve to modulate brake fluid pressure in its hydraulic unit. Brake pedal position is maintained during an antilock stop by being a closed system. The CAB continues to control pressure in individual hydraulic circuits until a wheel locking tendency is no longer present. The CAB turns on the pump motor during an antilock stop.

The antilock brake system is constantly monitored by the CAB for proper operation. If the CAB detects a system malfunction, it can disable the antilock system and turn on the ABS warning indicator. If the antilock function is disabled, the system will revert to standard base brake system operation.

The CAB inputs include the following:

- diagnostic communication
- four wheel speed sensors
- three power feeds: valve, pump, and microprocessor
- brake switch
- traction control switch

The CAB outputs include the following:

- ABS warning indicator actuation
- 12 volts power to wheel speed sensors
- eight valves
- ten valves with traction control
- diagnostic communication
- PCI bus communication
- traction control lamp illumination

3.3.3 HYDRAULIC CONTROL UNIT

The hydraulic control unit (HCU) contains the valve block assembly, and pump/motor assembly. The HCU is attached to the CAB.

Valve Block Assembly: The valve block assembly contains valves with four inlet valves and four

outlet valves. The inlet valves are spring-loaded in the open position and the outlet valves are spring loaded in the closed position. During an antilock stop, these valves are cycled to maintain the proper slip ratio for each wheel. If a wheel detects slip, the inlet valve is closed to prevent and further pressure increase. Then the outlet valve is opened to release the pressure to the accumulators until the wheel is no longer slipping. Once the wheel is no longer slipping, the outlet valve is closed and the inlet valve is opened to reapply pressure. If the wheel is decelerating within its predetermined limits (proper slip ratio), the inlet valve will close to hold the pressure constant. On vehicles which are equipped with a traction control system, there are two additional valves that isolate the master cylinder and rear wheels. During a traction control event the brakes are applied to reduce wheel slippage.

Pump Motor Assembly: The pump motor assembly provides the extra amount of fluid needed during antilock braking. The pump is supplied fluid that is released to the accumulators when the outlet valve is opened during an antilock stop. The pump is also used to drain the accumulator circuits after the antilock stop is complete. The pump is operated by an integral electric motor. This motor is controlled by the CAB. The CAB may turn on the pump motor when an antilock stop is detected. The pump continues to run during the antilock stop and is turned off after the stop is complete. Under some conditions, the pump motor will run to drain the accumulators during the next drive off. The CAB monitors the pump motor operation internally.

3.3.4 ABS SWITCHES/SENSORS

Master Cylinder: The master cylinder is a standard tandem compensating port design for ABS and non ABS systems. Traction control vehicles use a dual center port master cylinder. For proper traction control operation the standard master cylinder must not be used.

A fluid level switch is located in the master cylinder fluid reservoir. The switch closes when a low fluid level is detected. The fluid level switch turns on the brake warning indicator by grounding the indicator circuit. This switch does not disable the ABS system.

Wheel Speed Sensors and Tone Wheels: One active wheel speed sensor (WSS) is located at each wheel and sends a small DC signal to the control module (CAB). This signal is generated when a toothed sensor ring (tone wheel) passes by a stationary wheel speed sensor. The CAB converts the signals for each wheel.

Because of internal circuitry, correct wheel speed sensor function cannot be determined by a continuity or resistance check through the sensor.

The front wheel speed sensor is attached to a boss in the steering knuckle. The tone wheel is an integral part of the front axle shaft. The rear speed sensor is mounted though the bearing cover and the rear tone wheel is an integral part of the rear bearing hub. The wheel speed sensor air gap is not adjustable. Refer to the service manual for wheel speed sensor air gap and resistance specifications.

The four wheel speed sensors are serviced individually. The front tone wheels are serviced as an assembly with the outer constant velocity (C.V.) joint housing. The rear tone wheels are serviced as an assembly.

Correct antilock system operation is dependent on tone wheel speed signals from the wheel speed sensors. The vehicle's wheels and tires should all be the same size and type to generate accurate signals. In addition, the tires should be inflated to the recommended pressure for optimum system operation. Variation in wheel and tire size or significant variations in inflation pressure can produce inaccurate wheel speed signals; however, the system will continue to function when using the correct factory mini-spare.

3.3.5 ABS INITIALIZATION

System initialization starts when the key is turned to "run". At this point, the CAB performs a complete self-check of all electrical components in the antilock systems.

Between 8-17 km/h (5-10 mph), a dynamic test is performed. This will momentarily cycle the inlet and outlet valves, check wheel speed sensor circuitry, and run the pump motor at 25 km/h (15 mph). The CAB will try to test the pump motor. If the brake pedal is applied the test will be run at 40 km/h (24 mph) regardless of brake switch state. If, during the dynamic test, the brake pedal is applied, the driver may feel the test through brake pedal pulsations. This is a normal condition.

If any component exhibits a trouble condition during system initialization or dynamic check, the CAB will illuminate the ABS warning indicator and TRAC OFF lamp if equipped.

3.3.6 ABS DIAGNOSTIC MODE

To enter diagnostic mode, a vehicle speed must be below 10 km/h (6 mph) and no ABS condition present. If vehicle speed is not below 10 km/h (6 mph), a "No Response" message could be displayed by the DRBIII®. The following are characteristics of diagnostic mode:

– The amber ABS warning indicator will blink rapidly. If a hard trouble code, such as Valve Power Feed Failure code is present, the indicator will be illuminated without blinking until the trouble condition is cleared.

– Antilock operation is disabled.
– The HCU valves cannot be actuated when the vehicle speed is above 8 km/h (5 mph). If valve actuation is attempted above 8 km/h (5 mph), a "No Response" message will be displayed on the DRBIII®.

3.3.7 TRACTION CONTROL OPERATION (IF EQUIPPED)

The Controller Antilock Brake (CAB) monitors wheel speeds. If, during acceleration, the module detects front (drive) wheel slip and the brakes are not applied, the CAB will enter traction control mode. Traction control works in the following order when drive wheel slip is detected.

1. Close the (normally open) isolation valves.
2. Start pump/motor and supply volume/pressure to front hydraulic circuits (pump runs continuously during traction control).
3. Open and close build and decay valves to maintain minimum wheel slip and maximum traction.

The cycling of the build and decay valves is similar to the ABS except that they work to control wheel spin by applying brakes. ABS function is to control wheel skid by releasing brakes.

Two pressure relief valves allow excess fluid volume to return to the reservoir when not used by the build/decay cycles. These are required because the pump supplies more volume than the traction control system requires.

If at any time the brake pedal is applied during a traction control cycle, the brake lamp switch will trigger the CAB to switch off the traction control.

The traction control system will be enabled at each ignition cycle. It may be turned off by depressing the Traction Control Switch. The traction control system function lamp will illuminate "TRAC OFF" immediately upon depressing the traction control switch button. Only the "TRAC" portion of the "TRAC OFF" indicator will illuminate during a traction control event.

If the CAB calculates that the brake temperatures are high, the traction control system will become inoperative until a time-out period has elapsed. When in this thermal protection mode, the traction control "TRAC OFF" lamp will illuminate; however, a fault will not be registered.

3.5 DIAGNOSTIC TROUBLE CODES

The Controller Antilock Brake may report any of several Diagnostic Trouble Codes (DTC)s. For a list of the DTCs diagnosed in this manual, refer to the Table of Contents.

3.6 FREEZE FRAME

Freeze Frame takes a "snapshot" of specific vehicle information the instant an ABS failure is recognized and stores this information into the CAB memory. This information can be accessed using the DRBIII® to help diagnose the fault. Freeze Frame will capture the first time failure or only a new failure that occurs during the current ignition cycle.

3.7 TIRE PRESSURE MONITORING SYSTEM

If equipped with the Tire Pressure Monitoring System, each of the vehicle's four wheels will have a valve stem with a pressure sensor and radio transmitter built in. Signals from the tire pressure Sensor/Transmitters are received and interpreted by the Electronic Vehicle Information Center (EVIC).

A Sensor/Transmitter in a mounted wheel will broadcast its detected pressure once per minute when the vehicle is moving faster than 32 km/h (20 mph). Each Sensor/Transmitter's broadcast is uniquely coded so that the EVIC can determine location.

3.7.1 TRAINING THE EVIC

The EVIC can be trained to recognize the source locations of Sensor/Transmitter signals. The training procedure is given below:

1. From the Programmable Features List select "RETRAIN TIRE SENSORS Y/N" using the EVIC MENU button.
   Use the STEP button to select and the MENU button to confirm "YES". The EVIC will initiate the following procedure.
2. A display will prompt the user to: "TRAIN DRIVER FRONT SENSOR". At this point the user must set the left front tire Sensor/Transmitter to learn mode by positioning a magnet (Relearn Magnet special tool 8821) over the valve stem for at least 5 seconds. The Sensor/Transmitter in the front left tire will transmit a message indicating to the EVIC that it is in learn mode. When the EVIC has received this message and is assured that it has learned an ID, the EVIC will request a horn chirp via a bus message and then display the next train request. **Note: The EVIC will allow 60 seconds from the first train request display to the receipt of a unique learn ID message from the first Sensor/Transmitter and 30 seconds for each succeeding wheel. If either of these timers expires, the EVIC will abort the training procedure and revert to previous settings.** The EVIC will not store one ID for multiple locations.

3. The EVIC will request the initiation of a training sequence for each tire, one-by-one in a clockwise direction around the vehicle (Left Front, Right Front, Right Rear and Left Rear).
   NOTE:
   1. If one or all Sensor/Transmitters cannot be trained move vehicle to avoid radio frequency interference.
   2. If one Sensor/Transmitter still cannot be trained, replace it and retry.
   3. If all Sensor/Transmitters still fail to train, replace the EVIC.
4. Once all tires are successfully learned, the previous set of stored IDs will be replaced by the new IDs, and the EVIC will display, "TRAINING COMPLETE" until a button is pressed.

If the vehicle is equipped with the Homelink feature and a Homelink button is pressed at any time during the training procedure, the EVIC module will immediately exit the training procedure, discard any IDs learned in the current session and perform the Homelink function. After the button is released, the module will display "RETRAIN TIRE SENSORS? NO."

The training procedure can be stopped at any time by pressing the C/T, STEP, RESET or MENU button. When any of these buttons are pressed the EVIC will display "TRAINING ABORTED" until another button is pressed and then display "RETRAIN TIRE SENSORS? NO."

Sensor/transmitter replacement or tire rotation will require retraining of the EVIC.

3.7.2 PRESSURE THRESHOLDS

The EVIC will monitor the tire pressure signals from the tire Sensor/Transmitters and determine if any tire has gone below the low pressure threshold or exceeded the high pressure threshold. Refer to the table below.

LOW TIRE PRESSURE THRESHOLDS	
SYSTEM STATUS INDICATOR	TIRE PRESSURE
On	**179 kPa (26 PSI)**
Off	**214 kPa (31 PSI)**

HIGH TIRE PRESSURE THRESHOLDS	
SYSTEM STATUS INDICATOR	TIRE PRESSURE
On	**310 kPa (45 PSI)**
Off	**276 kPa (40 PSI)**

3.7.2.1 CRITICAL AND NON-CRITICAL SYSTEM ALERTS

Critical:

A critical alert will be triggered when a tire pressure has gone below or above a set threshold pressure. The EVIC will request a chime and then display "X TIRE(S) LOW PRESSURE" or "X TIRES HIGH PRESSURE". "X" will be the number of tires reporting low or high pressure.

The message will display for the duration of the current ignition cycle or until the an EVIC button is pressed. If the display is removed without correcting the condition, it will reappear without a chime after 300 seconds to warn the driver of the low or high pressure condition.

Non-Critical:

A non-critical alert with no chime will be triggered when no signal is received from a Sensor/Transmitter or when a Sensor/Transmitter low battery condition is detected. The EVIC will display "SERVICE TIRE PRESS. SYSTEM".

3.7.3 SYSTEM FAULTS

There are two conditions which will cause a Tire Pressure Monitoring System fault to be set. All fault codes are associated with a specific wheel location.

1. If the EVIC detects a non-transmitting Sensor/Transmitter condition, it will:
   a. Store an active fault code.
   b. Request a chime
   c. Display "SERVICE TIRE PRESS. SYSTEM"
2. When the EVIC receives a Low Sensor/Transmitter battery report from a Sensor/Transmitter, it will
   a. Store an active fault code.
   b. Request a chime.
   c. Display "SERVICE TIRE PRESS. SYSTEM".

Use the DRBIII® Inputs/Outputs function to further isolate the specific concern. The DRBIII® can be queried to determine the status and battery condition for each Sensor/Transmitter.

3.7.4 SPARE WHEEL AUTO-DETECT

If the spare tire is mounted on the vehicle, the EVIC will:

1. detect the change after 15 minutes at or above 32 km/h (20 mph)
2. query driver: "SPARE TIRE IN USE?"
   Use MENU button for YES and STEP button for NO. For YES the EVIC will revert to previous display and wait five hours. After five hours the EVIC will proceed as in the NO response below.
3. for a NO response, after 15 minutes, display: "ALL 5 TIRES W/ VEHICLE? Y" Use the STEP

button to select YES or NO and MENU button to confirm.

For a "YES" response the EVIC will display "SERVICE TIRE PRESS. SYSTEM".

For a "NO" response, the EVIC will revert to previous display and display "ALL 5 TIRES W/ VEHICLE? Y" every time the ignition is cycled to RUN and the missing tire ID is not received.

3.7.5 DIAGNOSING AND CLEARING SYSTEM FAULTS

All Tire Pressure Monitoring System Faults are specific to one location. If a no-transmit, "LOW BATTERY", "LOW or HIGH PRESSURE" fault is detected, the location can be determined by the DRBIII®. The appropriate Sensor/Transmitter can then be replaced or the out-of-spec pressure condition can be corrected.

- If a single Sensor/Transmitter cannot be detected by the EVIC, replace that Sensor/Transmitter.
- If none of the Sensor/Transmitters can be detected, refer to symptoms in the EVIC section.
- If a BUCKET COUNTER test fails, and one or more Sensor/Transmitters does not transmit, replace the affected Sensor/Transmitter.
- If none of the Sensor/Transmitter causes the BUCKET COUNTER to advance, replace the EVIC.
- If the EVIC displays SERVICE TIRE PRESS. SYSTEM and the DRBIII® sees no Sensor/Transmitter fault or pressure out of specification,

1. attempt the Retrain procedure. If the display reoccurs,
2. replace the EVIC.

3.7.6 SYSTEM TEST

A test of the Tire Pressure Monitoring System can be initiated in the EVIC. The test sequence is as follows:

1. Perform the RETRAIN TIRE SENSORS procedure.
2. Press and hold the RESET and STEP buttons for five seconds.
3. The EVIC will display BUCKET COUNTERS.
4. Drive the vehicle at 32 km/h (20 mph) for at least 2 minutes.
5. The counters will increase by one each time a Sensor/Transmitter signal is received by the EVIC.
6. Observe that the COUNTERS register at least 3 receptions for each Sensor/Transmitter.
7. Replace any Sensor/Transmitter that does not meet specification.
8. The test will continue until any EVIC button is pressed or until the ignition is cycled to OFF.

3.8 DRBIII® ERROR MESSAGES AND BLANK SCREEN

Under normal operation, the DRBIII® will display one of only two error messages:

– User-Requested WARM Boot or User-Requested COLD Boot.

If the DRBIII® should display any other error message, record the entire display and call the STAR Center. This is a sample of such an error message display:

```
ver: 2.14
date: 26 Jul93
file: key_itf.cc
date: Jul 26 1993
line: 548
err. 0x1
User-Requested COLD boot Press MORE to
switch between this display
  and the application screen.
Press F4 when done noting information.
```

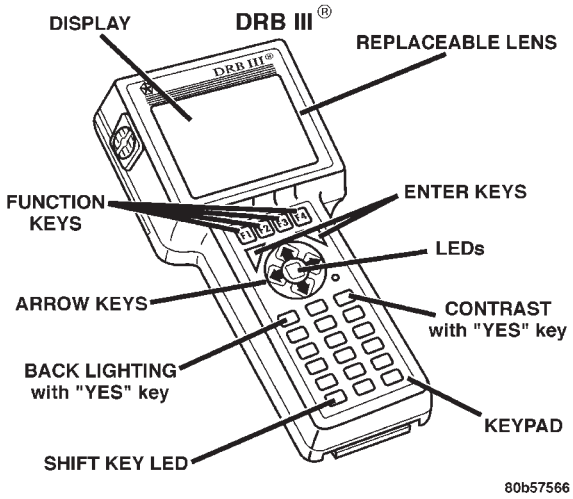
3.8.1 DRBIII® DOES NOT POWER UP

If the LED's do not light or no sound is emitted at start up, check for loose cable connections or a bad cable. Check the vehicle battery voltage (data link connector cavity 16). A minimum of 11 volts is required to adequately power the DRBIII®.

If all connections are proper and the vehicle battery is fully charged, an inoperative DRBIII® may be the result of faulty cable or vehicle wiring.

3.8.2 DISPLAY IS NOT VISIBLE

Low temperatures will affect the visibility of the display. Adjust the contrast to compensate for this condition.



4.0 DISCLAIMERS, SAFETY, WARNINGS

4.1 DISCLAIMERS

All information, illustrations, and specifications contained in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

4.2 SAFETY

4.2.1 TECHNICIAN SAFETY INFORMATION

WARNING: ENGINES PRODUCE CARBON MONOXIDE THAT IS ODORLESS, CAUSES SLOWER REACTION TIME, AND CAN LEAD TO SERIOUS INJURY. WHEN THE ENGINE IS OPERATING, KEEP SERVICE AREAS WELL VENTILATED OR ATTACH THE VEHICLE EXHAUST SYSTEM TO THE SHOP EXHAUST REMOVAL SYSTEM.

Set the parking brake and block the wheels before testing or repairing the vehicle. It is especially important to block the wheels on front-wheel drive vehicles; the parking brake does not hold the drive wheels.

When servicing a vehicle, always wear eye protection, and remove any metal jewelry such as rings, watchbands or bracelets that might make an inadvertent electrical contact.

When diagnosing a chassis problem, it is important to follow approved procedures where applicable. These procedures can be found in the service manual. Following these procedures is very important to the safety of individuals performing diagnostic tests.

4.2.2 VEHICLE PREPARATION FOR TESTING

Make sure the vehicle being tested has a fully charged battery. If is does not, false diagnostic codes or error messages may occur.

4.2.3 SERVICING SUB-ASSEMBLIES

Some components of the chassis system are intended to be serviced as an assembly only. Attempting to remove or repair certain system subcomponents may result in personal injury and/or improper system operation. Only those components with approved repair and installation procedures in the service manual should be serviced.

4.2.4 DRBIII® SAFETY INFORMATION

WARNING: EXCEEDING THE LIMITS OF THE DRBIII® MULTIMETER IS DANGEROUS. IT CAN EXPOSE YOU TO SERIOUS OR POSSIBLY FATAL INJURY. CAREFULLY READ AND UNDERSTAND THE CAUTIONS AND THE SPECIFICATION LIMITS.

- Follow the vehicle manufacturer's service specifications at all times.
- Do not use the DRBIII® if it has been damaged.
- Do not use the test leads if the insulation is damaged or if metal is exposed.
- To avoid electrical shock, do not touch the test leads, tips, or the circuit being tested.
- Choose the proper range and functions for the measurement. Do not try voltage or current measurements that may exceed the rated capacity.
- Do not exceed the limits shown in the table below:

FUNCTION	INPUT LIMIT
Volts	0 - 500 peak volts AC 0 - 500 volts DC
Ohms (resistance)*	0 -1.12 megohms
Frequency Measured Frequency Generated	0 - 10 kHz
Temperature	-58 - 1100°F -50 - 600°C

* Ohms cannot be measured if voltage is present. Ohms can be measured only in a non-powered circuit.

- Voltage between any terminal and ground must not exceed 500v DC or 500v peak AC.
- Use caution when measuring voltage above 25v DC or 25v AC.
- Use the low current shunt to measure circuits up to 10A. Use the high current clamp to measure circuits exceeding 10A.
- When testing for the presence of voltage or current, make sure the meter is functioning correctly. Take a reading of a known voltage or current before accepting a zero reading.
- When measuring current, connect the meter in series with the load.
- Disconnect the live test lead before disconnecting the common test lead.
- When using the meter function, keep the DRBIII® away from spark plug or coil wires to avoid measuring error from outside interference.

4.3 WARNINGS

4.3.1 VEHICLE DAMAGE WARNINGS

Before disconnecting any control module, make sure the ignition is "off". Failure to do so could damage the module.

When testing voltage or continuity at any control module, use the terminal side (not the wire end) of the connector. Do not probe a wire through the insulation, this will damage it and eventually cause it to fail because of corrosion.

Be careful when performing electrical tests so as to prevent accidental shorting of terminals. Such mistakes can damage fuses or components. Also, a second code could be set, making diagnosis of the original problem more difficult.

4.3.2 ROAD TESTING A COMPLAINT VEHICLE

Some complaints will require a test drive as part of the repair verification procedure. The purpose of the test drive is to try to duplicate the diagnostic code or symptom condition.

WARNING: BEFORE ROAD TESTING A VEHICLE, BE SURE THAT ALL COMPONENTS ARE REASSEMBLED. DURING THE TEST DRIVE, DO NOT TRY TO READ THE DRB SCREEN WHILE IN MOTION. DO NOT HANG THE DRBIII® FROM THE REAR VIEW MIRROR OR OPERATE IT YOURSELF. HAVE AN ASSISTANT AVAILABLE TO OPERATE THE DRBIII®.

4.4 DIAGNOSIS

1. Your diagnostic test procedure must begin with a thorough visual inspection of the system in question for damaged components or disconnected connectors. For ABS the brake lamps must be operational prior to continuing.
2. Connect the DRBIII® to the data link connector, which is located under the dash to the left of the steering column. If the DRBIII® does not power up, check the power and ground supplies to the connector.
3. Turn the ignition on. Select the system in question. If the DRBIII® displays "No Response" condition you must diagnose that first.
4. Read and record all diagnostic trouble codes. For ABS if the "CAB Power Feed Circuit" diagnostic trouble code is present, it must be repaired prior to addressing any other DTC's. If any additional DTC's are present, proceed to the appropriate test by locating the matching test in the Table of Contents and begin to diagnose the symptom.
5. For ABS if there are no diagnostic trouble codes present, identify the customer complaint. Select "Inputs/Outputs" and read the brake switch input as you press and release the brake pedal. If the display does not match the state of the pedal, perform the proper test by locating the matching test in the Table of Contents and begin to diagnose the symptom. If a problem exists with the yellow "ABS" warning indicator or the red "Brake" indicator exists, refer to the proper tests by locating the matching test in the Table of Contents and begin to diagnose the symptom. Read the traction control switch input as you press and release the switch. If the display does not match the state of the indicator perform the proper test by locating the matching test in the Table of Contents and begin to diagnose the symptom.
6. If no other problems are found, it will be necessary to road test the vehicle. Perform several antilock stops from above 50 Km/h (30 mph) and then repeat step 4. If any diagnostic trouble codes are present, proceed to the appropriate test.
7. The following conditions should be considered "NORMAL" operation, and no repairs should be attempted to correct them.
   - Brake pedal feedback during an ABS stop (clicking, vibrating).
   - Clicking, groaning or buzzing at 25 Km/h (15 mph) or 40 Km/h (24 mph) (drive off self test).
   - Groaning noise during an ABS stop.
   - Slight brake pedal drop and pop noise when ignition is initially turned on.
   - Brake pedal ratcheting down at the end of an ABS stop.
8. If the complaint is ABS "cycling" at the end of a stop at low speeds, it may be caused by a marginal wheel speed sensor signal. The sensor air gap, tone wheel condition, and/or brakes hanging up are possible causes of this condition.
9. After a road test in which no problems were found, refer to any Technical Service Bulletins that may apply.

5.0 REQUIRED TOOLS AND EQUIPMENT

DRBIII® (diagnostic read-out box)
jumper wires
ohmmeter
voltmeter
test light

6.0 GLOSSARY OF TERMS

ABS	antilock brake system
CAB	controller antilock brake
DC	direct current
DLC	data link connector
DRB	diagnostic read-out box
DTC	diagnostic test code
EVBP	electronic variable brake proportioning
HCU	hydraulic control unit
ICU	integrated control unit
IPM	integrated power module
JBLK	junction block
PCI	programmable communication interface
P/M	pump motor
WSS	wheel speed sensor

NOTES

7.0

DIAGNOSTIC INFORMATION AND PROCEDURES

Symptom:

BUS SYSTEM COMMUNICATION FAILURE

When Monitored and Set Condition:

BUS SYSTEM COMMUNICATION FAILURE

When Monitored: Ignition ON, continuously.

Set Condition: When the CAB does not receive a message from the instrument cluster for 10 seconds.

POSSIBLE CAUSES
INTERMITTENT CONDITION
ELECTRO-MECHANICAL INSTRUMENT CLUSTER DTC PRESENT
BUS CIRCUIT OPEN
CAB - INTERNAL FAILURE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTCs. With the DRBIII®, read Freeze Frame information. With the DRBIII®, erase DTCs. Turn the ignition off. Turn the ignition on. With the DRBIII®, read DTCs. Does the DRBIII® display BUS SYSTEM COMMUNICATION FAILURE? Yes → Go To 2 No → Go To 4	All
2	Turn the ignition on. With the DRBIII®, read EMIC DTCs. Does the DRBIII® display NO ABS MESSAGE RECEIVED? Yes → Refer to symptom NO ABS MESSAGE RECEIVED in the BODY/INSTRUMENT CLUSTER category. Perform ABS VERIFICATION TEST - VER 1. No → Go To 3	All

BUS SYSTEM COMMUNICATION FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the negative (-) battery cable. Disconnect the CAB harness connector. **NOTE: check connector - Clean/repair as necessary.** Measure the resistance of the Bus circuit between the CAB connector and the Data Link Connector (DLC). Is the resistance below 5.0 ohms? Yes → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No → Repair the Bus circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals. Were any problems found? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
CAB INTERNAL FAILURE

When Monitored and Set Condition:

CAB INTERNAL FAILURE

When Monitored: Ignition on. The CAB monitors its internal microprocessors for correct operation.

Set Condition: If the CAB detects an internal fault, the DTC is set.

POSSIBLE CAUSES
INTERMITTENT DTC
DAMAGED CAB/CAB HARNESS CONNECTOR
CAB - GROUND CIRCUIT OPEN
ABS VALVE FUSED B(+) CIRCUIT OPEN
ABS PUMP FUSED B(+) CIRCUIT OPEN
CAB - INTERNAL FAULT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTCs. With the DRBIII®, erase DTCs. Turn the ignition off. Turn the ignition on. With the DRBIII®, read DTCs. Does the DRBIII® display CAB INTERNAL FAILURE? Yes → Go To 2 No → Go To 6	All
2	Turn the ignition off. Disconnect the CAB harness connector. Inspect the CAB/CAB harness connector for damage. Is ther any broken, bent, pushed out, corroded or spread terminals? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the CAB harness connector. Using a 12-volt test light connected to 12-volts, probe the CAB harness connector ground circuits. Did the test light illuminate? Yes → Go To 4 No → Repair the CAB Ground circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All

CAB INTERNAL FAILURE — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Using a 12-volt test light connected to ground, probe the ABS Valve Fused B(+) circuit at the CAB harness connector. Did the test light illuminate? Yes → Go To 5 No → Repair the ABS Valve Fused B(+) circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Using a 12-volt test light connected to ground, probe the ABS Pump Fused B(+) circuit at the CAB harness connector. Did the test light illuminate? Yes → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No → Repair the ABS Pump Fused B(+) circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals. Refer to any Hotline letters or Technical Service Bulletins that may apply. Were any problems found? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
CLUSTER LAMP FAILURE

When Monitored and Set Condition:

CLUSTER LAMP FAILURE

When Monitored: Key ON. After Key-ON bulb check.

Set Condition: When the instrument cluster informs the CAB that the cluster cannot turn on the ABS Lamp.

POSSIBLE CAUSES
INSTRUMENT CLUSTER OR ABS DTC PRESENT
INSTRUMENT CLUSTER
CAB--NO DTC SIGNAL TO THE INSTRUMENT CLUSTER
CAB -- PERMANENT FAULT SIGNAL
CAB--NO KEY-ON BULB CHECK SIGNAL

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTCs. Are there any Instrument Cluster or ABS DTCs present? Yes → Refer to the appropriate category for the related symptom(s). Perform ABS VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Perform the Key-on Bulb Check. Does the ABS Warning Indicator light and then go out after a few seconds? Yes → Go To 3 No. Light remains after bulb check. Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No. Indicator never comes on. Go To 4	All

CLUSTER LAMP FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	**NOTE: The DRBIII® communication with the CAB must be operational for the result of this test to be valid.** Turn the ignition off. Remove ABS Valve fuse. Perform the Key-on Bulb Check. Does the ABS Indicator remain on after the bulb check? Yes → Test Complete. No → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All
4	**NOTE: The following steps will initiate the Instrument Cluster self test.** Turn the ignition off. Press and hold the odometer reset button. Turn the ignition to RUN. Observe the Instrument Cluster indicators. Release the odometer reset button. Did the ABS Indicator illuminate during the Instrument Cluster self test? Yes → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No → Replace the Instrument Cluster in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All

Symptom:
INCORRECT TONE WHEEL FAILURE

When Monitored and Set Condition:

INCORRECT TONE WHEEL FAILURE

When Monitored: Ignition ON. Vehicle speed above 40 km/h (25 mph) for 2 minutes.

Set Condition: When the CAB detects an unexpected wheel speed condition caused by a tire size that does not meet vehicle specification.

POSSIBLE CAUSES
INCORRECT TIRES ON VEHICLE
INCORRECT TONE WHEEL ON VEHICLE

TEST	ACTION	APPLICABILITY
1	Inspect the tire sizes on the vehicle. Is a smaller than production tire, mini spare, or two mini spares installed on both front wheels? Yes → Replace the incorrect tire(s) size with production size tire(s). Perform ABS VERIFICATION TEST - VER 1. No → Go To 2	All
2	Count the number of tone wheel teeth on both of the front driveshafts. Does one or both tone wheel(s) have (56 or 40) teeth? Yes → Replace the front driveshaft(s) with the incorrect number of tone wheel teeth. Perform ABS VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom List:

LEFT FRONT SENSOR CIRCUIT FAILURE
LEFT REAR SENSOR CIRCUIT FAILURE
RIGHT FRONT SENSOR CIRCUIT FAILURE
RIGHT REAR SENSOR CIRCUIT FAILURE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be LEFT FRONT SENSOR CIRCUIT FAILURE.

When Monitored and Set Condition:

LEFT FRONT SENSOR CIRCUIT FAILURE

When Monitored: Ignition on. The CAB monitors the wheel speed circuit continuously.

Set Condition: If the CAB detects an open or shorted wheel speed sensor circuit, the Diagnostic Trouble Code (DTC) will set.

LEFT REAR SENSOR CIRCUIT FAILURE

When Monitored: Ignition on. The CAB monitors the wheel speed circuit continuously.

Set Condition: If the CAB detects an open or shorted wheel speed sensor circuit, the Diagnostic Trouble Code (DTC) will set.

RIGHT FRONT SENSOR CIRCUIT FAILURE

When Monitored: Ignition on. The CAB monitors the wheel speed circuit continuously.

Set Condition: If the CAB detects an open or shorted wheel speed sensor circuit, the Diagnostic Trouble Code (DTC) will set.

RIGHT REAR SENSOR CIRCUIT FAILURE

When Monitored: Ignition on. The CAB monitors the wheel speed circuit continuously.

Set Condition: If the CAB detects an open or shorted wheel speed sensor circuit, the Diagnostic Trouble Code (DTC) will set.

POSSIBLE CAUSES
INTERMITTENT CONDITION
WHEEL SPEED SENSOR OR CONNECTOR DAMAGE
WHEEL SPEED SENSOR SIGNAL CIRCUIT FAULT
WHEEL SPEED SENSOR 12 VOLT SUPPLY CIRCUIT SHORT TO GROUND
WHEEL SPEED SENSOR 12 VOLT SUPPLY CIRCUIT OPEN
WHEEL SPEED SENSOR SIGNAL CIRCUIT SHORT TO GROUND
WHEEL SPEED SENSOR SIGNAL CIRCUIT OPEN

LEFT FRONT SENSOR CIRCUIT FAILURE — Continued

POSSIBLE CAUSES
CAB - 12 VOLT SUPPLY CIRCUIT FAULT
CAB - SIGNAL CIRCUIT FAULT
WHEEL SPEED SENSOR 12 VOLT SUPPLY SHORT TO GROUND
WHEEL SPEED SENSOR SIGNAL CIRCUIT INOPERATIVE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTCs. With the DRBIII®, read the Freeze Frame information. With the DRBIII®, erase DTCs. Turn the ignition off. Turn the ignition on. With the DRBIII®, read DTCs. **NOTE: The CAB must sense all four wheels at 25km/h (15 mph) before it will extinguish the ABS indicators.** Does the DRBIII® display SENSOR CIRCUIT FAILURE? Yes → Go To 2 No → Go To 13	All
2	Turn the ignition off. Inspect the CAB connector, affected Wheel Speed Sensor, and affected Wheel Speed Sensor connector. Is the affected Wheel Speed Sensor or any of the connectors damaged? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the affected Wheel Speed Sensor connector. **Note: Check connector - Clean/repair as necessary.** Turn the ignition on. Measure the voltage between affected Wheel Speed Sensor 12 Volt Supply circuit and ground. Is the voltage above 10 volts? Yes → Go To 6 No → Go To 4	All
4	Turn the ignition off. Disconnect the CAB harness connector. Disconnect the affected Wheel Speed Sensor connector. Using a 12-volt test light connected to 12-volts, probe the affected Wheel Speed Sensor 12 Volt Supply circuit. Does the test light illuminate? Yes → Repair the affected Wheel Speed Sensor 12 Volt Supply circuit for a short to ground. Perform ABS VERIFICATION TEST - VER 1. No → Go To 5	All

LEFT FRONT SENSOR CIRCUIT FAILURE — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off. Disconnect the CAB harness connector. Disconnect the affected Wheel Speed Sensor connector. Connect a jumper wire between affected Wheel Speed Sensor 12 Volt Supply circuit and ground. Using a 12-volt test light connected to 12-volts, probe the affected Wheel Speed Sensor 12 Volt Supply circuit. Does the test light illuminate? Yes → Go To 6 No → Repair the affected Wheel Speed Sensor 12 Volt Supply circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the affected Wheel Speed Sensor connector. **NOTE: Check connector - Clean/repair as necessary.** Turn the ignition on. Measure the voltage between affected Wheel Speed Sensor Signal circuit and ground. Is the voltage above 1 volt? Yes → Repair the affected Wheel Speed Sensor Signal circuit for a short to voltage. Perform ABS VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off. Disconnect the CAB harness connector. Disconnect the affected Wheel Speed Sensor connector. Using a 12-volt test light connected to 12-volts, probe the affected Wheel Speed Sensor Signal circuit. Does the test light illuminate? Yes → Repair the affected Wheel Speed Sensor Signal circuit for a short to ground. Perform ABS VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off. Disconnect the CAB harness connector. Disconnect the affected Wheel Speed Sensor connector. Connect a jumper wire between affected Wheel Speed Sensor Signal circuit and ground. Using a 12-volt test light connected to 12-volts, probe the affected Wheel Speed Sensor Signal circuit. Does the test light illuminate? Yes → Go To 9 No → Repair the affected Wheel Speed Sensor Signal circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All

LEFT FRONT SENSOR CIRCUIT FAILURE — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off. Remove the CAB harness strain relief to access wires. Reconnect the CAB harness connector. Turn the ignition on. Measure the voltage between affected Wheel Speed Sensor 12 Volt Supply circuit and ground. Is the voltage above 10 volts? Yes → Go To 10 No → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All
10	Turn the ignition off. Remove the CAB harness strain relief to access wires. Reconnect the CAB harness connector. Turn the ignition on. Measure the voltage between affected Wheel Speed Sensor 12 Volt Supply circuit and affected Wheel Speed Sensor Signal circuit. Is the voltage above 10 volts? Yes → Go To 11 No → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All
11	Turn the ignition off. Reconnect ALL affected Wheel Speed Sensor circuit connectors. Disconnect the affected Wheel Speed Sensor connector. Turn the ignition on. Measure the voltage of the affected Wheel Speed Sensor 12 Volt Supply circuit in the affected Wheel Speed Sensor connector while reconnecting the sensor connector. Did the affected Wheel Speed Sensor 12 Volt Supply circuit drop voltage to 0 DC volts? Yes → Replace the affected Wheel Speed Sensor in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No → Go To 12	All
12	Turn the ignition off. Reconnect ALL affected Wheel Speed Sensor circuit connectors. Turn the ignition on. Measure the DC voltage of the Wheel Speed Sensor Signal circuit in the affected Wheel Speed Sensor connector. Slowly rotate the wheel. Does the DC voltage toggle between 1.6 volts to .8 volts? Yes → Go To 13 No → Replace the affected Wheel Speed Sensor in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All

LEFT FRONT SENSOR CIRCUIT FAILURE — Continued

TEST	ACTION	APPLICABILITY
13	Turn the ignition off. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals. Refer to any Hotline letters or Technical Service Bulletins that may apply. Were any problems found? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom List:

LEFT FRONT WHEEL SPEED SIGNAL FAILURE
LEFT REAR WHEEL SPEED SIGNAL FAILURE
RIGHT FRONT WHEEL SPEED SIGNAL FAILURE
RIGHT REAR WHEEL SPEED SIGNAL FAILURE

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be LEFT FRONT WHEEL SPEED SIGNAL FAILURE.

When Monitored and Set Condition:

LEFT FRONT WHEEL SPEED SIGNAL FAILURE

When Monitored: Wheel speed are checked and verified at drive off and continuously thereafter.

Set Condition: If, during an ABS stop, the CAB commands any valve solenoid on for an extended length of time, and does not see a corresponding wheel speed change, the Diagnostic Trouble Code (DTC) is set. The DTC can also set if the signal is missing or erratic.

LEFT REAR WHEEL SPEED SIGNAL FAILURE

When Monitored: Wheel speed are checked and verified at drive off and continuously thereafter.

Set Condition: If, during an ABS stop, the CAB commands any valve solenoid on for an extended length of time, and does not see a corresponding wheel speed change, the Diagnostic Trouble Code (DTC) is set. The DTC can also set if the signal is missing or erratic.

RIGHT FRONT WHEEL SPEED SIGNAL FAILURE

When Monitored: Wheel speed are checked and verified at drive off and continuously thereafter.

Set Condition: If, during an ABS stop, the CAB commands any valve solenoid on for an extended length of time, and does not see a corresponding wheel speed change, the Diagnostic Trouble Code (DTC) is set. The DTC can also set if the signal is missing or erratic.

RIGHT REAR WHEEL SPEED SIGNAL FAILURE

When Monitored: Wheel speed are checked and verified at drive off and continuously thereafter.

Set Condition: If, during an ABS stop, the CAB commands any valve solenoid on for an extended length of time, and does not see a corresponding wheel speed change, the Diagnostic Trouble Code (DTC) is set. The DTC can also set if the signal is missing or erratic.

LEFT FRONT WHEEL SPEED SIGNAL FAILURE — Continued

POSSIBLE CAUSES
WHEEL SPEED SIGNAL FAILURE DTC PRESENT
AFFECTED WHEEL SPEED SENSOR SIGNAL INOPERATIVE
AFFECTED WHEEL SPEED SENSOR CONNECTOR DAMAGED
AFFECTED WHEEL SPEED SENSOR TONE WHEEL DAMAGED
AFFECTED WHEEL SPEED SENSOR AIR GAP FAULT
WHEEL BEARING FAULT
BRAKE LINING FAULT
AFFECTED WHEEL SPEED SENSOR CIRCUIT ELECTRICAL FAULT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTCs. With the DRBIII®, read Freeze Frame information. **NOTE: The CAB must sense ALL 4 wheels at 25 km/h (15 mph) before it will extinguish the ABS indicators.** Does the DRBIII® display WHEEL SPEED/SIGNAL FAILURE and SENSOR CIRCUIT FAILURE? Yes → Refer to the affected Wheel Speed SENSOR CIRCUIT FAILURE for the related symptom(s). Perform ABS VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition on. With the DRBIII® in Sensors, monitor ALL the Wheel Speed Sensor Signals while an assistant drives the vehicle. Slowly accelerate as straight as possible from a stop to 24 km/h (15 mph). Is the affected Wheel Speed Signal showing 0 km/h (0 mph)? Yes → Go To 3 No → The condition is not present at this time. Monitor DRBIII® parameters while wiggling the related wiring harness. Refer to any Technical Service Bulletins(TSB) that may apply. Visually inspect the related wiring harness and connector terminals. Perform ABS VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Inspect the CAB connector, affected Wheel Speed Sensor, and affected Wheel Speed Sensor connector. Is the Wheel Speed Sensor or any connector damaged? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Go To 4	All

LEFT FRONT WHEEL SPEED SIGNAL FAILURE — Continued

TEST	ACTION	APPLICABILITY
4	Turn ignition off. Inspect the affected Tone Wheel for damaged, missing teeth, cracks, or looseness. **NOTE: The Tone Wheel teeth should be perfectly square, not bent, or nicked.** Is the affected Tone Wheel OK? Yes → Go To 5 No → Replace the Tone Wheel in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. Using a Feeler Gauge, measure the affected Wheel Speed Sensor Air Gap. **NOTE: Refer to the appropriate service information, if necessary, for procedures or specifications.** Is the Air Gap OK? Yes → Go To 6 No → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Inspect the wheel bearings for excessive runout or clearance. **NOTE: Refer to the appropriate service information, if necessary, for procedures or specifications.** Is the bearing clearance OK ? Yes → Go To 7 No → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1.	All
7	Turn the ignition off. Visually inspect brakes for locking up due to lining contamination or overheating. Inspect all Components for defects which may cause a Signal DTC to set. Is any Component Damaged? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Refer to symptom SENSOR CIRCUIT FAILURE for further diagnostics. Perform ABS VERIFICATION TEST - VER 1.	All

Symptom:
PUMP CIRCUIT FAILURE

When Monitored and Set Condition:

PUMP CIRCUIT FAILURE

When Monitored: Ignition on. The CAB commands the pump on at 20 km/h (12 mph) to check its operation, if the brake switch is not applied. If the brake is applied, the test will run at 40 km/h (25 mph).

Set Condition: The DTC is stored when the CAB detects: 1) Improper voltage decay after the pump was turned off. 2) Pump not energized by the CAB, but voltage is present for 3.5 seconds. 3) Pump is turned on by the CAB, but without sufficient voltage to operate it.

POSSIBLE CAUSES
CAB - PUMP MOTOR RUNNING CONTINUOUSLY
ABS PUMP FUSE
ABS PUMP MOTOR INTERMITTENT DTC
DAMAGED CAB/CAB HARNESS CONNECTOR
ABS PUMP FUSED B(+) CIRCUIT INTERMITTENT SHORT TO GROUND
ABS PUMP FUSED B(+) CIRCUIT SHORT TO GROUND
CAB - INTERNAL FAULT
ABS PUMP MOTOR INOPERATIVE
ABS PUMP MOTOR OPEN
ABS PUMP MOTOR B(+) CIRCUIT OPEN
ABS PUMP MOTOR GROUND CIRCUIT OPEN
CAB - INTERNAL FAULT

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Turn the ignition on. Monitor the ABS Pump Motor for continuous operation. **NOTE: The CAB must sense ALL wheels at 25 km/h (15 mph) before it will extinguish the ABS indicators.** Is the ABS Pump Motor running continuously? Yes → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No → Go To 2	All

PUMP CIRCUIT FAILURE — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. Turn the ignition on. With the DRBIII®, read DTCs. With the DRBIII®, erase DTCs. Turn the ignition off. Turn the ignition on. With the DRBIII®, actuate the ABS Pump Motor. Did the ABS Pump Motor operate? Yes → Go To 3 No → Go To 4	All
3	Turn the ignition off. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Make sure the Pump Motor connecter is secure. Visually inspect the related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals. Refer to any Hotline letters or Technical Service Bulletins that may apply. Were any problems found? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Test Complete.	All
4	Turn the ignition off. Remove and inspect the ABS Pump fuse. Is the ABS Pump fuse open? Yes → Go To 5 No → Go To 8	All
5	Turn the ignition off. Visually inspect the ABS Pump Fused B(+) circuit in the wiring harness. Look for any sign of an intermittent short to ground. Is the wiring harness OK? Yes → Go To 6 No → Repair the ABS Pump Fused B(+) circuit for a short to ground. Perform ABS VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the CAB harness connector. Check connectors - Clean/repair as necessary. Using a 12-volt test light connected to 12-volts, probe the ABS Pump Fused B(+) circuit fuse terminal. Does the test light illuminate? Yes → Repair the ABS Pump Fused B(+) circuit for a short to ground. Perform ABS VERIFICATION TEST - VER 1. No → Go To 7	All

PUMP CIRCUIT FAILURE — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Reconnect the CAB harness connector. Using a 12-volt test light connected to 12-volts, probe the ABS Pump Fused B(+) circuit fuse terminal. Does the test light illuminate? Yes → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No → Replace the ABS Pump fuse. If the fuse is open make sure to check for a short to ground. Perform ABS VERIFICATION TEST - VER 1.	All
8	Turn the ignition off. Disconnect the CAB harness connector. Inspect the CAB and CAB harness connector for damage. Is there any broken, bent, pushed out, corroded, or spread terminals? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off. Reinstall the ABS Pump fuse. Disconnect the ABS Pump Motor connector. Check connectors - Clean/repair as necessary. Connect a 10 gauge 40 amp fused jumper wire between the ABS Pump Fused B(+) terminal in the CAB harness connector to the ABS Pump Motor connector RED wired terminal. Connect a 10 gauge jumper wire between the Ground circuit terminal in the CAB harness connector to the ABS Pump Motor connector BLACK wired terminal. Did the ABS Pump Motor operate? Yes → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No → Go To 10	All
10	Turn the ignition off. Disconnect the ABS Pump Motor connector. Check connectors - Clean/repair as necessary. Connect a 10 gauge 40 amp fused jumper wire between the ABS Pump Motor connector RED wired terminal and an alternate 40 amp capable B(+) source. Connect a 10 gauge jumper wire between the ABS Pump Motor connector BLACK wired terminal and ground Did the ABS Pump Motor operate? Yes → Go To 11 No → Replace the Hydraulic Control Unit in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All

PUMP CIRCUIT FAILURE — Continued

TEST	ACTION	APPLICABILITY
11	Turn the ignition off. Disconnect the ABS Pump Motor connector. Check connectors - Clean/repair as necessary. Connect a 10 gauge 40 amp fused jumper wire between the ABS Pump Fused B(+) terminal in the CAB harness connector to the ABS Pump Motor connector RED wired terminal. Connect a 10 gauge jumper wire between the ABS Pump Motor connector BLACK wired terminal and ground. Did the ABS Pump Motor operate? Yes → Repair the ABS Pump Motor Fused B(+) circuit for an open. Perform ABS VERIFICATION TEST - VER 1. No → Repair the ABS Pump Motor Ground circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All

Symptom:
SYSTEM OVER VOLTAGE

When Monitored and Set Condition:

SYSTEM OVER VOLTAGE

When Monitored: Ignition on. The CAB monitors the Fused B(+) circuit at all times for proper system voltage.

Set Condition: If the voltage is above 16.5 volts, the Diagnostic Trouble Code (DTC) is set.

POSSIBLE CAUSES
INTERMITTENT DTC
BATTERY CHARGER CONNECTED
FUSED IGNITION SWITCH OUTPUT (RUN) CIRCUIT HIGH
DAMAGED CAB/CAB HARNESS CONNECTOR
CAB - GROUND CIRCUIT OPEN
CAB - INTERNAL FAULT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. With the DRBIII®, erase DTC's. Turn the ignition off. Turn the ignition on. Start the engine. With the DRBIII®, read DTC's. Does the DRBIII® display SYSTEM OVER VOLTAGE? Yes → Go To 2 No → Go To 7	All
2	Is a battery charger connected to the vehicle? Yes → Ensure the battery is fully charged. Perform ABS VERIFICATION TEST - VER 1. No → Go To 3	All

SYSTEM OVER VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the CAB connector. **Note: Check connector - Clean/repair as necessary.** Start the engine. Raise engine speed above 1,800 RPM's Measure the voltage between Fused Ignition Switch Output (RUN) circuit and ground. Is the voltage above 16.5 volts ? Yes → Refer to appropriate service information for Charging System testing and repair. Perform ABS VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the CAB connector. **Note: Check connector - Clean/repair as necessary.** Inspect the CAB and CAB harness connector for damage. Is there any broken, bent, pushed out, corroded, or spread terminals? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Disconnect the CAB connector. **Note: Check connector - Clean/repair as necessary.** Using a 12-volt test light connected to 12-volts, probe the Ground circuits. Does the test light illuminate? Yes → Go To 6 No → Repair the Ground circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Reconnect the CAB harness connector. Turn the ignition on. With the DRBIII® in Sensors, read the ignition voltage. Does the DRBIII® display ignition voltage above 16 volts? Yes → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No → Go To 7	All

SYSTEM OVER VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals. Refer to any Hotline letters or Technical Service Bulletins that may apply. Ensure the battery is fully charged. Inspect the vehicle for aftermarket accessories that may exceed the Generator System output. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Were any problems found? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
SYSTEM UNDER VOLTAGE

When Monitored and Set Condition:

SYSTEM UNDER VOLTAGE

When Monitored: Ignition on. The CAB monitors the Fused Ignition Switch Output circuit voltage above 10 km/h (6 mph) for proper system voltage.

Set Condition: If the voltage is below 9.5 volts, the Diagnostic Trouble Code (DTC) is set.

POSSIBLE CAUSES
INTERMITTENT DTC
DAMAGED CAB/CAB HARNESS CONNECTOR
RUNNING BATTERY VOLTAGE LOW
CAB - GROUND CIRCUIT OPEN
FUSED IGNITION SWITCH OUTPUT (RUN) CIRCUIT OPEN
CAB - INTERNAL FAULT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. With the DRBIII®, erase DTC's. Turn the ignition off. Turn the ignition on. Start the engine. Drive the vehicle above 16 km/h (10 mph) for at least 20 seconds. Stop the vehicle With the DRBIII®, read DTC's. Does the DRBIII® display SYSTEM UNDER VOLTAGE ? Yes → Go To 2 No → Go To 6	All
2	Engine Running. Measure the battery voltage. Is the battery voltage below 10 volts? Yes → Refer to appropriate service information for charging system testing and repair. Perform ABS VERIFICATION TEST - VER 1. No → Go To 3	All

SYSTEM UNDER VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the CAB harness connector. Inspect the CAB and CAB harness connector for damage. Is there any broken, bent, pushed out, corroded, or spread terminals? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off. Disconnect the CAB harness connector. Using a 12-volt test light connected to 12-volts, probe the Ground circuits. Does the test light illuminate? Yes → Go To 5 No → Repair the Ground circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All
5	Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch Output (RUN) circuit. Does the test light illuminate? Yes → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No → Repair the Fused Ignition Switch Output (RUN) circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals. Refer to any Hotline letters or Technical Service Bulletins that may apply. Ensure the battery is fully charged. Inspect the vehicle for aftermarket accessories that may exceed the Generator System output. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Were any problems found? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

VALVE POWER FEED FAILURE

When Monitored and Set Condition:

VALVE POWER FEED FAILURE

When Monitored: Ignition ON. ABS Power Relay closed. Valve command for a particular solenoid not present.

Set Condition: Low feedback voltage from the low side of all the solenoids.

POSSIBLE CAUSES
INTERMITTENT DTC
ABS VALVE FUSE
ABS VALVE FUSED B(+) SUPPLY CIRCUIT OPEN
ABS VALVE FUSED B(+) CIRCUIT OPEN
ABS VALVE FUSED B(+) CIRCUIT INTERMITTENT SHORT TO GROUND
ABS VALVE FUSED B(+) CIRCUIT SHORT TO GROUND
DAMAGED CAB/CAB HARNESS CONNECTOR
CAB - GROUND CIRCUIT OPEN
CAB - INTERNAL FAULT

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read DTC's. With the DRBIII®, erase DTC's. Turn the ignition off. Turn the ignition on. With the DRBIII®, read DTC's. Does the DRBIII® display VALVE POWER FEED FAILURE? Yes → Go To 2 No → Go To 10	All
2	Turn the ignition off. Remove and Inspect the ABS Valve fuse. Is the ABS Valve fuse open? Yes → Go To 3 No → Go To 6	All

VALVE POWER FEED FAILURE — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Visually inspect the ABS Valve Fused B(+) circuit in the wiring harness. Look for any sign of an intermittent short to ground. Is the wiring harness OK? Yes → Go To 4 No → Repair the ABS Valve Fused B(+) circuit for a short to ground. Perform ABS VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the CAB harness connector. **Note: Check connector - Clean/repair as necessary.** Using a test light connected to 12 volts, probe the ABS Valve Fused B(+) circuit fuse terminal. Did the test light illuminate? Yes → Repair the ABS Valve Fused B(+) circuit for a short to ground. Perform ABS VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off. Reconnect the CAB harness connector. **NOTE: The CAB harness connector must be reconnected for the results of this test to be valid.** Using a test light connected to 12 volts, probe the ABS Valve Fused B(+) circuit fuse terminal. Did the test light illuminate? Yes → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No → Replace the ABS Valve Fused B(+) fuse. If the fuse is open make sure to check for a short to ground. Perform ABS VERIFICATION TEST - VER 1.	All
6	Turn the ignition off. Disconnect the CAB harness connector. Inspect the CAB and CAB harness connector for damage. Is there any broken, bent, pushed out, corroded or spread terminals? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off. Using a 12-volt test light connected to ground, probe the B(+) supply at the ABS Valve fuse terminal. Did the test light illuminate? Yes → Go To 8 No → Repair the ABS Valve Fused B(+) supply circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All

VALVE POWER FEED FAILURE — Continued

TEST	ACTION	APPLICABILITY
8	Reinstall the ABS Valve fuse. Disconnect the CAB harness connector. Using a 12-volt test light connected to ground, probe the ABS Valve Fused B(+) circuit at the CAB harness connector. Did the test light illuminate? Yes → Go To 9 No → Repair the ABS Valve Fused B(+) circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All
9	Turn the ignition off. Using a 12-volt test light connected to 12-volts, probe the ground circuits at the CAB harness connector. Did the test light illuminate? Yes → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No → Repair the CAB Ground circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All
10	Turn the ignition off. Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires. Visually inspect the related wire harness connectors. Look for broken, bent, pushed out, or corroded terminals. Refer to any Hotline letters or Technical Service Bulletins that may apply. Were any problems found? Yes → Repair as necessary. Perform ABS VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
*BRAKE LAMP SWITCH INOPERATIVE

POSSIBLE CAUSES
CHECK BRAKE LAMP SWITCH OUTPUT
BRAKE LAMP SWITCH B+ OPEN
BRAKE LAMP SWITCH OPEN
BRAKE LAMP SWITCH OUTPUT CIRCUIT SHORT OR OPEN
CAB -- INTERNAL OPEN

TEST	ACTION	APPLICABILITY
1	With the DRBIII® in Inputs/Outputs, read the Brake Lamp Switch state. Press and release the brake pedal. Does the DRBIII® display PRESSED and RELEASED? Yes → The Brake Lamp Switch is OK. Perform ABS VERIFICATION TEST - VER 1. No → Go To 2	All
2	Disconnect the Brake Lamp Switch harness connector. Using a 12-volt test light connected to ground, check the Brake Lamp Switch Fused B+ circuit. Does the test light illuminate brightly ? Yes → Go To 3 No → Repair the Brake Lamp Switch Fused B+ circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All
3	Disconnect the Brake Lamp Switch harness connector. Connect a jumper wire between the Brake Lamp Switch B+ and Brake Lamp Switch Output circuits. With the DRBIII® in Inputs/Outputs, read the Brake Lamp Switch state. Does the DRBIII® display PRESSED? Yes → Replace the Brake Lamp Switch in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No → Go To 4	All
4	Disconnect the CAB harness connector. Disconnect the Brake Lamp Switch harness connector. Check the Brake Lamp Switch Output circuit for a short to voltage and for an open. Is the Brake Lamp Switch Output circuit shorted or open? Yes → Repair the Brake Lamp Switch Output circuit for a short to voltage or an open. Perform ABS VERIFICATION TEST - VER 1. No → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All

Symptom:

*TRAC OFF INDICATOR NEVER/ALWAYS ON

POSSIBLE CAUSES
TRAC OFF SW GROUND OPEN
TRAC OFF SWITCH OPEN
TRAC OFF SWITCH SENSE CIRCUIT SHORT TO B+ OR OPEN
BCM -- NO TRAC OFF MESSAGE
CLUSTER INTERNAL FAULT-- TRAC OFF INDICATOR INOPERATIVE
CLUSTER-PERMANENT TRAC OFF INDICATOR
TRAC OFF SWITCH INTERNAL SHORT
TRAC OFF SWITCH SENSE CIRCUIT SHORT TO GROUND
BCM -- PERMANENT TRAC OFF MESSAGE

TEST	ACTION	APPLICABILITY
1	**Note: If any DTC's are present, they must be repaired prior to performing this test.** Turn the ignition off. Turn the ignition on. Observe the TRAC OFF indicator. Did the TRAC OFF indicator come on for several seconds then go out? Yes → Go To 2 No. TRAC OFF Indicator does not come on. Go To 5 No. TRAC OFF Indicator does not go out. Go To 6	All
2	Disconnect the TRAC OFF Switch harness connector. Using a 12-volt test light connected to 12-volts, check the TRAC OFF Switch Ground circuit. Does the test light illuminate? Yes → Go To 3 No → Repair the TRAC OFF Switch Ground circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the TRAC OFF Switch harness connector. Turn the ignition on. Connect and disconnect a jumper wire between TRAC OFF Switch Ground and TRAC OFF Switch Sense circuits. Does the TRAC OFF Indicator light and then go out? Yes → Replace the TRAC OFF switch. Perform ABS VERIFICATION TEST - VER 1. No → Go To 4	All

*TRAC OFF INDICATOR NEVER/ALWAYS ON — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the TRAC OFF Switch harness connector. Disconnect the CAB harness connector. Turn the ignition on. Check the TRAC OFF Switch Sense circuit for short to B+ and for an open. Is the Sense circuit shorted or open? Yes → Repair the TRAC OFF Switch Sense circuit for a short to battery or for an open. Perform ABS VERIFICATION TEST - VER 1. No → Replace the Body Control Module in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All
5	Turn the ignition off. **NOTE: The purpose of this test is to perform the Instrument Cluster self test.** Depress and hold the Odometer Reset Button. Turn the Key from OFF to ON and then back to OFF. Release the Odometer Reset Button. Do the Instrument Cluster Indicators and Gauges activate and deactivate? Yes → Replace the Body Control Module in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No → Replace the Instrument Cluster in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All
6	**NOTE: The purpose of this test is to perform the Instrument Cluster self test.** Depress and hold the Odometer Reset Button. Turn the Key from OFF to ON and then back to OFF. Release the Odometer Reset Button. Do the Instrument Cluster Indicators and Gauges activate and deactivate? Yes → Go To 7 No → Replace the Instrument Cluster in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All
7	Turn the ignition off. Disconnect the TRAC OFF Switch harness connector. Turn the ignition on. Does the TRAC OFF Indicator light and then go out? Yes → Replace the TRAC OFF switch. Perform ABS VERIFICATION TEST - VER 1. No → Go To 8	All

*TRAC OFF INDICATOR NEVER/ALWAYS ON — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off. Disconnect the TRAC OFF Switch harness connector. Disconnect the BCM C4 harness connector. Check the TRAC OFF Switch Sense circuit for short to ground. Is the Sense circuit shorted to ground? Yes → Repair the TRAC OFF Switch Sense circuit for a short to ground. Perform ABS VERIFICATION TEST - VER 1. No → Replace the Body Control Module in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All

Symptom:
*TRAC ON INDICATOR NEVER/ALWAYS ON

POSSIBLE CAUSES
CAB -- INTERNAL FAULT
CHECK TRACTION CONTROL SYSTEM
CLUSTER FAILS SELF TEST
CAB - NO TRAC MESSAGE

TEST	ACTION	APPLICABILITY
1	**NOTE: The DRBIII® must be able to communicate with the CAB prior to performing this test.** **NOTE: Note: If any CAB DTC's are present, they must be repaired prior to performing this test.** Perform the KEY-ON bulb test. Did the TRAC Indicator illuminate and then go out? Yes → Go To 2 No → Go To 3	All
2	Make sure the Traction Control system has not been deactivated with the TRAC OFF switch. **NOTE: The purpose of this test is to determine if the Traction Control system is operating.** With the DRBIII® in Inputs/Outputs, read the ABS Pump Motor voltage state. Accelerate sufficient to cause drive wheel slip. Does the TRAC Indicator illuminate and the DRBIII® display approximately 9 volts? Yes → The traction control system is functioning normally. Perform ABS VERIFICATION TEST - VER 1. No → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All
3	**NOTE: The purpose of this test is to perform the Instrument Cluster self test.** Depress and hold the Odometer Reset Button. Turn the Key from OFF to ON and then back to OFF. Release the Odometer Reset Button. Do the Instrument Cluster Indicators and Gauges activate and deactivate? Yes → Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1. No → Replace the Instrument Cluster in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All

Symptom:

*NO RESPONSE FROM CONTROLLER ANTILOCK BRAKE

POSSIBLE CAUSES
NO RESPONSE FROM CAB
GROUND CIRCUIT OPEN
OPEN FUSED IGNITION SWITCH OUTPUT CIRCUIT
OPEN PCI BUS CIRCUIT
CONTROLLER ANTILOCK BRAKE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **Note: As soon as one or more module communicates with the DRB, answer the question.** With the DRB, attempt to communicate with the Airbag Control Module (ACM). With the DRB, attempt to communicate with the Body Control Module (BCM). Was the DRB able to I/D or establish communications with either of the modules? Yes → Go To 2 No → Refer to the Communications category and perform the symptom PCI Bus Communication Failure. Perform ABS VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the CAB harness connector. Using a 12-volt test light connected to 12-volts, probe both ground circuits. Is the test light illuminated for each circuit? Yes → Go To 3 No → Repair the ground circuit(s) for an open. Perform ABS VERIFICATION TEST - VER 1.	All
3	Turn the ignition off. Disconnect the CAB harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch Output circuit. Is the test light illuminated? Yes → Go To 4 No → Repair the Fused Ignition Switch Output circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM CONTROLLER ANTILOCK BRAKE — Continued

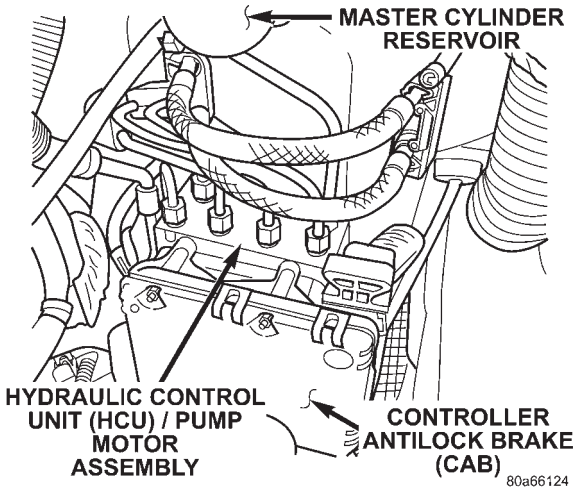
TEST	ACTION	APPLICABILITY
4	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the CAB harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the CAB connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 5 No → Repair the PCI Bus circuit for an open. Perform ABS VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the Controller Antilock Brake in accordance with the Service Information. Perform ABS VERIFICATION TEST - VER 1.	All

Verification Tests

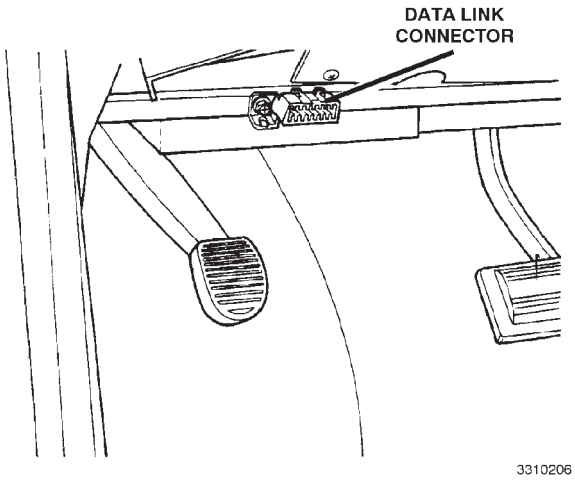
ABS VERIFICATION TEST - VER 1	APPLICABILITY
1. Turn the ignition off. 2. Connect all previously disconnected components and connectors. 3. Ensure all accessories are turned off and the battery is fully charged. 4. Ensure that the Ignition is on, and with the DRBIII, erase all Diagnostic Trouble Codes from ALL modules. Start the engine and allow it to run for 2 minutes and fully operate the system that was malfunctioning. 5. Turn the ignition off and wait 5 seconds. Turn the ignition on and using the DRBIII, read DTC's from ALL modules. 6. If any Diagnostic Trouble Codes are present, return to Symptom list and troubleshoot new or recurring symptom. **7. NOTE: For Sensor Signal and Pump Motor faults, the CAB must sense all 4 wheels at 25 km/h (15 mph) before it will extinguish the ABS Indicator.** 8. If there are no DTC's present after turning ignition on, road test the vehicle for at least 5 minutes. Perform several antilock braking stops. **9. Caution: Ensure braking capability is available before road testing.** 10. Again, with the DRBIII® read DTC's. If any DTC's are present, return to Symptom list. 11. If there are no Diagnostic Trouble Codes (DTC's) present, and the customer's concern can no longer be duplicated, the repair is complete. Are any DTC's present or is the original concern still present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

8.0 COMPONENT LOCATIONS

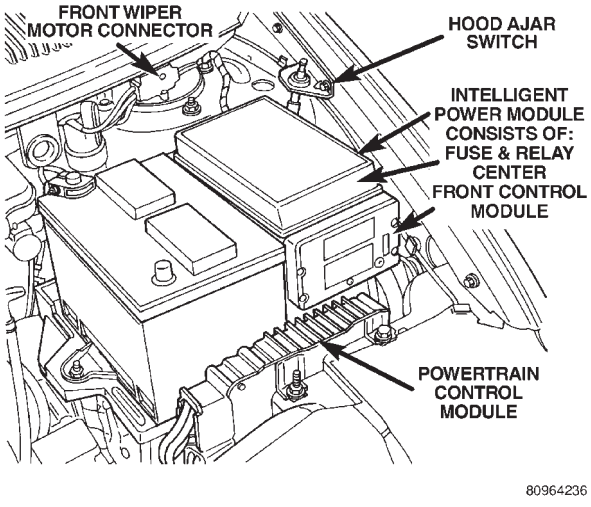
8.1 CONTROLLER ANTILOCK BRAKE (CAB)



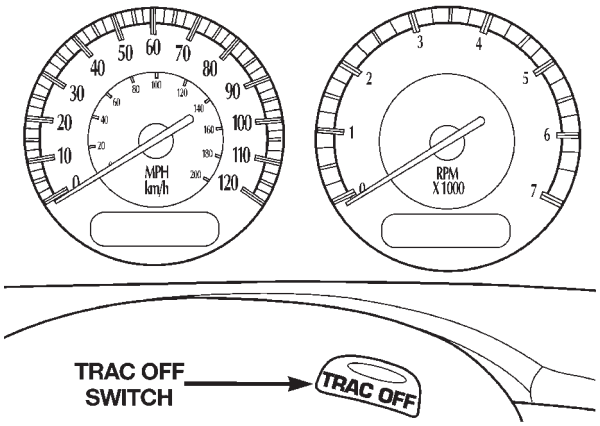
8.2 DATA LINK CONNECTOR



8.3 FUSES



8.4 TRACTION CONTROL SWITCH



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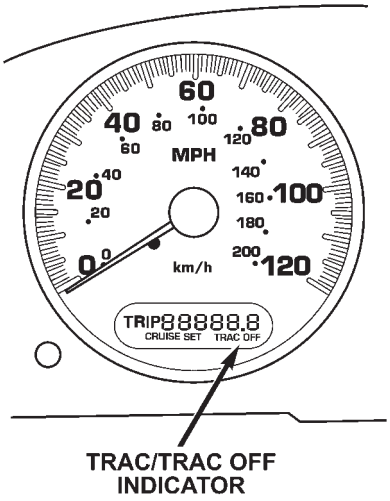
8.4.1 TRACTION CONTROL INDICATORS



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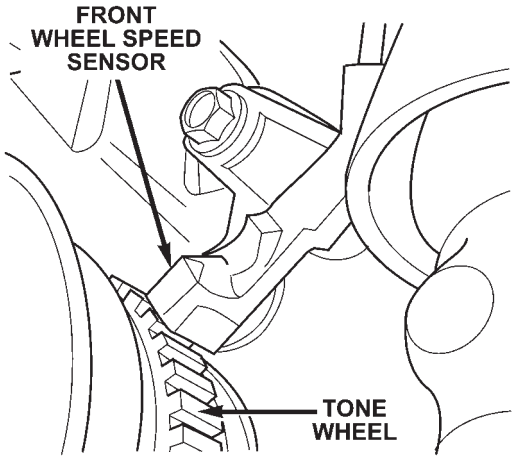
8.5 WHEEL SPEED SENSORS

8.5.1 FRONT



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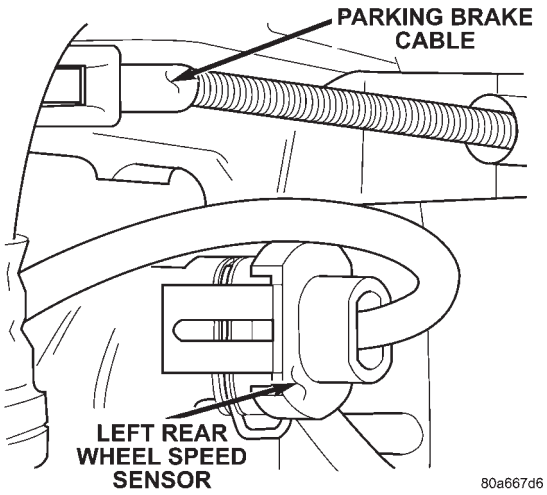
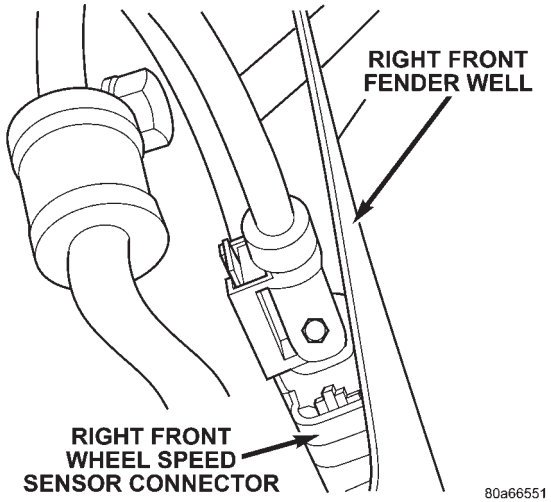
8.5.2 REAR

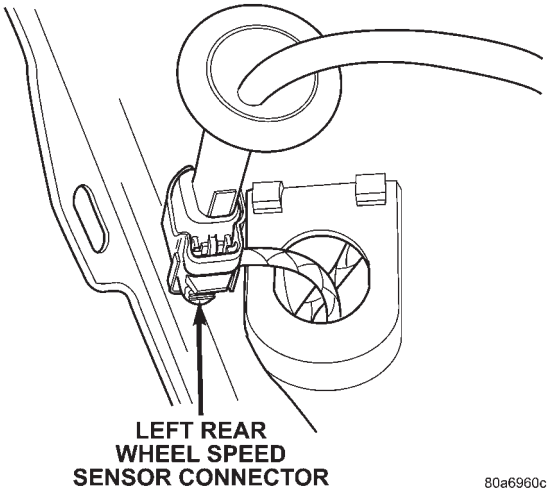


8.5A WHEEL SPEED SENSOR CONNECTORS

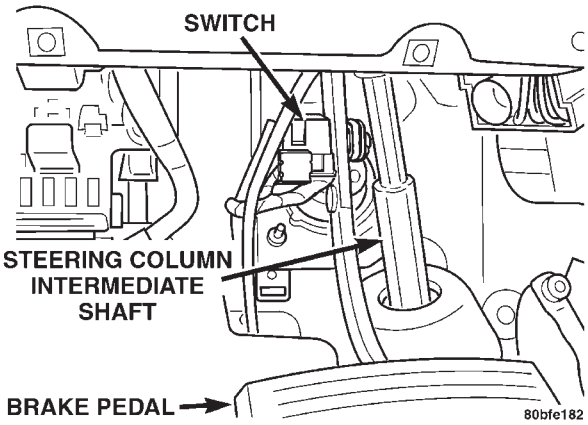
8.5A.1 FRONT



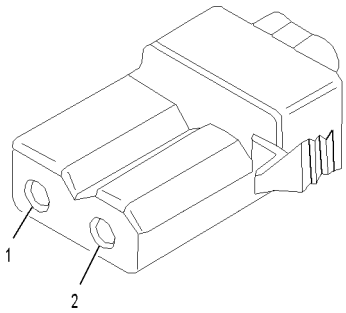
8.5A.2 REAR



8.6 BRAKE LAMP SWITCH



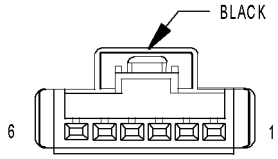
9.0 CONNECTOR PINOUTS



ABS
PUMP
MOTOR

ABS PUMP MOTOR

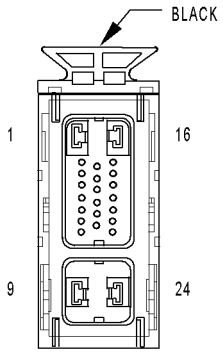
CAV	CIRCUIT	FUNCTION
1	TN	GROUND
2	RD	PUMP/MOTOR RELAY OUTPUT



BRAKE
LAMP
SWITCH

BRAKE LAMP SWITCH

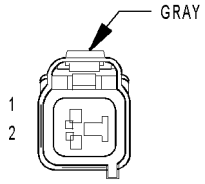
CAV	CIRCUIT	FUNCTION
1	A103 18GY/RD	FUSED B(+)
2	L50 18WT/TN (GAS)	BRAKE LAMP SWITCH OUTPUT
2	L50 18WT/TN (DIESEL)	PRIMARY BRAKE SWITCH SIGNAL
3	V30 20VT/WT (GAS)	SPEED CONTROL BRAKE SWITCH OUTPUT
4	V32 20VT/YL (GAS)	SPEED CONTROL ON/OFF SWITCH SENSE
5	Z429 20BK/OR	GROUND
6	B29 20DG/WT	SECONDARY BRAKE SWITCH SIGNAL



CONTROLLER ANTILOCK BRAKE

CONTROLLER ANTILOCK BRAKE

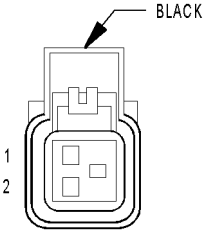
CAV	CIRCUIT	FUNCTION
1	Z107 12BK/DG	GROUND
2	B1 18DG/OR	RIGHT REAR WHEEL SPEED SENSOR SIGNAL
3	B2 18DG/LB	RIGHT REAR WHEEL SPEED SENSOR 12 VOLT SUPPLY
4	-	-
5	D25 18WT/VT	PCI BUS
6	B6 18DG/WT	RIGHT FRONT WHEEL SPEED SENSOR SIGNAL
7	B7 18DG/VT	RIGHT FRONT WHEEL SPEED SENSOR 12 VOLT SUPPLY
8	-	-
9	A111 12DG/RD	FUSED B(+)
10	F500 18DG/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	Z127 12BK/DG	GROUND
17	-	-
18	L50 18WT/TN	BRAKE LAMP SWITCH OUTPUT
19	B3 18DG/YL	LEFT REAR WHEEL SPEED SENSOR SIGNAL
20	B4 18DG/GY	LEFT REAR WHEEL SPEED SENSOR 12 VOLT SUPPLY
21	-	-
22	B8 18DG/TN	LEFT FRONT WHEEL SPEED SENSOR SIGNAL
23	B9 18DG/LG (EXCEPT 3.3L/3.8L)	LEFT FRONT WHEEL SPEED SENSOR 12 VOLT SUPPLY
23	B9 18DG/WT (3.3L/3.8L)	LEFT FRONT WHEEL SPEED SENSOR 12 VOLT SUPPLY
24	A107 12TN/RD	FUSED B(+)



LEFT FRONT WHEEL SPEED SENSOR

LEFT FRONT WHEEL SPEED SENSOR

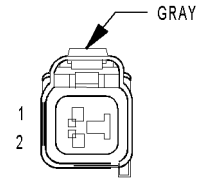
CAV	CIRCUIT	FUNCTION
1	B9 18DG/LG (EXCEPT 3.3L/3.8L)	LEFT FRONT WHEEL SPEED SENSOR 12 VOLT SUPPLY
1	B9 18DG/WT (3.3L/3.8L)	LEFT FRONT WHEEL SPEED SENSOR 12 VOLT SUPPLY
2	B8 18DG/TN	LEFT FRONT WHEEL SPEED SENSOR SIGNAL



LEFT REAR WHEEL SPEED SENSOR

LEFT REAR WHEEL SPEED SENSOR

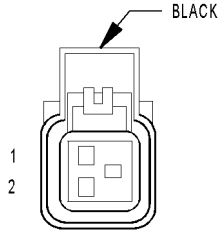
CAV	CIRCUIT	FUNCTION
1	B4 18DG/GY	LEFT REAR WHEEL SPEED SENSOR 12 VOLT SUPPLY
2	B3 18DG/YL	LEFT REAR WHEEL SPEED SENSOR SIGNAL



RIGHT FRONT WHEEL SPEED SENSOR

RIGHT FRONT WHEEL SPEED SENSOR

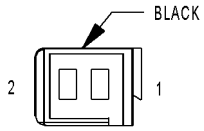
CAV	CIRCUIT	FUNCTION
1	B7 18DG/VT	RIGHT FRONT WHEEL SPEED SENSOR 12 VOLT SUPPLY
2	B6 18DG/WT	RIGHT FRONT WHEEL SPEED SENSOR SIGNAL



RIGHT REAR WHEEL SPEED SENSOR

RIGHT REAR WHEEL SPEED SENSOR

CAV	CIRCUIT	FUNCTION
1	B2 18DG/LB	RIGHT REAR WHEEL SPEED SENSOR 12 VOLT SUPPLY
2	B1 18DG/OR	RIGHT REAR WHEEL SPEED SENSOR SIGNAL



TRACTION CONTROL SWITCH

TRACTION CONTROL SWITCH

CAV	CIRCUIT	FUNCTION
1	B27 20DG/WT	TRACTION CONTROL SWITCH SENSE
2	Z427 20BK/WT	GROUND

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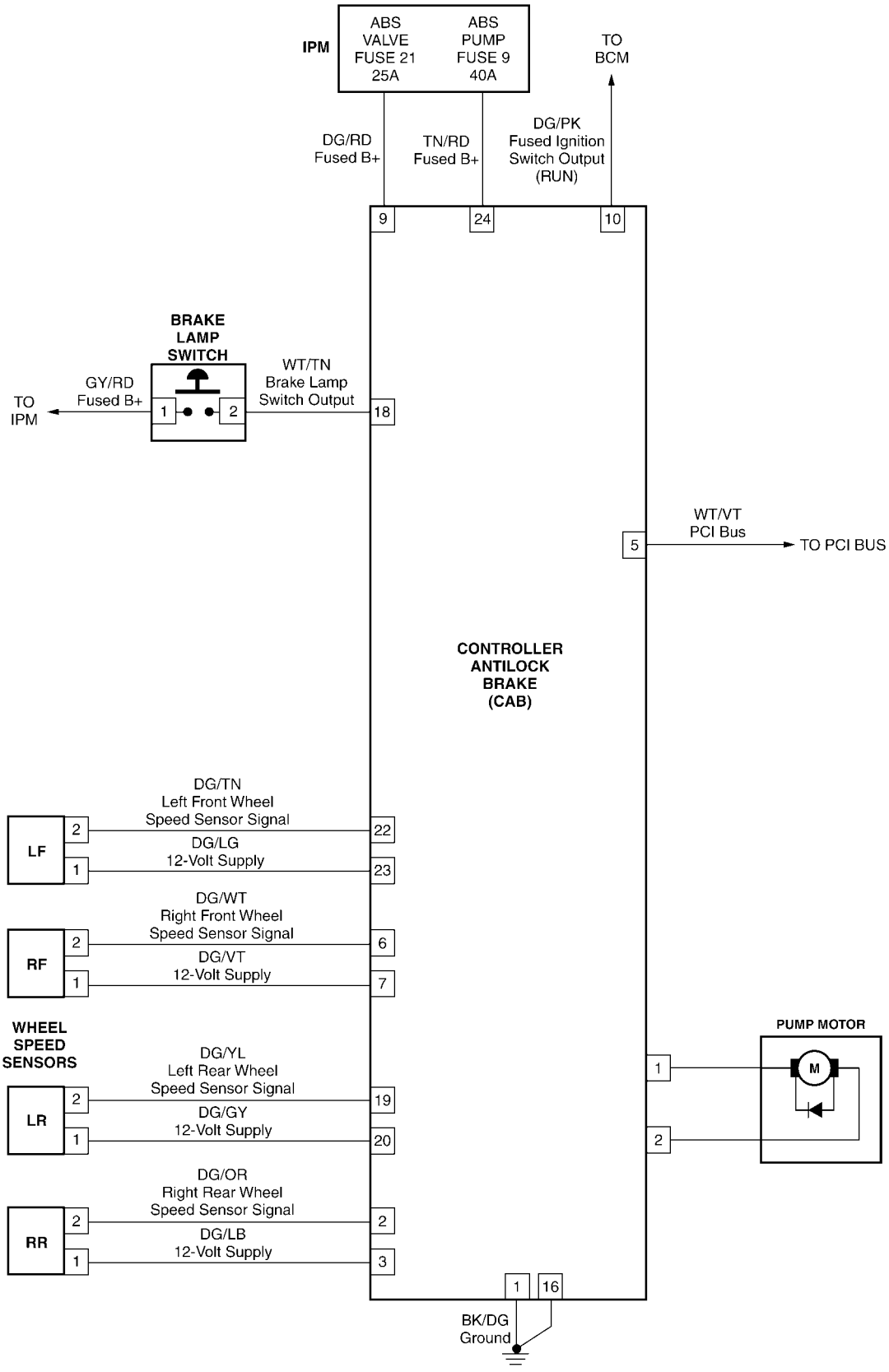
10.1 TEVES MARK 20E ANTILOCK BRAKE SYSTEM – ABS



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NOTES

1.0 INTRODUCTION

IMPORTANT

The 2003 RS model year vehicles, will use both the standard EATX controlled transmission with 3.3/3.8L engines and the new NGC controlled transmission with 2.4L engine.

NGC CONTROLLER

New for 2003 model year, RS vehicles will integrate the Transmission Control Module and Powertrain Control Module into a single control module. This new module is the Next Generation Controller for DaimlerChrysler and will be referred to as the Powertrain Control Module (PCM).

Some of the changes you will see are several new Diagnostics Trouble Codes and supporting diagnostic procedures which reflect the new combined module technology. The PCM will have four color coded connectors, C1 through C4, (C1-BLK, C2-GRAY, C3-WHITE, C4-GREEN), each PCM connector will have 38 pins. Two new tools are used for probing and repairing the new PCM connectors. Miller tool #3638, and Miller tool #8815. Miller tool #3638 is designed to release the pins from the PCM harness connectors. You must use the Miller tool #3638 to release the harness connector terminals or harness connector or terminal damage will occur. Miller tool #8815 was designed for probing the PCM harness connectors. You must use Miller tool #8815 for probing the PCM terminals or damage to the terminal will occur resulting in a poor terminal to pin connection. There are also new Verification tests and module replacement procedures for the new PCM.

The procedures contained in this manual include all of the specifications, instructions, and graphics needed to diagnose,

*41TE (EATX) Electronic Automatic Transmission problems

*41TE (NGC) Electronic Automatic Transmission problems

The diagnostics in this manual are based on the failure condition or symptom being present at the time of diagnosis.

When repairs are required, refer to the appropriate volume of the service manual for the proper removal and repair procedure.

Diagnostic procedures change every year. New diagnostic systems may be added and/or carryover systems may be enhanced. READ THIS MANUAL BEFORE TRYING TO DIAGNOSE A VEHICLE TROUBLE CODE. It is recommended that you review the entire manual to become familiar with all new and changed diagnostic procedures.

This book reflects many suggested changes from readers of past issues. After using this book, if you have any comments or recommendations, please fill out the form at the back of the book and mail it back to us.

1.1 SYSTEM COVERAGE

The diagnostic procedure manual covers all 2003 RS vehicles equipped with a 41TE transaxle.

1.2 SIX -STEP TROUBLESHOOTING PROCEDURE

Diagnosis of the 41TE Electronic transaxle is done in six basic steps:

verification of complaint
verification of any related symptoms
symptom analysis
problem isolation
repair of isolated problem
verification of proper operation

2.0 IDENTIFICATION OF SYSTEM

The 41TE Transmission family can be identified through a visual inspection. Confirm the presense of a Solenoid/Pressure Switch Assembly, Transmission Range Sensor, Input Speed Sensor and Output Speed Sensor all located on the same side of the transmission case. Refer to the Service Information for transmission ID tag descriptions.

3.0 SYSTEM DESCRIPTION AND FUNCTIONAL OPERATION

3.1 GENERAL DESCRIPTION

The 41TE electronic transaxle is a conventional transaxle in that it uses hydraulically applied clutches to shift a planetary gear train. However, the electronic control system replaces many of the mechanical and hydraulic components used in conventional transmission valve bodies.

3.2 FUNCTIONAL OPERATION

The 41TE electronic transaxle has a fully adaptive control system. The system performs its functions based on continuous real-time sensor feedback information. The control system automatically adapts to changes in engine performance and friction element variations to provide consistent shift quality. The control system ensures that clutch operation during upshifting and downshifting is more responsive without increased harshness.

The control module continuously checks for electrical problems, mechanical problems, and some hydraulic problems. When a problem is sensed, the control module stores a diagnostic trouble code. Some of these codes cause the transaxle to go into Limp-in or?default mode. While in this mode, electrical power is removed from the transaxle, de-energizing the transmission control relay, and solenoid pack. When this happens, the only transaxle mechanical functions are:

Park and Neutral
Reverse
Second Gear

No upshifts or downshifts are possible. The position of the manual valve alone allows the three ranges that are available. Although vehicle performance is seriously degraded while in this mode, it allows the owner to drive the vehicle in for service.

Once the DRBIII® is in the Transmission portion of the diagnostic program, it constantly monitors the control module to see if the system is in Limp-in mode. If the transaxle is in Limp-in mode, the DRBIII® will flash the red LED.

3.2.1 AUTOSTICK FEATURE (IF EQUIPPED)

This feature allows the driver to manually shift the transaxle when the shift lever is moved to the AutoStick position. When in AutoStick mode, the instrument cluster displays the current gear.

3.2.2 TRANSMISSION OPERATION AND SHIFT SCHEDULING AT VARIOUS OIL TEMPERATURES.

The transmission covered in this manual has unique shift schedules depending on the temperature of the transmission oil. The shift schedule is modified to extend the life of the transmission while operating under extreme conditions.

The oil temperature is measured with a Temperature Sensor on the 41TE transmission. The Temperature Sensor is an integral component of the Transmission Range Sensor (TRS). If the Temperature Sensor is faulty, the transmission will default to a calculated oil temperature. Oil temperature will then be calculated through a complex heat transfer equation using engine coolant temperature, battery/ambient temperature, and engine off time. These inputs are received from the PCI bus periodically and used to initialize the oil temperature at start up. Once the engine is started, the control module updates the transmission oil temperature based on torque converter slip speed, vehicle speed, gear, and engine coolant temperature to determine an estimated oil temperature during vehicle operation. Vehicles using calculated oil temperature, are reasonably accurate, during normal operation. However, if a transmission is overfilled, a transmission oil cooler becomes restricted, or if a customer drives aggressively in low gear, the calculated oil temperature will be inaccurate. Consequently the shift schedule selected may be inappropriate for the current conditions.

3.3 DIAGNOSTIC TROUBLE CODES

Diagnostic trouble codes (DTC's) are codes stored by the PCM (NGC) or TCM (EATX) depending on application and help diagnose Transmission problems. They are viewed using the DRBIII® scan tool.

Always begin by performing a visual inspection of the wiring, connectors, cooler lines and the transmission. Any obvious wiring problems or leaks should be repaired prior to performing any diagnostic test procedures. Some engine driveability problems can be misinterpreted as a transmission problem. Ensure that the engine is running properly and no engine DTC's are present that could cause a transmission complaint.

If there is a bus communication problem, trouble codes will not be accessible until the bus problem is fixed. The DRBIII® will display an appropriate message.

Each diagnostic trouble code is diagnosed by following a specific testing sequence. The diagnostic test procedures contain step-by-step instructions for determining the cause of a transmission diagnostic trouble code. Possible sources of the code are checked and eliminated one by one. It is not necessary to perform all of the tests in this book to diagnose an individual code. These tests are based on the problem being present at the time that the test is run.

All testing should be done with a fully charged battery.

If the control module records a DTC that will adversely affect vehicle emissions, it will request (via the communication bus) that the PCM illuminate the Malfunction Indicator Lamp (MIL). Although these DTC's will be stored immediately as a 1 trip failure, it may take up to five minutes of accumulated trouble confirmation set the DTC and illuminate the MIL. Three consecutive successful OBDII (EURO STAGE III OBD) trips or clearing the DTC's with a diagnostic tool (DRBIII® or equivalent) is required to extinguish the MIL. When the Transmission Control system requests that the PCM illuminate the MIL, the PCM sets a DTC P0700 ($89) to alert the technician that there are DTC's in the Transmission Control System. You must also erase the DTC P0700 in the PCM, in order to extinguish the MIL.

3.3.1 HARD CODE

Any Diagnostic Trouble Code (DTC) that is set whenever the system or component is monitored is a HARD code. This means that the problem is there every time the Transmission Control System checks that system or component. Some codes will set immediately at start up and others will require a road test under specific conditions. It must be determined if a code is repeatable (Hard) or intermittent before attempting diagnosis.

3.3.2 ONE TRIP FAILURES

A One Trip Failure, when read from the Transmission Control System, is a hard OBDII (EURO STAGE III OBD) code that has not matured for the full 5 minutes to a hard fault. This applies to codes that will only set after 5 minutes of substituted gear operation.

3.3.3 INTERMITTENT CODE

A diagnostic trouble code that is not there every time the Transmission Control System checks the circuit or function is an a intermittent code. Some intermittent codes are caused by wiring or connector problems. However intermittent gear ratio codes are usually caused by intermittent hydraulic seal leakage in the clutch and/or accumulator circuits. Problems that come and go like this are the most difficult to diagnose, they must be looked for under the specific conditions that cause them.

3.3.4 STARTS SINCE SET COUNTER

For the most recent code, the Starts Since Set counter counts the number of times the vehicle has started since it was last set. The counter will count up to 255 starts. Note that this code only applies to the last or most recent code set.

When there are no diagnostic trouble codes stored in memory, the DRBIII® will display NO DTC'S PRESENT and the reset counter will show "STARTS SINCE CLEAR = XXX"

The number of starts helps determine if the diagnostic trouble code is hard or intermittent.

- If the count is less than 3, the code is usually a hard code.
- If the count is greater than 3, it is considered an intermittent code. This means that the engine has been started most of the time without the code recurring.

3.3.5 TROUBLE CODE ERASURE

A Diagnostic trouble code will be cleared from control module memory if it has not reset for 40 warm-up cycles.

A warm-up cycle is defined as sufficient vehicle operation such that the coolant temperature has risen by at least 22°C (40° F) from engine starting and reaches a minimum temperature of 71°C (160° F).

The Malfunction Indicator Lamp (MIL) will turn off after 3 good trips or when the DTC's are cleared from the control module.

3.3.6 QUICK LEARN

The Quick Learn function customizes adaptive parameters of the control module to the transmission characteristics of a vehicle. This gives the customer improved "as received" shift quality compared to the initial parameters stored in the control module.

Notes about Quick Learn Features

The nature of the Quick Learn function requires that certain features must be taken into consideration.

> Quick Learn should generally not be used as a repair procedure unless directed by a repair or diagnostic procedure. If the transmission system is exhibiting a problem that you think is caused by an invalid CVI, you should try to relearn the value by performing the appropriate driving maneuvers. In most cases, if Quick Learn makes a vehicle shift better, the vehicle will return with the same problem.

> Before performing Quick Learn, it is imperative that the vehicle be shifted into OD with the engine running and the oil level set to the correct level. This step will purge air from the clutch circuits to prevent erroneous clutch volume values, which could cause poor initial shift quality.

> If a new control module is installed on a vehicle with a HOT engine, Quick Learn will cause the control module to report a cold calculated oil temperature. This requires monitoring the calculated oil temperature using the DRBIII®. If the temperature is below 15 C (60° F) , the transmission must be run at idle or driven in gear until the temperature goes above 15 C (60° F). If the temperature is above 93C (200° F), the transmission must cool to below 93 C (200° F).

> First gear is engaged in overdrive after Quick Learn is completed. Place the vehicle in park after performing Quick Learn.

The Quick Learn function should be performed:

- Upon installation of a new service control module
- After replacement or rebuild of internal transmission components or the torque converter
- If one or more of the clutch volumes indexes (CVI's) contain skewed readings because of abnormal conditions.

To perform the Quick Learn procedure, the following conditions must be met.

- It is imperative that the vehicle be shifted into OD with the engine running and the oil level set to the correct level. This step will purge the air in the clutch circuits to prevent erroneous clutch volume values, which could cause poor initial shift quality.
- Place the selector lever in neutral.
- The brakes must be applied.
- The engine must be idling.
- The throttle angle (TP sensor) must be less than 3 degrees.
- The shift lever position must stay in neutral until prompted to shift into OD.
- The shift lever must stay in OD after the "Shift to Overdrive" prompt until the DRBIII® indicates the procedure is complete.
- The oil temperature must be between 15 C (60°) and 93 C (200° F).

NOTE: The above conditions must be maintained during the procedure to keep the procedure from being aborted.

The Quick Learn procedure is performed with the DRBIII® by selecting "Transmission" system then "Miscellaneous" functions, then "Quick Learn". Follow the procedure instructions displayed on the DRBIII®.

3.3.7 CLUTCH VOLUMES

Theory of Operation: The volumes of the transmission fluid needed to apply the friction elements are continuously monitored and learned for adaptive controls. As the clutch friction material wears, the volume of fluid needed to apply the clutch increases. The following are typical clutch volumes, the clutches may be damaged if the volumes are greater or less than the specified below:

The LR clutch volume is updated when doing a 2-1 or 3-1 coast down shift. The transmission temperature must be between 21-49 C (70-120° F). The clutch volume should be between 35 and 83.

The 2/4 clutch volume is updated when doing a 1-2 shift. The transmission temperature must be above 43 C (110° F). The clutch volume should be between 20 and 77.

The OD clutch volume is updated when doing a 2-3 shift. The transmission temperature must be above 43 C (110° F). The clutch volume should be between 40 and 150.

The UD clutch volume is updated when doing a 4-3 or 4-2 shift. The transmission temperature must be above 43 C (110° F). The clutch volume should be between 24 and 70.

Transmission Effects: These CVIs that are out of range are usually set with other DTC's, which indicates an internal transmission problem.

Possible Causes:

> Clutch pack clearance out of spec

> Snap ring out of position or broken

> Broken return spring

> Hydraulic leak into clutch circuit with near-zero volume

3.3.8 EATX DTC EVENT DATA

EATX DTC EVENT DATA can be used as a diagnostic aid when experiencing Electronic Transmissions with intermittent problems. When a Diagnostic Trouble Code (DTC) is set, the vehicles transmission inputs are stored in the controller memory and are retrievable with the DRBIII®. This information can be helpful when a DTC can not be duplicated.

The EATX DTC EVENT DATA is located in the DRBIII®, under the Transmission system menu, in the sub-screen Miscellaneous. It is a good practice to document the EATX DTC EVENT DATA before beginning any diagnostic or service procedure.

A thorough understanding of how the transmission works is beneficial in order to interpret the data correctly. These skills are necessary in order to avoid an incorrect diagnosis.

A MASTERTECH video and reference book was produced in January 2002 that explains many of the features of the EATX DTC EVENT DATA with several examples on how to interpret the information and suggested training material to help understand all the specifics.

EATX DTC EVENT DATA can only be erased by:

1. Disconnecting the battery.
2. Performing a DRBIII® QUICK LEARN procedure.
3. Reprogramming the NGC/EATX controller.

Erasing Transmission DTCs does not clear the EATX DTC EVENT DATA.

3.3.9 ELECTRONIC PINION FACTOR (IF APPLICABLE)

The transmission output speed signal supplies distance pulses to the control module, which are used to calculate speed and mileage. A pinion factor is stored in the control module in order to provide the appropriate distance pulses for other vehicle systems. The pinion factor is programmed into the control module at the assembly plant.

Using the following steps, the pinion factor can be checked and/or reset using the DRBIII®:

1. Select Transmission system, then Miscellaneous functions, then Pinion Factor. The DRBIII® will display the current tire size.
2. If the tire size is incorrect, press the Enter key and then select the correct size.
3. Press the Page Back key to exit the reset procedure.

Notes About Electronic Pinion Factor Features

The nature of the electronic pinion factor requires that certain features must be taken into consideration.

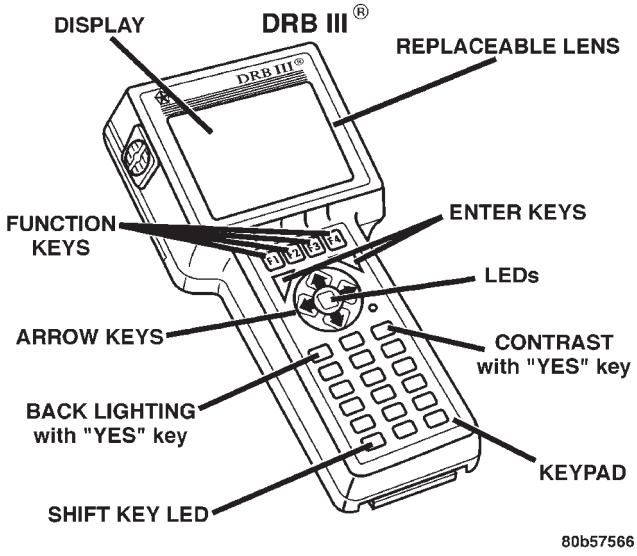
> If no pinion factor is stored in an installed control module, the vehicle speedometer will not operate, engine speed will be limited to 2300 RPM, and catalyst damage may occur.

> Selecting a wrong tire size will cause the speedometer to be inaccurate and will also cause any speed related features to operate improperly.

Note: After replacing the PCM, you must reprogram pinion factor

3.4 USING THE DRBIII®

Refer to the DRBIII® users guide for instructions and assistance with reading trouble codes, erasing trouble codes, and other DRBIII® functions.



3.5 DRBIII® ERROR MESSAGES

Under normal operation, the DRBIII® will display one of only two error messages:

– User-Requested WARM Boot

– User-Requested COLD Boot

If the DRBIII® should display any other error message, record the entire display and call the S.T.A.R. Center.

3.5.1 DRBIII® DOES NOT POWER UP (BLANK SCREEN)

If the LED's do not light or no sound is emitted at start up, check for loose cable connections or a bad cable. Check the vehicle battery voltage. A minimum of 11 volts is required to adequately power the DRBIII®.

If all connections are proper between the DRBIII® and the vehicle or other devices, and the vehicle battery is fully charged, an inoperative DRBIII® may be the result of faulty cable or vehicle wiring. For a blank screen, refer to the appropriate Body Diagnostic manual.

3.5.2 DISPLAY IS NOT VISIBLE

Low temperatures will affect the visibility of the display. Adjust the contrast to compensate for this condition.

3.5.3 SOME DISPLAY ITEMS READ "---"

This is caused by the scrolling the DRBIII® display a single line up or down. The line which was scrolled onto the screen might read "---". Use the page down or page up function to display the information.

3.6 TRANSMISSION SIMULATOR (MILLER TOOL # 8333) AND FWD ADAPTER (MILLER TOOL #8333-1A)

Note: Remove the starter Relay when using the transmission simulator
***Failure to remove the Starter Relay can cause a PCM - No Response condition.**
***The removal of the Starter Relay will also prevent the engine from starting in gear.**
***The Transmission Simulator will not accurately diagnose intermittent faults.**

The transmission simulator, simply put, is an electronic device that simulates the electronic functions of any EATX or NGC controlled transmission (41TE, 41TE, 45RFE, and 545RFE). The basic function of the simulator is to aid the technician in determining if an internal transmission problem exists or if the problem resides in the vehicle wiring or control module. It is only useful for electrical problems. It will not aid in the diagnosis of a failed mechanical component, but it can tell you if the control module and wiring are working properly and that the problem is internal to the transmission.

The ignition switch should be in the lock position before attempting to install the simulator. Follow all instructions included with the simulator. If the

feedback from the simulator is in doubt, you can verify the simulators operation by installing it on a known good vehicle. A "known good vehicle" would be defined as a vehicle that does not set any DTC's and drives and shifts as expected.

One important point to remember is that the Simulator receives power from the Trans Relay Output circuit. If the transmission system is in Limp-in (Relay open), the simulator will not operate. This is not really an indication of a problem, but an additional symptom. If the simulator does not power up ("P" led lit), this is an indication that the problem is still present with the simulator hooked up. This indicates that the problem is in the wiring or control module and not the transmission.

Miller Tool # 8333-1A consists of the adapter cables and overlay necessary to adapt the simulator to TE/AE/RLE/LE transmissions.

4.0 DISCLAIMERS, SAFETY, AND WARNINGS

4.1 DISCLAIMERS

All information, illustrations, and specifications contained in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

4.2 SAFETY

4.2.1 TECHNICIAN SAFETY INFORMATION

WARNING: ENGINES PRODUCE CARBON MONOXIDE THAT IS ODORLESS, CAUSES SLOWER REACTION TIME, AND CAN LEAD TO SERIOUS INJURY. WHEN THE ENGINE IS OPERATING KEEP SERVICE AREAS WELL VENTILATED OR ATTACH THE VEHICLE EXHAUST SYSTEM TO THE SHOP EXHAUST REMOVAL SYSTEM.

Set the parking brake and block the wheels before testing or repairing the vehicle. If is especially important to block the wheels on front-wheel drive vehicles: the parking brake does not hold the drive wheels.

Some operations in this manual require that hydraulic tubes, hoses, and fittings, disconnected for inspection or testing purposes. These systems, when fully charged, contain fluid at high pressure. Before disconnecting any hydraulic tubes, hoses, and fittings, be sure that the system is fully depressurized. When servicing a vehicle, always wear eye protection, and remove any metal jewelry such as watchbands or bracelets that might make an inadvertent electrical contact.

When diagnosing a Transmission system problem, it is important to follow approved procedures where applicable. These procedures can be found in the service information. Following these procedures is very important to the safety of individuals performing diagnostic tests.

4.2.2 VEHICLE PREPARATION FOR TESTING

Make sure the vehicle being tested has a fully charged battery. If it does not, false diagnostic DTC's or error messages may occur. It is extremely important that accurate shift lever position data is available to the control module. The accuracy of any DTC found in memory is doubtful unless the Shift Lever Test, performed on the DRBIII® Scan Tool, passes without failure.

4.2.3 SERVICING SUB-ASSEMBLIES

Some components of the Transmission system are to be serviced as an assembly only. Attempting to remove or repair certain system sub-components may result in personal injury and/or improper system operation. Only those components with approved repair and installation procedures in the service information should be serviced.

4.2.4 DRBIII® SAFETY INFORMATION

WARNING: EXCEEDING THE LIMITS OF THE DRBIII® MULTIMETER IS DANGEROUS. IT CAN EXPOSE YOU TO SERIOUS OR POSSIBLY FATAL INJURY. CAREFULLY READ AND UNDERSTAND THE CAUTIONS AND THE SPECIFICATION LIMITS.

- Follow the vehicle manufacturer's service specifications at all times.
- Do not use the DRBIII® if it has been damaged.
- Do not use the test leads if the insulation is damaged or if metal is exposed.
- To avoid electrical shock, do not touch the test leads, tips or the circuit being tested.
- Choose the proper range and function for the measurement. Do not try voltage or current measurements that may exceed the rated capacity.

- Do not exceed the limits shown in the table.

FUNCTION	INPUT LIMIT
Volts	0-500 volts peak AC 0-500 volts DC
Ohms (resistance)*	0-1.12 megohms
Frequency measured Frequency generated	0-10 khz
Temperature	-58-1100°F -50-600°C
*Ohms cannot be measured if voltage is present. Ohms can be measured only in a non-powered circuit.	

- Voltage between any terminal and ground must not exceed 500v DC or 500v peak AC.
- Use caution when measured voltage above 25v DC or 25v AC.
- The circuit being tested must be protected by a 10A fuse or circuit breaker.
- Use the low current shunt to measure circuits up to 10A. Use the high current clamp to measure circuits exceeding 10A.
- When testing for the presence of voltage or current, make sure the meter is functioning correctly. Take a reading of a known voltage or current before accepting a zero reading.
- When measuring current, connect the meter in series with the load.
- Disconnect the live test lead before disconnecting the common test lead.
- When using the meter function, keep the DRBIII® away from spark plug or coil wires to avoid measuring error from outside interference.

4.3 WARNINGS

4.3.1 VEHICLE DAMAGE WARNINGS

Before disconnecting any control module, make sure the ignition is "lock" position. Failure to do so could damage the module.

When testing voltage or continuity at any control module, use the terminal side (not the wire end) of the connector. Do not probe a wire through the insulation: this will damage the wire and eventually cause the wire to fail because of corrosion.

Be careful when performing electrical tests so as to prevent accidental shorting of terminals. Such mistakes can damage fuses or components. Also, a second DTC could be set, making diagnosis of the original problem more difficult.

When replacing a blown fuse, it is important to use only a fuse having the correct amperage rating. The use of a fuse with a rating other than indicated may result in a dangerous electrical system overload. If a properly rated fuse continues to blow, it indicates a problem in the circuit that must be corrected.

4.3.2 ROAD TESTING A COMPLAINT VEHICLE

Some complaints will require a test drive as part of the repair verification procedure. The purpose of the test drive is to try to duplicate the diagnostic DTC or symptom condition.

CAUTION: Before road testing a vehicle, be sure that all components are reassembled. during the test drive, do not try to read DRBIII® screen while in motion. do not hang the DRBIII® from the rear view mirror or operate it yourself. Have an assistant available to operate the DRBIII®.

Road testing is an essential step in the diagnostic process that must not be overlooked. Along with the diagnostic information obtained from the DRBIII® Scan Tool and the original customer concern, the road test helps verify the problem was current and any repairs performed, fixed the vehicle correctly. Always operate and observe the vehicle under actual driving conditions.

Just as important as the road test is, there are preliminary inspections that should be performed prior to the road test. Always check the fluid level and condition before taking the vehicle on a road test. Determine if an incorrect fluid type is being used, improper fluid will result in erratic transmission operation.

Some of the conditions of incorrect fluid level are as follows:

- Delayed engagement
- Poor shifting or erratic shifting
- Excessive noise
- Overheating

The next step is to verify that the shift linkage is correctly adjusted. If the shifter is incorrectly adjusted, a number of complaints can result.

The control module monitors the Shift Lever Position (SLP) Sensor continuously. If the shifter is incorrectly adjusted, the control module will sense a shift lever position that is not correct for the gear chosen by the driver. This may cause a DTC to be set.

The following complaints may also be the result of an incorrectly adjusted shifter:

- Delayed clutch engagement
- Erratic shifts
- Vehicle will drive in neutral

- Engine will not crank in park or neutral
- Shifter will be able to be moved without the key in the ignition
- Not able to remove the ignition key in park
- Parking pawl will not engage properly

The shifter should also be adjusted when replacing the Transmission, repairing the valve body, or when repairing any component between the shift lever and the Transmission.

Some questions to ask yourself when performing the road test are as follows:

- Is the complaint or concern what you think the problem is, based on the customers description?
- Is the Transmission operating normally, or is there a real problem?
- When does the problem occur?
- Is the problem only in one gear range?
- What temperature does the problem occur?
- Does the vehicle have to sit over night for the problem to occur?
- Does the transmission go into Limp-in mode?

4.3.3 ELECTRONIC PINION FACTOR WARNINGS (IF APPLICABLE)

The pinion factor must be set when replacing the control module. **Note: The pinion factor is a fixed number and cannot be changed or updated in some vehicle applications.** If the pinion factor is not set or incorrectly set, any speed related functions will not operate correctly i.e. speedometer, speed control, rolling door locks, other control modules will be affected that depend on speed information.

4.4.4 BULLETINS AND RECALLS

Always perform all Safety Recalls and Technical Service Bulletins that are applicable to the problem.

5.0 REQUIRED TOOLS AND EQUIPMENT

> DRBIII® (diagnostic read-out box) - Must be at latest release level.

> Transmission Simulator (Miller # 8333)

> Adapter harness/ panel overlay kit for Transmission Simulator (Miller # 8333-1A) for FWD vehicles.

> Jumper wires

> Test Light (minimum of 25 ohms of resistance)

> Ohmmeter

> Voltmeter

> Pressure gauge 0-2068 kPa (0-300 PSI)

> Diagnostic pin out box (Miller # 8815)

> Terminal remover (Miller # 3638)

6.0 GLOSSARY OF TERMS

6.1 ACRONYMS

BCM	Body Control Module
CKT	Circuit
CVI	Clutch Volume Index
DLC	Data Link Connector
DRBIII®	Diagnostic Readout Box
DTC	Diagnostic Trouble Code
EATX	Electronic Automatic Transaxle
EMCC	Electronically Modulated Converter Clutch
FCM	Front Control Module (part of the IPM system)
FEMCC	Full Electronically Modulated Converter Clutch
IOD	Ignition off-draw
IPM	Integrated Power Module
IRT	Intelligent Recovery Timer
ISS	Input Speed Sensor
LED	Light Emitting Diode
LR	Low/reverse Clutch or Pressure Switch
LU	Lockup
MIC	Mechanical Instrument Cluster
MIL	Malfunction Indicator Lamp
NGC	Next Generation Controller
OBDII	On Board Diagnostics
OD	Overdrive Clutch or Pressure Switch
OSS	Output Speed Sensor
PCM	Powertrain Control Module
PEMCC	Partial Electronically Modulated Converter Clutch
PLU	Partial Lockup

REV	Reverse Clutch
SLPK	Solenoid Pack
SSV	Solenoid Switch Valve
SW	Switch
TCC	Torque Converter Clutch
PCM	Combined PCM and Transmission Control Module
TP	Throttle Position
TRD	Torque Reduction
TRS	Transmission Range Sensor
UD	Underdrive Clutch
2/4	2nd and 4th gear Clutch or Pressure Switch

6.2 DEFINITIONS

OBDII (EURO STAGE III OBD) Trip - A vehicle start and drive cycle such that all once per trip diagnostic monitors have run.

Key Start - A vehicle start and run cycle of at least 20 seconds.

Warm-up Cycle - A vehicle start and run cycle such that the engine coolant must rise to at least 71 C (160° F) and must rise by at least 4.4 C (40° F) from initial start up. To count as a warm-up cycle, no DTC may occur during the cycle.

NOTES

7.0

DIAGNOSTIC INFORMATION AND PROCEDURES

Symptom:

***NO RESPONSE FROM TRANSMISSION CONTROL MODULE - EATX**

POSSIBLE CAUSES
NO RESPONSE FROM TRANSMISSION CONTROL MODULE
FCM OUTPUT (RUN/ST) CIRCUIT OPEN
FUSED IGNITION SWITCH OUTPUT (START) CIRCUIT OPEN
FUSED IGNITION SWITCH OUTPUT (START) CIRCUIT SHORT
FUSED B(+) CIRCUIT OPEN
GROUND CIRCUIT(S) OPEN
OPEN PCI BUS CIRCUIT
TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. **Note: As soon as one or more module communicates with the DRB, answer the question.** With the DRB, attempt to communicate with the Airbag Control Module (ACM). With the DRB, attempt to communicate with the Body Control Module (BCM). Was the DRB able to I/D or establish communications with either of the modules? Yes → Go To 2 No → Refer to the Body Communication category and perform the symptom PCI Bus Communication Failure. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
2	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, probe the FCM Output (Run/St) circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 3 No → Repair the FCM Output (Run/St) circuit for an open. Refer to the wiring diagrams location in the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM TRANSMISSION CONTROL MODULE - EATX — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Remove the starter relay from the IPM. Using a 12-volt test light connected to ground, probe the Fused Ignition Switch Output (Start) circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Observe the test light while momentarily turning the ignition switch to the Start position. Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused Ignition Switch Output (Start) circuit for an open. Refer to the wiring diagrams located in the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. **Note: Reinstall the original Starter Relay.**	All
4	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Remove the starter relay from the IPM. With a voltmeter in the millivolt scale, measure the voltage of the Fused Ignition Switch Output (Start) circuit. **NOTE: A no response condition can exist if voltage is present on this circuit with the ignition switch in any position except for the Start position.** **NOTE: Voltage up to .080 millivolts can cause this condition.** **NOTE: Check for after market components that could cause this condition.** Perform this step with the Ignition Switch in every position except for the Start position. Is any voltage present? Yes → Repair the Fused Ignition Switch Output (Start) circuit for a short to voltage. Refer to the wiring diagrams located in the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5 **Note: Reinstall the original Starter Relay.**	All
5	Turn the ignition off. Disconnect the TCM harness connector. Using a 12-volt test light connected to ground, check the Fused B(+) circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 6 No → Repair the Fused B(+) circuit for an open. Refer to the wiring diagrams located in the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM TRANSMISSION CONTROL MODULE - EATX — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Using a 12-volt test light connected to 12-volts, check each ground circuit in the TCM harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly at all the ground circuits? Yes → Go To 7 No → Repair the Ground circuit(s) for an open. Check the main ground connection to engine block and/or chassis. Refer to the wiring diagrams located in the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
7	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the TCM harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the TCM connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 8 No → Repair the PCI Bus circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
8	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module in accordance with the service information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

*NO RESPONSE FROM TRANSMISSION CONTROL MODULE - NGC

POSSIBLE CAUSES
NO RESPONSE FROM TRANSMISSION CONTROL MODULE
FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
FUSED B(+) CIRCUIT OPEN
GROUND CIRCUIT(S) OPEN
PCI BUS CIRCUIT OPEN
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. **Note: As soon as one or more module communicates with the DRB, answer the question.** With the DRB, attempt to communicate with the Instrument Cluster. With the DRB, attempt to communicate with the Airbag Control Module. Was the DRB able to I/D or establish communications with both of the modules? Yes → Go To 2 No → Refer to the Communications category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
2	Turn the ignition off. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Turn the ignition on. Using a 12-volt test light connected to ground, probe both Fused Ignition Switch Output circuits (cavs 11 and 12) in the appropriate terminal of special tool #8815. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Is the test light illuminated for both circuits? Yes → Go To 3 No → Repair the Fused Ignition Switch Output circuit for an open. Refer to the wiring diagrams located in the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM TRANSMISSION CONTROL MODULE - NGC — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Using a 12-volt test light connected to ground, probe the Fused B(+) circuit in the appropriate terminal of special tool #8815. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Is the test light illuminated? Yes → Go To 4 No → Repair the Fused B(+) circuit for an open. Refer to the wiring diagrams located in the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
4	Turn the ignition off. Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Using a 12-volt test light connected to 12-volts, probe each ground circuit in the appropriate terminal of special tool #8815. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Is the light illuminated at all ground circuits? Yes → Go To 5 No → Repair the Ground circuit(s) for an open. Check the main ground connection to engine block and/or chassis. Refer to the wiring diagrams located in the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

*NO RESPONSE FROM TRANSMISSION CONTROL MODULE - NGC — Continued

TEST	ACTION	APPLICABILITY
5	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the PCM harness connectors. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the appropriate terminal of special tool #8815. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 6 No → Repair the PCI Bus circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module in accordance with the service information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P0122-TPS/APPS LOW

When Monitored and Set Condition:

P0122-TPS/APPS LOW

When Monitored: Continuously with the ignition on and engine running.

Set Condition: This DTC will set if the monitored TPS voltage drops below .078 volts for the period of 0.48 seconds.

POSSIBLE CAUSES
ENGINE TPS DTC'S PRESENT
TPS SIGNAL CIRCUIT HIGH RESISTANCE
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check Engine DTC's. Are there any Engine TPS related DTCs present? Yes → Refer to the Powertrain category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All

P0122-TPS/APPS LOW — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII® in Transmission Sensors, read the TPS voltage. Is the TPS voltage below 0.5 volts? Yes → Go To 4 No → Go To 6	All
4	Ignition on, engine not running. With the DRBIII® in Transmission Sensors, record the TPS voltage. While back probing the TCM harness connector, measure the voltage of the TPS Signal circuit. Compare the voltage readings between the DRBIII® and the reading from the digital multi meter. Are the voltages within 0.1 volt of each other? Yes → Repair the TPS signal circuit between the TCM harness connector and the splice for high resistance. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. Pay particular attention to the point where the TPS signal and sensor ground circuits splice off from the engine circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0123-TPS/APPS HIGH

When Monitored and Set Condition:

P0123-TPS/APPS HIGH

When Monitored: Continuously with the ignition on and engine running.

Set Condition: This DTC will set if the monitored TPS voltage rises above 4.94 volts for the period of 0.48 seconds.

POSSIBLE CAUSES
ENGINE TPS DTC'S PRESENT
SENSOR GROUND CIRCUIT OPEN TO TCM
TPS SIGNAL CIRCUIT OPEN TO TCM
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check Engine DTC's. Are there any Engine TPS related DTCs present? Yes → Refer to the Powertrain category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All

P0123-TPS/APPS HIGH — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII® in Transmission Sensors, read the TPS voltage. Is the TPS voltage above 4.5 volts? Yes → Go To 4 No → Go To 7	All
4	Turn the ignition off to the lock position. Disconnect the TPS harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the TPS Signal Circuit from the TCM harness connector to the TPS harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the TPS Signal circuit between the TCM harness connector and the splice for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Turn the ignition off to the lock position. Disconnect the TPS harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Sensor Ground circuit between the TPS harness connector and the Transmission Control Module harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Sensor Ground circuit between the TCM harness connector and the splice for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. Pay particular attention to the point where the TPS signal and sensor ground circuits splice off from the engine circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0124-TPS/APPS INTERMITTENT

When Monitored and Set Condition:

P0124-TPS/APPS INTERMITTENT

When Monitored: Continuously with the ignition on and engine running.

Set Condition: This DTC will set with a throttle angle between 6° and 120.6° with a 5° or higher change under 7.0 milliseconds.

POSSIBLE CAUSES
ENGINE TPS DTC'S PRESENT
THROTTLE POSITION SENSOR
TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check Engine DTC's. Are any Engine TPS related DTC's present? Yes → Refer to the Powertrain category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All

P0124-TPS/APPS INTERMITTENT — Continued

TEST	ACTION	APPLICABILITY
3	Ignition On, Engine Not Running. With the DRBIII®, under Transmission Sensors, monitor the TPS voltage in the following step. Slowly open and close the throttle while checking for erratic voltage changes. Did the TPS voltage change smooth and consistent? Yes → Go To 4 No → Replace the Throttle Position Sensor per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
4	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P0218-HIGH TEMPERATURE OPERATION ACTIVATED

When Monitored and Set Condition:

P0218-HIGH TEMPERATURE OPERATION ACTIVATED

When Monitored: Whenever the engine is running.

Set Condition: Immediately when the Overheat shift schedule is activated when the Transmission Oil Temperature reaches 116 °C or 240 °F.

POSSIBLE CAUSES
ENGINE COOLING SYSTEM MALFUNCTION
TRANSMISSION OIL COOLER PLUGGED
HIGH TEMPERATURE OPERATIONS ACTIVATED

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0218-HIGH TEMPERATURE OPERATION ACTIVATED — Continued

TEST	ACTION	APPLICABILITY
2	This DTC is an informational DTC designed to aid the Technician in diagnosing shift quality complaints. This DTC indicates that the Transmission has been operating in the ″Overheat″ shift schedule which may generate a customer complaint. The customer driving patterns may indicate the need for an additional Transmission Oil Cooler. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair the cause of the Transmission Overheating per the Service Information. If indicated install an additional Transmission Oil Cooler. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	Perform Engine Cooling System diagnostics per the Service Information Is the Engine Cooling System functioning properly? Yes → Go To 4 No → Repair the cause of the Engine Overheating. Refer to the Service Information for additional repair information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
4	If there are no possible causes remaining, view repair. Repair Flush or replace the Transmission Oil cooler as necessary per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0562-LOW BATTERY VOLTAGE

When Monitored and Set Condition:

P0562-LOW BATTERY VOLTAGE

When Monitored: With the engine running and the TCM has closed the Transmission Control Relay.

Set Condition: If battery voltage at TCM Transmission Control Relay Output Sense circuit is less than 10.0 volts for 15 seconds. *This DTC generally indicates a gradually falling battery voltage or resistive connections to the TCM.

POSSIBLE CAUSES
RELATED CHARGING SYSTEM DTCS
FUSED B+ CIRCUIT OPEN OR HIGH RESISTANCE
GROUND CIRCUIT OPEN OR HIGH RESISTANCE
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT TO TCM OPEN OR HIGH RESISTANCE
TRANSMISSION CONTROL RELAY
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0562-LOW BATTERY VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read the PCM DTC's. Are there any Charging System related DTC's stored in the PCM? Yes → Refer to the Charging System category and repair any PCM Charging System DTC's first. NOTE: After repairing the PCM charging system DTC's, perform the Transmission Verification test to verify the transmission was not damaged. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	**NOTE: Generator, battery, and charging system must be fully functional before performing this test.** With the DRBIII®, read Transmission DTC's. With the DRBIII®, Check the STARTS SINCE SET counter for P0562. **Note: This counter only applies to the last DTC set.** Is the Starts Since Set counter for P0562 set at 0? Yes → Go To 4 No → Go To 9	All
4	Turn the ignition off to the lock position. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Using a 12-volt test light connected to 12-volts, check the ground circuits in the TCM harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly for all the ground circuits? Yes → Go To 5 No → Repair the Ground circuit(s) for an open or high resistance. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output in the Transmission Control Relay connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Fused B+ circuit in the TCM harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 6 No → Repair the Fused B+ circuit for an open or high resistance. If the fuse is open make sure to check for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0562-LOW BATTERY VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, check both Transmission Control Relay Output circuits in the TCM harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 7 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
7	Turn the ignition off to the lock position. Install a substitute Relay in place of the Transmission Control Relay. Start the engine. Using a voltmeter, measure the battery voltage. With the DRBIII®, monitor the Transmission Switched Battery Voltage. Compare the DRBIII® Transmission Switched Battery voltage to the actual battery voltage. Is the DRBIII® voltage within 2.0 volts of the battery voltage? Yes → Replace the Transmission Control Relay. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
9	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0604-INTERNAL TCM

When Monitored and Set Condition:

P0604-INTERNAL TCM

When Monitored:

Set Condition: The TCM is reporting internal errors and must be replaced.

POSSIBLE CAUSES
TCM - INTERNAL ERROR

TEST	ACTION	APPLICABILITY
1	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0605-INTERNAL TCM

When Monitored and Set Condition:

P0605-INTERNAL TCM

When Monitored:

Set Condition: The TCM is reporting internal errors and must be replaced.

POSSIBLE CAUSES
TCM - INTERNAL ERROR

TEST	ACTION	APPLICABILITY
1	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0613-INTERNAL TCM

When Monitored and Set Condition:

P0613-INTERNAL TCM

When Monitored: After the ignition is turned to the RUN position or after cranking the engine.

Set Condition: The controller runs a self diagnostic test that checks the integrity of the controllers RAM, ROM, and microprocessor. If the self diagnostic test fails in any one of series of different categories, the DTC will set.

POSSIBLE CAUSES
TCM - INTERNAL ERROR

TEST	ACTION	APPLICABILITY
1	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0706-CHECK SHIFTER SIGNAL

When Monitored and Set Condition:

P0706-CHECK SHIFTER SIGNAL

When Monitored: Continuously with the ignition key on.

Set Condition: 3 occurrences in one key start of an invalid PRNDL code which lasts for more than 0.1 second.

POSSIBLE CAUSES
CONDITION P0706 PRESENT
TRS T1 SENSE CIRCUIT OPEN
TRS T3 SENSE CIRCUIT OPEN
TRS T41 SENSE CIRCUIT OPEN
TRS T42 SENSE CIRCUIT OPEN
TRS T1 SENSE CIRCUIT SHORT TO GROUND
TRS T3 SENSE CIRCUIT SHORT TO GROUND
TRS T41 SENSE CIRCUIT SHORT TO GROUND
TRS T42 SENSE CIRCUIT SHORT TO GROUND
TRS T1 SENSE CIRCUIT SHORT TO VOLTAGE
TRS T3 SENSE CIRCUIT SHORT TO VOLTAGE
TRS T41 SENSE CIRCUIT SHORT TO VOLTAGE
TRS T42 SENSE CIRCUIT SHORT TO VOLTAGE
TRANSMISSION RANGE SENSOR
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	Using the DRBIII®, perform the Shift Lever Position Test. Select the test outcome from the following: Test passes Go To 3 Test fails with DTC Go To 4 Test fails without DTC Adjust the shift linkage per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
3	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. Check the Shift Linkage and cable for proper operation per the Service Information. Perform *PRNDL FAULT CLEARING PROCEDURE after completion of any repairs. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit, Miller tool #8333-1. Ignition on, engine not running. With the DRBIII®, perform the Shift Lever Position Test. When the DRBIII ® instructs you to put the Gear Selector in a particular position, you must do so using the Transmission Simulator. The LED for the gear position in question must be illuminated prior to hitting ″enter″ on the DRBIII®. Did the test pass? Yes → Go To 5 No → Go To 6 **NOTE: Disconnect the Transmission Simulator and reconnect all the harness connectors.**	All
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Range Sensor per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Ignition on, engine not running. With the DRBIII® in Inputs/Outputs, read the TRS Sense circuits C1 thru C4. Move the shift lever thru all gear positions, pausing momentarily in each gear position. Watch for one of the circuits to not change state. Pick the one that did not change state. TRS T1 sense (C4) Go To 7 TRS T3 sense (C3) Go To 10 TRS T41 sense (C1) Go To 13 TRS T42 sense (C2) Go To 16	All
7	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the TRS T1 Sense circuit from the TCM harness connector to the TRS harness connector. Is the resistance above 5.0 ohms? Yes → Repair the TRS T1 Sense circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the TRS T1 circuit in the TCM harness connector. Is the resistance below 5.0 ohms? Yes → Repair the TRS T1 Sense circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the TCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the TRS T1 Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the TRS T1 Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 19	All
10	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the TRS T3 Sense circuit from the TCM harness connector to the TRS harness connector. Is the resistance above 5.0 ohms? Yes → Repair the TRS T3 Sense circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 11	All
11	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the TRS T3 Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the TRS T3 Sense circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 12	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
12	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the TCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the TRS T3 Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the TRS T3 Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 19	All
13	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the TRS T41 Sense circuit from the TCM connector to the TRS connector. Is the resistance above 5.0 ohms? Yes → Repair the TRS T41 Sense circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 14	All
14	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the TRS T41 Sense circuit in the TCM harness connector. Is the resistance below 5.0 ohms? Yes → Repair the TRS T41 Sense circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 15	All
15	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the TCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the TRS T41 Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the TRS T41 Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 19	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
16	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the TRS T42 Sense circuit from the TCM harness connector to the TRS harness connector. Is the resistance above 5.0 ohms? Yes → Repair the TRS T42 Sense circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 17	All
17	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the TRS T42 Sense circuit in the TCM harness connector. Is the resistance below 5.0 ohms? Yes → Repair the TRS T42 Sense circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 18	All
18	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the TCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the TRS T42 Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the TRS T42 Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 19	All
19	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0711-TRANSMISSION TEMPERATURE SENSOR PERFORMANCE

When Monitored and Set Condition:

P0711-TRANSMISSION TEMPERATURE SENSOR PERFORMANCE

When Monitored: Continuously with the ignition on and engine running.

Set Condition: This DTC will set when the desired transmission temperature does not reach a normal operating temperature within a given time frame. Time is variable due to ambient temperature. Approximate times are starting temperature to warm up time: (-40° F / -40° C - 35 min) (-20° F / -28° C - 25 min) (20° F / -6.6° C - 20 min) (60° F / 15.5 ° C - 10 min)

POSSIBLE CAUSES
RELATED DTC'S PRESENT
TRANSMISSION TEMPERATURE SENSOR
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0711-TRANSMISSION TEMPERATURE SENSOR PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check Transmission DTC's. Are there any other Transmission Temperature Sensor related DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0711. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 4 No → Go To 7	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator, turn the Input/Output switch to OFF. With the DRBIII®, monitor the TRANS TEMP VOLTS while turning the Thermistor Voltage switch to all three positions on the Transmission Simulator. Compare the DRBIII® readings with the numbers listed on the Transmission Simulator. Do the readings on the Transmission Simulator match the DRBIII® readings ± 0.2 volts? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/TRS Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0711-TRANSMISSION TEMPERATURE SENSOR PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0712-TRANSMISSION TEMPERATURE SENSOR LOW

When Monitored and Set Condition:

P0712-TRANSMISSION TEMPERATURE SENSOR LOW

When Monitored: Continuously with the ignition on and engine running.

Set Condition: The DTC will set when the monitored Temperature Sensor voltage drops below 0.078 volts for the period of 0.45 seconds.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
TRANSMISSION TEMPERATURE SENSOR SIGNAL CIRCUIT SHORT TO GROUND
TRANSMISSION TEMPERATURE SENSOR
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check Transmission DTC's. Are there any Speed Sensor DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All

P0712-TRANSMISSION TEMPERATURE SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0712. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 4 No → Go To 8	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator, turn the Input/Output switch to OFF. With the DRBIII®, monitor the TRANS TEMP VOLTS while turning the Thermistor Voltage switch to all three positions on the Transmission Simulator. Compare the DRBIII® readings with the numbers listed on the Transmission Simulator. Do the readings on the Transmission Simulator match the DRBIII® readings ± 0.2 volts? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the TCM harness connector.. Disconnect the Transmission Solenoid/TRS Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Transmission Temperature Sensor Signal circuit. Is the resistance below 5.0 ohms? Yes → Repair the Transmission Temperature Sensor Signal circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0712-TRANSMISSION TEMPERATURE SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
8	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0713-TRANSMISSION TEMPERATURE SENSOR HIGH

When Monitored and Set Condition:

P0713-TRANSMISSION TEMPERATURE SENSOR HIGH

When Monitored: Continuously with the ignition on and engine running.

Set Condition: The DTC will set when the monitored Temperature Sensor voltage rises above 4.94 volts for the period of 0.45 seconds.

POSSIBLE CAUSES
TRANSMISSION TEMPERATURE SENSOR SIGNAL CIRCUIT OPEN
TRANSMISSION TEMPERATURE SENSOR SIGNAL CIRCUIT SHORT TO VOLTAGE
TRANSMISSION TEMPERATURE SENSOR
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, Check the STARTS SINCE SET counter for P0713. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 3 No → Go To 8	All

P0713-TRANSMISSION TEMPERATURE SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator, turn the Input/Output switch to OFF. With the DRBIII®, monitor the TRANS TEMP VOLTS while turning the Thermistor Voltage switch to all three positions on the Transmission Simulator. Compare the DRBIII® readings with the numbers listed on the Transmission Simulator. Do the readings on the Transmission Simulator match the DRBIII® readings ± 0.2 volts? Yes → Go To 4 No → Go To 5	All
4	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/TRS Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Turn the ignition off to the lock position. Disconnect the TCM harness connector.. Disconnect the Transmission Solenoid /TRS Assembly harness connector **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Transmission Temperature Sensor Signal circuit from the TCM harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Transmission Temperature Sensor Signal circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the Transmission Temperature Sensor Signal circuit in the TCM harness connector. Is the voltage above 0.5 volts? Yes → Repair the Transmission Temperature Sensor Signal circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0713-TRANSMISSION TEMPERATURE SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
7	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
8	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0714-TRANSMISSION TEMPERATURE SENSOR INTERMITTENT

When Monitored and Set Condition:

P0714-TRANSMISSION TEMPERATURE SENSOR INTERMITTENT

When Monitored: Continuously with the ignition on and engine running.

Set Condition: The DTC will set when the monitored Temperature Sensor voltage fluctuates or changes abruptly within a predetermined period of time.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
TRANSMISSION TEMPERATURE SENSOR
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check Transmission DTC's. Are there any Speed Sensor and/or other Temperature Sensor DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All

P0714-TRANSMISSION TEMPERATURE SENSOR INTERMITTENT — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0714. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 4 No → Go To 7	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit, Miller tool #8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator, turn the Input/Output switch to OFF. With the DRBIII®, monitor the TRANS TEMP VOLTS while turning the Thermistor Voltage switch to all three positions on the Transmission Simulator. Compare the DRBIII® readings with the numbers listed on the Transmission Simulator. Do the readings on the Transmission Simulator match a steady DRBIII® reading ± 0.2 volts? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/TRS Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0715-INPUT SPEED SENSOR ERROR

When Monitored and Set Condition:

P0715-INPUT SPEED SENSOR ERROR

When Monitored: The transmission gear ratio is monitored continuously while the transmission is in gear.

Set Condition: If there is an excessive change in input RPM in any gear.

POSSIBLE CAUSES
INPUT SPEED SENSOR SIGNAL CIRCUIT OPEN
SPEED SENSOR GROUND CIRCUIT OPEN
INPUT SPEED SENSOR SIGNAL CIRCUIT SHORT TO GROUND
INPUT SPEED SENSOR SIGNAL CIRCUIT SHORT TO VOLTAGE
SPEED SENSOR GROUND CIRCUIT SHORT TO VOLTAGE
INPUT SPEED SENSOR ERROR
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0715-INPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
2	Start the engine in park. With the DRBIII®, read the Input RPM. Is the Input RPM reading below 400 RPM? Yes → Go To 3 No → Go To 11	All
3	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the Transmission Simulator, set the ″Input/Output Speed″ switch to ″ON″ and the rotary switch to the ″3000/1250″ position. With the DRBIII®, monitor the Input and Output RPM. Does the Input RPM read 3000 RPM and the Output RPM read 1250 RPM +/- 50 RPM? Yes → Go To 4 No → Go To 5 **NOTE: Disconnect the Transmission Simulator and reconnect all harness connectors.**	All
4	If there are no possible causes remaining, view repair. Repair Replace the Input Speed Sensor per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Input Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Input Speed Sensor Signal circuit from the TCM harness connector to the Input Speed Sensor harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Input Speed Sensor Signal circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Input Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Input Speed Sensor signal circuit. Is the resistance Below 5.0 ohms? Yes → Repair the Input Speed Sensor Signal circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0715-INPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the Input Speed Sensor harness connector. Disconnect the TCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the Input Speed Sensor Signal circuit in the TCM harness connector. Is the voltage above 0.5 volts? Yes → Repair the Input Speed Sensor Signal circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Input Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Speed Sensor Ground circuit from the TCM harness connector to the Input Speed Sensor harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Speed Sensor Ground circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the TRS harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the Speed Sensor Ground circuit in the TCM harness connector. Is the voltage above 0.5 volts? Yes → Repair the Speed Sensor Ground circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0715-INPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0720-OUTPUT SPEED SENSOR ERROR

When Monitored and Set Condition:

P0720-OUTPUT SPEED SENSOR ERROR

When Monitored: The transmission gear ratio is monitored continuously while the transmission is in gear.

Set Condition: If there is an excessive change in output RPM in any gear.

POSSIBLE CAUSES
OUTPUT SPEED SENSOR SIGNAL CIRCUIT OPEN
SPEED SENSOR GROUND CIRCUIT OPEN
OUTPUT SPEED SENSOR SIGNAL CIRCUIT SHORT TO GROUND
OUTPUT SPEED SENSOR SIGNAL CIRCUIT SHORT TO VOLTAGE
SPEED SENSOR GROUND CIRCUIT SHORT TO VOLTAGE
OUTPUT SPEED SENSOR
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0720-OUTPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
2	Start the engine in park. Raise the drive wheels off of the ground. **WARNING: PROPERLY SUPPORT THE VEHICLE.** Place transmission in drive, release foot from brake. **WARNING: BE SURE TO KEEP HANDS AND FEET CLEAR OF ROTATING WHEELS.** **Note: The drive wheels must be turning at this point.** With the DRBIII®, read the Output RPM Is the Output RPM below 100 RPM? Yes → Go To 3 No → Go To 11	All
3	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the Transmission Simulator, set the ″Input/Output Speed″ switch to ″ON″ and the rotary switch to the ″3000/1250″ position. With the DRBIII®, read the Input RPM and Output RPM. Does the Input RPM read 3000 and the Output RPM read 1250 ± 50 RPM? Yes → Go To 4 No → Go To 5	All
4	If there are no possible causes remaining, view repair. Repair Replace the Output Speed Sensor per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Output Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Output Speed Sensor Signal circuit from the TCM harness connector to the Output Speed Sensor harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Output Speed Sensor Signal circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Output Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Output Speed Sensor Signal circuit. Is the resistance Below 5.0 ohms? Yes → Repair the Output Speed Sensor Signal circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0720-OUTPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
7	Turn ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the TRS harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the Output Speed Sensor Signal circuit. Is the voltage above 0.5 volts? Yes → Repair Output Speed Sensor Signal circuit short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Output Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Speed Sensor Ground circuit from the TCM harness connector to the Output Speed Sensor harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Speed Sensor Ground circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the TRS harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the Speed Sensor Ground circuit. Is the voltage above 0.5 volts? Yes → Repair the Speed Sensor Ground circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0720-OUTPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0725-ENGINE SPEED SENSOR CIRCUIT

When Monitored and Set Condition:

P0725-ENGINE SPEED SENSOR CIRCUIT

When Monitored: Whenever the engine is running.

Set Condition: Engine RPM less than 390 or greater than 8000 for more than 2 seconds while the engine is running.

POSSIBLE CAUSES
EATX RPM SIGNAL CIRCUIT OPEN
EATX RPM SIGNAL CIRCUIT SHORT TO GROUND
EATX RPM SIGNAL CIRCUIT SHORT TO VOLTAGE
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0725-ENGINE SPEED SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	**NOTE: This code is not a Transmission Input Speed Sensor DTC** With the DRBIII®, Check the STARTS SINCE SET counter. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter set at 0? Yes → Go To 3 No → Go To 8	All
3	Turn ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the EATX RPM Signal circuit between the TCM harness connector and the PCM harness connector. Is the resistance above 5.0 ohms? Yes → Repair the EATX RPM Signal circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground the EATX RPM Signal circuit. Is the resistance below 5.0 ohms? Yes → Repair the EATX RPM Signal circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn ignition off to the lock position. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Measure the voltage of the EATX RPM Signal circuit. Is the voltage above 10.0 volts? Yes → Repair the EATX RPM Signal circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Measure the voltage of the EATX RPM Signal circuit Is the voltage between 4.5 and 5.5 volts? Yes → Replace and program the Powertrain Control Module per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0725-ENGINE SPEED SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
8	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. Check the vehicles battery condition. Check the power and ground circuits of the Transmission Control Module. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0731-GEAR RATIO ERROR IN 1ST

When Monitored and Set Condition:

P0731-GEAR RATIO ERROR IN 1ST

When Monitored: The Transmission Gear Ratio is monitored continuously while the Transmission is in gear.

Set Condition: If the ratio of the input RPM to the output RPM does not match the current Gear Ratio.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
INTERMITTENT GEAR RATIO ERRORS
INTERNAL TRANSMISSION

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, read Transmission DTC's If any of these DTC's are present, perform their respective tests first. Are there any Loss of Prime, Line Pressure Sensor and/or Speed Sensor DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. If any of these DTC's are present, they will cause a gear ratio error. Perform the test for Loss of Prime first if it is present. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All

P0731-GEAR RATIO ERROR IN 1ST — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII®, perform the 1st Gear Clutch Test. Follow the instructions on the DRBIII®. Increase the throttle angle, TPS Degree, to 30° for no more than a few seconds. **CAUTION: Do not overheat the transmission.** Did the Clutch Test pass, Input Speed remain at 0? Yes → Go To 4 No → Go To 5	All
4	The conditions to set this DTC are not present at this time. Check the gearshift linkage adjustment. Gear ratio DTC's can be set by problems in the Input and Output Speed Sensor circuits. If the vehicle passes the clutch test and still sets gear ratio DTC('s), check the Speed Sensors for proper operation. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Check the Speed Sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. This DTC can also be set under extreme temperature conditions, this is usually caused by an internal problem. Verify if the problem is only experienced under extreme hot or cold conditions. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	If there are no possible causes remaining, view repair. Repair Repair internal transmission per the Service Information. Check all components related to the Underdrive and L/R clutches. Inspect the Oil Pump per the Service Information and repair or replace as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0732-GEAR RATIO ERROR IN 2ND

When Monitored and Set Condition:

P0732-GEAR RATIO ERROR IN 2ND

When Monitored: The Transmission Gear Ratio is monitored continuously while the Transmission is in Gear.

Set Condition: If the ratio of the input RPM to the output RPM does not match the current Gear Ratio.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
RELATED PRESSURE SWITCH DTC'S PRESENT
INTERMITTENT GEAR RATIO ERRORS
TRANSMISSION - INTERNAL

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0732-GEAR RATIO ERROR IN 2ND — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's If any of these DTC's are present, perform their respective tests first. Are there any Loss of Prime, Line Pressure Sensor and/or Speed Sensor DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. If any of these DTC's are present, they will cause a gear ratio error. Perform the test for Loss of Prime first if it is present. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, perform the 2nd Gear Clutch Test. Follow the instructions on the DRBIII®. Increase the Throttle Angle, TPS Degree, to 30° for no more than a few seconds. **CAUTION: Do not overheat the transmission.** Did the Clutch Test pass, Input Speed remain at 0? Yes → Go To 4 No → Go To 5	All
4	The conditions to set this DTC are not present at this time. Check the gearshift linkage adjustment. Gear ratio DTC's can be set by problems in the Input and Output Speed Sensor circuits. If the vehicle passes the clutch test and still sets Gear Ratio DTC(s), check the Speed Sensors for proper operation. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Check the Speed Sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. This DTC can also be set under extreme temperature conditions, this is usually caused by an internal problem. Verify if the problem is only experienced under extreme hot or cold conditions. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	With the DRBIII®, read Transmission DTC's. Is the DTC P0845 and/or P0846 present also? Yes → Replace the Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Repair internal transmission problem. Check all of the components related to the Underdrive and 2/4 clutches. Inspect the Oil Pump per the Service Information and repair or replace as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0733-GEAR RATIO ERROR IN 3RD

When Monitored and Set Condition:

P0733-GEAR RATIO ERROR IN 3RD

When Monitored: The Transmission Gear Ratio is monitored continuously while the Transmission is in Gear.

Set Condition: If the ratio of the input RPM to the output RPM does not match the current Gear Ratio.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
TRANSMISSION SOLENOID PRESSURE SWITCH ASSEMBLY
INTERNAL TRANSMISSION
INTERMITTENT GEAR RATIO ERRORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0733-GEAR RATIO ERROR IN 3RD — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's If any of these DTC's are present, perform their respective tests first. Are there any Loss of Prime, Line Pressure Sensor and/or Speed Sensor DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. If any of these DTC's are present, they will cause a gear ratio error. Perform the test for Loss of Prime first if it is present. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, perform the 3rd gear clutch test. Follow the instructions on the DRBIII®. Increase the throttle angle, TPS Degree, to 30° for no more than a few seconds. **CAUTION: Do not overheat the transmission.** Did the Clutch Test pass, Input Speed remain at 0? Yes → Go To 4 No → Go To 5	All
4	The conditions to set this DTC are not present at this time. Check the gearshift adjustment. Gear ratio DTC's can be set by problems in the Input and Output Speed Sensor circuits. If the vehicle passes the clutch test and still sets Rear Ratio DTC(s), check the Speed Sensors for proper operation. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Check the speed sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. This DTC can also be set under extreme temperature conditions, this is usually caused by an internal problem. Verify if the problem is only experienced under extreme hot or cold conditions. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	With the DRBIII®, read Transmission DTC's. Is the DTC P0870 and/or P0871 present also? Yes → Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Repair internal transmission per the Service Information. Check all of the components related to the Underdrive and Overdrive clutches. Inspect the Oil Pump per the Service Information and repair or replace as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0734-GEAR RATIO ERROR IN 4TH

When Monitored and Set Condition:

P0734-GEAR RATIO ERROR IN 4TH

When Monitored: The Transmission Gear Ratio is monitored continuously while the Transmission is in Gear.

Set Condition: If the ratio of the input RPM to the output RPM does not match the current Gear Ratio.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
RELATED PRESSURE SWITCH DTC'S PRESENT
INTERMITTENT GEAR RATIO ERRORS
TRANSMISSION - INTERNAL

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0734-GEAR RATIO ERROR IN 4TH — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission Control Module DTC's If any of these DTC's are present, perform their respective tests first. Are there any Loss of Prime, Line Pressure Sensor and/or Speed Sensor DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. If any of these DTC's are present, they will cause a gear ratio error. Perform the test for Loss of Prime first if it is present. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, perform the 4th gear clutch test. Follow the instructions on the DRBIII®. Increase the throttle angle, TPS Degree, to 30° for no more than a few seconds. **CAUTION: Do not overheat the transmission.** Did the Clutch Test pass, Input Speed remain at 0? Yes → Go To 4 No → Go To 5	All
4	The conditions to set this DTC are not present at this time. Check the gearshift linkage adjustment. Gear Ratio DTC's can be set by problems in the Input and Output Speed Sensor circuits. If the vehicle passes the clutch test and still sets Gear Ratio DTC(s), check the Speed Sensors for proper operation. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Check the Speed Sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. This DTC can also be set under extreme temperature conditions, this is usually caused by an internal problem. Verify if the problem is only experienced under extreme hot or cold conditions. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	With the DRBIII®, read Transmission DTC's. Is the DTC P0845 and/or P0846 present also? Yes → Replace the Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	If there are no possible causes remaining, view repair. Repair Repair internal transmission problem. Check all of the components related to the Overdrive and 2/4 clutches. Inspect the Oil Pump per the Service Information and repair or replace as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P0736-GEAR RATIO ERROR IN REVERSE

When Monitored and Set Condition:

P0736-GEAR RATIO ERROR IN REVERSE

When Monitored: The Transmission Gear Ratio is monitored continuously while the Transmission is in Gear.

Set Condition: If the ratio of the input RPM to the output RPM does not match the current Gear Ratio.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
INTERMITTENT GEAR RATIO ERRORS
TRANSMISSION - INTERNAL

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, read Transmission DTC's If any of these DTC's are present, perform their respective tests first. Are there any Loss of Prime, Line Pressure Sensor and/or Speed Sensor DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. If any of these DTC's are present, they will cause a gear ratio error. Perform the test for Loss of Prime first if it is present. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All

P0736-GEAR RATIO ERROR IN REVERSE — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII®, perform the Reverse gear clutch test. Follow the instructions on the DRBIII®. Increase the throttle angle, TPS Degree, to 30° for no more than a few seconds. **CAUTION: Do not overheat the Transmission.** Did the Clutch Test pass, Input Speed remain at 0? Yes → Go To 4 No → Go To 5	All
4	The conditions to set this DTC are not present at this time. Check the gearshift adjustment. Gear Ratio DTC's can be set by problems in the Input and Output Speed Sensor circuits. If the vehicle passes the clutch test and still sets Gear Ratio DTC(s), check the Speed Sensors for proper operation. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Check the speed sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. This DTC can also be set under extreme temperature conditions, this is usually caused by an internal problem. Verify if the problem is only experienced under extreme hot or cold conditions. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	If there are no possible causes remaining, view repair. Repair Repair internal transmission problem. Check all of the components related to the Reverse and L/R clutches. Inspect the Oil Pump per the Service Information and repair or replace as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P0740-TORQUE CONVERTER CLUTCH CONTROL CIRCUIT

When Monitored and Set Condition:

P0740-TORQUE CONVERTER CLUTCH CONTROL CIRCUIT

When Monitored: During Electronically Modulated Converter Clutch (EMCC) Operation.

Set Condition: Transmission must be in EMCC, with input speed greater than 1750 RPM. TCC/L-R Solenoid achieves the maximum duty cycle and can not pull engine RPM within 60 RPM of input speed. Or the Transmissions is in FEMCC and engine slips, TCC greater than 100 RPM for 10 seconds.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
INTERNAL TRANSMISSION
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	Ignition on, engine not running. With the DRBIII®, read Transmission DTC's Is the DTC P0750 and/or P0841 present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All

P0740-TORQUE CONVERTER CLUTCH CONTROL CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	Ignition on, engine not running. With the DRBIII®, record and erase Transmission DTCs. Drive the vehicle until it is fully warmed up to at least 43° C or 110° F. Perform the following steps 3 times. With the DRBIII®, monitor TPS degree. Drive the vehicle to the speed of 83 Km/h or 50 MPH and allow 4th gear to engage for at least 10 seconds. Close the throttle, then tip back in until the throttle angle, TPS degrees, is between 25 and 29 degrees. **NOTE: If you go over 30 TPS degrees, you must back off of the throttle and retry.** Did the TCC engage during any of the attempts? Yes → Go To 4 No → Go To 5	All
4	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. This DTC can also be set under extreme temperature conditions, this is usually caused by an internal problem. Verify if the problem is only experienced under extreme hot or cold conditions. Check for any Technical Service Bulletins (TSB's) that may apply. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	If there are no possible causes remaining, view repair. Repair Perform the Hydraulic Pressure test in the Service Information. Repair the internal transmission components and torque converter per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0750-LR SOLENOID CIRCUIT

When Monitored and Set Condition:

P0750-LR SOLENOID CIRCUIT

When Monitored: Initially at power-up, then every 10 seconds thereafter. The solenoids will also be tested immediately after a Gear Ratio or Pressure Switch error is detected.

Set Condition: Three consecutive solenoid continuity test failures, or one failure if a test is run in response to a Gear Ratio or Pressure Switch error.

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
L/R SOLENOID CONTROL CIRCUIT OPEN
L/R SOLENOID CONTROL CIRCUIT SHORT TO GROUND
L/R SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
L/R SOLENOID
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0750-LR SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	Ignition on, engine not running. With the DRBIII®, read Transmission Control Module DTC's Are there any Transmission Control Relay DTC's present also? Yes → Refer to symptom list and perform the appropriate symptom for Transmission Control Relay related DTC's. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0750. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter for P0750 set at 0? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the DRBIII®, actuate the L/R Solenoid. With the Transmission Simulator, monitor the L/R Solenoid LED. Did the L/R Solenoid LED on the Transmission Simulator blink on and off during actuation? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 7 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0750-LR SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Measure the resistance of the L/R Solenoid Control circuit from the TCM harness connector to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the L/R Solenoid Control circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Measure the resistance between ground and the L/R Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the L/R Solenoid Control circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the L/R Solenoid Control circuit. Is the voltage above 0.5 volt? Yes → Repair the L/R Solenoid Control circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0755-2/4 SOLENOID CIRCUIT

When Monitored and Set Condition:

P0755-2/4 SOLENOID CIRCUIT

When Monitored: Initially at power-up, then every 10 seconds thereafter. They will also be tested immediately after a Gear Ratio or Pressure Switch error is detected.

Set Condition: Three consecutive Solenoid continuity test failures, or one failure if test is run in response to a Gear Ratio or Pressure Switch error.

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
2/4 SOLENOID CONTROL CIRCUIT OPEN
2/4 SOLENOID CONTROL CIRCUIT SHORT TO GROUND
2/4 SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
2/4 SOLENOID
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0755-2/4 SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's Are there any Transmission Control Relay DTC's present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter for P0755 set at 0? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the DRBIII®, actuate the 2/4 Solenoid. With the Transmission Simulator, monitor the 2/4 Solenoid LED. Did the 2/4 Solenoid LED on the Transmission Simulator blink on and off during actuation? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 7 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0755-2/4 SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the 2/4 Solenoid Control circuit from the TCM harness connector to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the 2/4 Solenoid Control circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the 2/4 Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the 2/4 Solenoid Control circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the 2/4 Solenoid Control circuit. Is the voltage above 0.5 volt? Yes → Repair the 2/4 Solenoid Control circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0755-2/4 SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0760-OD SOLENOID CIRCUIT

When Monitored and Set Condition:

P0760-OD SOLENOID CIRCUIT

When Monitored: Initially at power-up, then every 10 seconds thereafter. They will also be tested immediately after a Gear Ratio or Pressure Switch error is detected.

Set Condition: Three consecutive solenoid continuity test failures, or one failure if test is run in response to a Gear Ratio or Pressure Switch error.

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
INTERMITTENT WIRING AND CONNECTORS
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
OD SOLENOID CONTROL CIRCUIT OPEN
OD SOLENOID CONTROL CIRCUIT SHORT TO GROUND
OD SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
OD SOLENOID
TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0760-OD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission Control Module DTC's Are there any Transmission Control Relay DTC's present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0760. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter for P0760 set at 0? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the Transmission Simulator, monitor the OD Solenoid LED. With the DRBIII®, actuate the OD Solenoid. Did the OD Solenoid LED on the Transmission Simulator blink on and off during actuation? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 7 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0760-OD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the OD Solenoid Control circuit from the TCM harness connector to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the OD Solenoid Control circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the OD Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the OD Solenoid Control circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the OD Solenoid Control circuit. Is the voltage above 0.5 volt? Yes → Repair the OD Solenoid Control circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0760-OD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0765-UD SOLENOID CIRCUIT

When Monitored and Set Condition:

P0765-UD SOLENOID CIRCUIT

When Monitored: Initially at power-up, then every 10 seconds thereafter. They will also be tested immediately after a Gear Ratio or Pressure Switch error is detected.

Set Condition: Three consecutive Solenoid continuity test failures, or one failure if test is run in response to a Gear Ratio or Pressure Switch error.

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
UD SOLENOID CONTROL CIRCUIT OPEN
UD SOLENOID CONTROL CIRCUIT SHORT TO GROUND
UD SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
UD SOLENOID
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0765-UD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission Control Module DTC's Are there any Transmission Control Relay DTC's present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter for P0765 set at 0? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the DRBIII®, actuate the UD Solenoid. With the Transmission Simulator, monitor the UD Solenoid LED. Did the UD Solenoid LED on the Transmission Simulator blink on and off? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 7 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0765-UD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the UD Solenoid Control circuit from the TCM harness connector to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the UD Solenoid Control circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the UD Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the UD Solenoid Control circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. Connect a jumper wire between the Fused B+ circuits and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. **Note: Check connectors - Clean/repair as necessary.** Measure the voltage of the UD Solenoid Control circuit. Is the voltage above 0.5 volt? Yes → Repair the UD Solenoid Control circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0765-UD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0841-LR PRESSURE SWITCH SENSE CIRCUIT

When Monitored and Set Condition:

P0841-LR PRESSURE SWITCH SENSE CIRCUIT

When Monitored: Whenever the engine is running.

Set Condition: The appropriate DTC is set if one of the Pressure Switches are open or closed at the wrong time in a given gear .

POSSIBLE CAUSES
LOSS OF PRIME DTC P0944 PRESENT
TRANSMISSION CONTROL RELAY DTCS PRESENT
TCM AND WIRING
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
L/R PRESSURE SWITCH SENSE CIRCUIT OPEN
L/R PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
L/R PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0841-LR PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other Transmission DTC's. Is the DTC P0944 present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, read Transmission DTC's Are there any Transmission Control Relay related DTC's P0888, P0890, or P0891 present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	With the DRBIII®, Check the STARTS SINCE SET counter for P0841. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 5 No → Go To 11	All
5	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit, Miller tool #8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. On the Transmission Simulator select L/R on the Pressure Switch selector switch. With the DRBIII®, monitor the L/R Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. Did the Pressure Switch state change from OPEN to CLOSED when the test button was pressed? Yes → Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All

P0841-LR PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit in the Solenoid/Pressure Switch Assembly harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 7 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. If the fuse is open make sure to check for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the L/R Pressure Switch Sense circuit from the TCM harness connector to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the L/R Pressure Switch Sense circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the L/R Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the L/R Pressure Switch circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the L/R Pressure Switch Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the L/R Pressure Switch Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All

P0841-LR PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0845-2/4 HYDRAULIC PRESSURE TEST FAILURE

When Monitored and Set Condition:

P0845-2/4 HYDRAULIC PRESSURE TEST FAILURE

When Monitored: In any forward gear with engine speed above 1000 RPM, shortly after a shift, and every minute thereafter.

Set Condition: After a shift into a forward gear, with engine speed greater than 1000 RPM, the TCM momentarily turns on element pressure to the clutch circuits that do not have pressure to identify the correct pressure switch closes. If the pressure switch does not close 2 times the DTC sets.

POSSIBLE CAUSES
LOSS OF PRIME P0944 PRESENT
RELATED DTC'S PRESENT
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
2/4 PRESSURE SWITCH SENSE CIRCUIT OPEN
2/4 PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
2/4 PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
INTERNAL TRANSMISSION
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

P0845-2/4 HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check for other Transmission DTCs. Is the DTC P0944 present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, read Transmission DTC's. Is the DTC P0732, P0734 and/or P0846 present also? Yes → Repair internal transmission as necessary. Refer to the Service Information for the proper repair procedure for components related to the OD clutch. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	With the DRBIII®, Check the STARTS SINCE SET counter for P0845. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 5 No → Go To 12	All

P0845-2/4 HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator, select ″2/4″ on the Pressure Switch rotary switch. With the DRBIII®, monitor the 2/4 Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. Wiggle the wiring leading to the TCM while pressing the button. Did the 2/4 Pressure Switch state change to closed and remain closed while wiggling the wires? Yes → Go To 6 No → Go To 7	All
6	If there are no possible causes remaining, view repair. Repair Disassemble and inspect the Valve Body per the Service Information and repair or replace as necessary. If there are no problems found in the Valve Body, replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the 2/4 Pressure Switch Sense circuit from the TCM harness connector to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the 2/4 Pressure Switch Sense circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the 2/4 Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the 2/4 Pressure Switch Sense circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All

P0845-2/4 HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the 2/4 Pressure Switch Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the 2/4 Pressure Switch Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 11 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. If the fuse is open make sure to check for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
11	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
12	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0846-2/4 PRESSURE SWITCH SENSE CIRCUIT

When Monitored and Set Condition:

P0846-2/4 PRESSURE SWITCH SENSE CIRCUIT

When Monitored: Whenever the engine is running.

Set Condition: The appropriate DTC is set if one of the Pressure Switches are open or closed at the wrong time in a given gear .

POSSIBLE CAUSES
TRANSMISSION CONTROL RELAY DTC'S PRESENT
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
2/4 PRESSURE SWITCH SENSE CIRCUIT OPEN
2/4 PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
2/4 PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
2/4 PRESSURE SWITCH
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0846-2/4 PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's Are there any Transmission Control Relay related DTC's present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less for P0846? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator, select 2/4 on the Pressure Switch selector switch. With the DRBIII®, monitor the 2/4 Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. Did the Pressure Switch state change from OPEN to CLOSED when the test button was pressed? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the 2/4 Pressure Switch Sense circuit from the TCM harness connector to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the 2/4 Pressure Switch Sense circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0846-2/4 PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the 2/4 Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the 2/4 Pressure Switch Sense circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the 2/4 Pressure Switch Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the 2/4 Pressure Switch Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 10 No → Repair the Transmission Control Relay Output circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0846-2/4 PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0870-OD HYDRAULIC PRESSURE TEST FAILURE

When Monitored and Set Condition:

P0870-OD HYDRAULIC PRESSURE TEST FAILURE

When Monitored: In any forward gear with engine speed above 1000 RPM shortly after a shift and every minute thereafter.

Set Condition: After a shift into a forward gear, with engine speed > 1000 RPM, the TCM momentarily turns on element pressure to the clutch ckts that don't have pressure to identify the correct pressure sw closes. If the pressure sw does not close 2 times the code sets

POSSIBLE CAUSES
LOSS OF PRIME DTC P0944 PRESENT
RELATED DTC'S PRESENT
INTERMITTENT WIRING AND CONNECTORS
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
OD PRESSURE SWITCH SENSE CIRCUIT OPEN
OD PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
OD PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
INTERNAL TRANSMISSION
TRANSMISSION CONTROL MODULE

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check for other Transmission DTCs. Is the DTC P0944 present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, read Transmission DTC's. Is the DTC P0733 and/or P0871 present also? Yes → Replace the Transmission or Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	With the DRBIII®, Check the STARTS SINCE SET counter for P0870. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 5 No → Go To 12	All

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit, Miller tool #8333-1A. **NOTE: Check connectors - Clean/repair as necessary.** With the Transmission Simulator, select ″OD″ on the Pressure Switch rotary switch. With the DRBIII®, monitor the OD Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. Wiggle the wires leading to the TCM while pressing the test button. Did the O/D Pressure Switch state change to closed and remain closed while wiggling the wires? Yes → Go To 6 No → Go To 7	All
6	If there are no possible causes remaining, view repair. Repair Disassemble and inspect the Valve Body per the Service Information and repair or replace as necessary. If no problems are found in the Valve Body, replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the OD Pressure Switch Sense circuit from the Transmission Solenoid/Pressure Switch Assembly harness connector to the TCM harness connector. Is the resistance above 5.0 ohms? Yes → Repair the O/D Pressure Switch Sense circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the OD Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the OD Pressure Switch Sense circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the OD Pressure Switch Sense circuit. Is the voltage above 0.5 volt? Yes → Repair OD Pressure Switch Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 11 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. If the fuse is open make sure to check for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
11	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
12	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0871-OD PRESSURE SWITCH SENSE CIRCUIT

When Monitored and Set Condition:

P0871-OD PRESSURE SWITCH SENSE CIRCUIT

When Monitored: Whenever the engine is running.

Set Condition: The appropriate DTC is set if one of the Pressure Switches are open or closed at the wrong time in a given gear.

POSSIBLE CAUSES
TRANSMISSION CONTROL RELAY DTCS PRESENT
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
O/D PRESSURE SWITCH SENSE CIRCUIT OPEN
O/D PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
O/D PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
O/D PRESSURE SWITCH
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0871-OD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's Are there any Transmission Control Relay related DTC's present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less for P0871? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit, Miller tool #8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. On the Transmission Simulator, select OD on the Pressure Switch selector switch. With the DRBIII®, monitor the OD Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. Did the Pressure Switch state change from OPEN to CLOSED when the test button was pressed? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the O/D Pressure Switch Sense circuit from the TCM harness connector to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the O/D Pressure Switch Sense circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0871-OD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the O/D Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the O/D Pressure Switch circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the O/D Pressure Switch Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the O/D Pressure Switch Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 10 No → Repair the Transmission Control Relay Output circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0871-OD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0884-POWER UP AT SPEED

When Monitored and Set Condition:

P0884-POWER UP AT SPEED

When Monitored: When Transmission Control Module powers up.

Set Condition: This DTC will set if the TCM powers up and senses the vehicle in a valid forward gear (no PRNDL DTCs) with a output speed above 800 RPM (approximately 32Km/h or 20 MPH).

POSSIBLE CAUSES
POWER UP AT SPEED

TEST	ACTION	APPLICABILITY
1	This DTC is set when the TCM is initialized while the vehicle is moving down the road in a valid forward gear. Check all of the Fused B+, Fused Ignition Switch Output, and Ground circuits to the TCM for an intermittent open or short to ground. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair wiring and/or connectors as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 2	All
2	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Test Complete.	All

Symptom:

P0888-RELAY OUTPUT ALWAYS OFF

When Monitored and Set Condition:

P0888-RELAY OUTPUT ALWAYS OFF

When Monitored: Continuously

Set Condition: This code is set when less than 3 volts are present at the transmission control relay output circuits at the Transmission Control Module when the TCM is energizing the relay.

POSSIBLE CAUSES
FUSED B+ CIRCUIT OPEN
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
TRANSMISSION CONTROL RELAY CONTROL CIRCUIT OPEN
TRANSMISSION CONTROL RELAY GROUND CIRCUIT OPEN
TRANSMISSION CONTROL RELAY CONTROL CIRCUIT SHORT TO GROUND
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT SHORT TO GROUND
TRANSMISSION CONTROL RELAY STUCK OPEN
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0888-RELAY OUTPUT ALWAYS OFF — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, Check the STARTS SINCE SET counter for P0888. **Note: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter set at 0? Yes → Go To 3 No → Go To 11	All
3	Turn the ignition off to the lock position. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Fused B+ circuit in the Transmission Control Relay connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused B+ circuit for an open or high resistance. If the fuse is open make sure to check for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
4	Turn the ignition off to the lock position. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Using a 12-volt test light connected to 12-volts, check the Transmission Control Relay Ground circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 5 No → Repair the Transmission Control Relay Ground circuit for an open or high resistance. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Turn the ignition off to the lock position. Remove the Transmission Control Relay. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Transmission Control Relay Control circuit between the Transmission Control Relay connector and the TCM harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Transmission Control Relay Control circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All

P0888-RELAY OUTPUT ALWAYS OFF — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Transmission Control Relay Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the Transmission Control Relay Control circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit. Ignition on, engine not running. Using a 12-volt test light connected to ground, check the three Transmission Control Relay Output circuits. **NOTE: There are three Transmission Relay Output circuits. Two are located in the TCM harness connector and one located in the Transmission Solenoid/Pressure Switch Assembly harness connector** **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly on all three Transmission Control Relay Output circuits? Yes → Go To 8 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Transmission Control Relay Output circuit. Is the resistance below 5.0 ohms? Yes → Repair the Transmission Control Relay Output circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All

P0888-RELAY OUTPUT ALWAYS OFF — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Install a substitute Relay in place of the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the DRBIII®, actuate the Transmission Control Relay. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit in the Transmission Solenoid /Pressure Switch Assembly harness connector. Does the test light blink on and off? Yes → Replace the Transmission Control Relay. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorts and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0890-SWITCHED BATTERY

When Monitored and Set Condition:

P0890-SWITCHED BATTERY

When Monitored: Ignition key is turned from the OFF position to RUN position and/or ignition key is turned from the CRANK position to RUN position.

Set Condition: This DTC is set if the Transmission Control Module senses voltage on any of the Pressure Switch Inputs prior to the TCM energizing the Transmission Control Relay.

POSSIBLE CAUSES
2/4 PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
L/R PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
OD PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, Check the STARTS SINCE SET counter for P0890. **Note: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter for P0890 set at 0? Yes → Go To 3 No → Go To 7	All

P0890-SWITCHED BATTERY — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the 2/4 Pressure Switch Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the 2/4 Pressure Switch Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the L/R Pressure Switch Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the L/R Pressure Switch Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the OD Pressure Switch Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the OD Pressure Switch Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0890-SWITCHED BATTERY — Continued

TEST	ACTION	APPLICABILITY
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0891-TRANSMISSION RELAY ALWAYS ON

When Monitored and Set Condition:

P0891-TRANSMISSION RELAY ALWAYS ON

When Monitored: When the ignition is turned from the OFF position to the RUN position and/or the ignition is turned from the CRANK position to RUN position.

Set Condition: This DTC is set if the Transmission Control Module senses greater than 3.0 volts at the Transmission Control Relay Output terminal of the TCM prior to the TCM energizing the Transmission Control Relay.

POSSIBLE CAUSES
INTERMITTENT WIRING AND CONNECTORS
TRANSMISSION CONTROL RELAY STUCK CLOSED
TRANSMISSION CONTROL RELAY CONTROL CIRCUIT SHORT TO VOLTAGE
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT SHORT TO VOLTAGE
TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0891-TRANSMISSION RELAY ALWAYS ON — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check the STARTS SINCE SET counter for P0891. **Note: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter set to 0? Yes → Go To 3 No → Go To 7	All
3	Turn the ignition off to the lock position. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between the Fused B+ circuit and the Transmission Control Relay Output Circuit in the Transmission Control Relay. Is the resistance above 5.0 ohms? Yes → Go To 4 No → Replace the Transmission Control Relay. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
4	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Measure the voltage of the Transmission Control Relay Output circuit in the Solenoid/Pressure Switch Assembly harness connector. Is the voltage above 0.5 volt? Yes → Repair the Transmission Control Relay Output circuit for a short to voltage Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off to the lock position. Remove the Transmission Control Relay. Ignition on, engine not running. **Note: Check connectors - Clean/repair as necessary.** Measure the voltage of the Transmission Control Relay Control circuit. Is the voltage above 0.5 volt? Yes → Repair Transmission Relay Control Circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0891-TRANSMISSION RELAY ALWAYS ON — Continued

TEST	ACTION	APPLICABILITY
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0897-WORN OUT/BURNT TRANSAXLE FLUID

When Monitored and Set Condition:

P0897-WORN OUT/BURNT TRANSAXLE FLUID

When Monitored: With each transition from full Torque Convertor to partial Torque Convertor engagement for A/C bump prevention.

Set Condition: When vehicle shudder is detected during partial engagement (PEMCC).

POSSIBLE CAUSES
WORN OUT/ BURNT TRANSMISSION FLUID

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0897-WORN OUT/BURNT TRANSAXLE FLUID — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off. Remove the Transmission Oil Pan and Oil Filter per the Service Information. Install a new Transmission Oil Filter per Service Information. Reinstall Transmission Oil Pan, and refill with new Transmission Fluid per the Service Information. **Note: The Transmission Cooler must be flushed before prodceeding.** Start the engine, check and adjust the Transmission Fluid Level per Service Information. Allow the engine to idle for 10 minutes, in Park. Flush the Transmission Oil Cooler per the Service Information. Turn the ignition off. Drain and refill the Transmission Fluid. Flush the Transmission Oil Cooler again. Start the engine, check and adjust the Transmission Fluid Level per Service Information. With the DRBIII®, perform a Battery Disconnect. **Note: This must be done to re enable EMCC during an A/C Clutch engagement.** The vehicle may exhibit intermittent shudder during the first few hundred miles. **Note: The oil will gradually penetrate the TCC friction material and the shudder should disappear.** Erase the DTC and return the vehicle to the customer. Did the Code reset or does the vehicle still shudder after a few thousand miles? Yes → Replace the Torque Convertor per the Service Information. Note: After replacing the Torque Convertor, use the DRBIII to perform the TCC Break In procedure. This will prevent a possible shudder condition. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0944-LOSS OF PRIME

When Monitored and Set Condition:

P0944-LOSS OF PRIME

When Monitored: If the transmission is slipping in any forward gear and the pressure switches are not indicating pressure, a loss of prime test is run.

Set Condition: If the Trans. begins to slip in a forward gear & the press. switch(s) that should be closed are open a loss of prime test begins. Available elements are turned on by the TCM to see if pump prime exists.The code sets if no pressure switches respond.

POSSIBLE CAUSES
SHIFT LEVER POSITION
PLUGGED TRANSMISSION OIL FILTER
TRANSMISSION OIL PUMP
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0944-LOSS OF PRIME — Continued

TEST	ACTION	APPLICABILITY
2	Place the gear selector in park. Start the engine. **NOTE: The TRANS TEMP DEG must be at least 43° C or 110° F before performing the following steps.** The Transmission must be at operating temperature prior to checking pressure. A cold Transmission will give higher readings. Place the Transmission in Reverse. With the DRBIII®, observe the Transmission Pressure Switch states. Are any of the Pressure Switches closed? Yes → Go To 3 No → Go To 5	All
3	The conditions necessary to set this DTC are not present at this time. Test drive the vehicle. Allow the Transmission to shift through all gears and ranges. Did you experience a delayed engagement and/or a no drive condition? Yes → Go To 5 No → Go To 4	All
4	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	With the DRBIII®, perform a Shift Lever Position test. Follow the instructions on the DRBIII®. Did the Shift Lever Position Test pass? Yes → Go To 6 No → Refer to symptom list and perform test for DTC P0706. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Remove and inspect the Transmission Oil Pan and Transmission Oil Filter per the Service Information. Does the Transmission Oil Pan contain excessive debris and/or is the Oil Filter plugged? Yes → Repair the cause of the plugged Transmission Oil Filter. Refer to the Service Information for the proper repair procedure. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	If there are no possible causes remaining, view repair. Repair Replace the Transmission Oil Pump per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P0952-AUTOSTICK INPUT CIRCUIT LOW

When Monitored and Set Condition:

P0952-AUTOSTICK INPUT CIRCUIT LOW

When Monitored: The AutoStick circuit is checked every .007 seconds, with the ignition on, and in both AutoStick and non-AutoStick modes.

Set Condition: If either the monitored upshift or downshift switch voltages are reported closed in a non AutoStick mode or the monitored voltage drops below 0.3 volts.

POSSIBLE CAUSES
AUTOSTICK/OD OFF MUX INPUT CIRCUIT SHORT TO GROUND
AUTOSTICK SWITCH
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, Check the STARTS SINCE SET counter for P0952. **Note: This counter only applies to the last DTC set.** Is the Starts Since Set counter set at 0? Yes → Go To 3 No → Go To 6	All

P0952-AUTOSTICK INPUT CIRCUIT LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the AutoStick/OD Switch harness connector. **NOTE: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the AutoStick/OD Off MUX Input circuit. Is the resistance below 5.0 ohms? Yes → Repair the AutoStick/OD Off MUX Input circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Replace the AutoStick Switch per the Service Information. Ignition on, engine not running. With the DRBIII®, erase Transmission DTCs. In AutoStick mode, perform multiple AutoStick upshifts and downshifts. With the DRBIII®, read Transmission DTCs. Does the DTC return? Yes → Go To 5 No → Test Complete. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0953-AUTOSTICK INPUT CIRCUIT HIGH

When Monitored and Set Condition:

P0953-AUTOSTICK INPUT CIRCUIT HIGH

When Monitored: The AutoStick circuit is checked every .007 seconds, with the ignition on, and in both AutoStick and non-AutoStick modes.

Set Condition: When the monitored circuit voltage rises above 4.8 volts.

POSSIBLE CAUSES
AUTOSTICK/OD OFF MUX INPUT CIRCUIT OPEN
AUTOSTICK/OD OFF SWITCH ASSEMBLY GROUND CIRCUIT OPEN
AUTOSTICK/OD OFF MUX INPUT CIRCUIT SHORT TO VOLTAGE
AUTOSTICK SWITCH
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, Check the STARTS SINCE SET counter for P0953. **Note: This counter only applies to the last DTC set.** Is the Starts Since Set counter set at 0? Yes → Go To 3 No → Go To 8	All

P0953-AUTOSTICK INPUT CIRCUIT HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the AutoStick/OD Switch harness connector. **NOTE: Check connectors - Clean/repair as necessary.** Measure the resistance of the AutoStick/OD Off MUX Input circuit between the AutoStick/OD Switch harness connector and the TCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the AutoStick/OD Off MUX Input circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
4	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the AutoStick/OD Switch harness connector. **NOTE: Check connectors - Clean/repair as necessary.** Measure the resistance of the ground circuit between the AutoStick/OD Switch harness connector and ground. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the AutoStick/OD OFF Switch ground circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Autostick/OD switch harness connector. **NOTE: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Measure the voltage of the AutoStick/OD Off MUX Input circuit. Is the voltage above 0.5 volts? Yes → Repair the AutoStick/OD Off MUX Input circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Replace the AutoStick Switch per the Service Information. Ignition on, engine not running. With the DRBIII®, erase Transmission DTCs. In AutoStick mode, perform multiple AutoStick upshifts and downshifts. With the DRBIII®, read Transmission DTCs. Does the DTC return? Yes → Go To 7 No → Test Complete. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0953-AUTOSTICK INPUT CIRCUIT HIGH — Continued

TEST	ACTION	APPLICABILITY
7	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
8	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0992- 2-4/OD HYDRAULIC PRESSURE TEST FAILURE

When Monitored and Set Condition:

P0992- 2-4/OD HYDRAULIC PRESSURE TEST FAILURE

When Monitored: In any forward gear with engine speed above 1000 RPM shortly after a shift and every minute thereafter.

Set Condition: After a shift into a forward gear, with engine speed > 1000 RPM, the TCM momentarily turns on element pressure to the clutch ckts that don't have pressure to identify the correct pressure sw closes. If the pressure sw does not close 2 times the code sets.

POSSIBLE CAUSES
CONDITION P0992 PRESENT

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0992- 2-4/OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
2	**NOTE: The vehicle must be driven to set this DTC, the transmission must be warm or hot with the Engine RPM above 1000 RPM.** This DTC is an indicator of a 2/4 and/or O/D Hydraulic Pressure Switch DTC's present. Perform the tests for P0870 and/or P0845 to determine which switch is failing. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. If there are no possible causes remaining, view repair. Repair Refer to the Transmission category and perform the appropriate symptom for P0870 and/or P0845. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P1652-SERIAL COMMUNICATION LINK MALFUNCTION

When Monitored and Set Condition:

P1652-SERIAL COMMUNICATION LINK MALFUNCTION

When Monitored: Continuously with engine running.

Set Condition: The DTC sets in approximately 20 seconds if no BUS messages are received by the TCM.

POSSIBLE CAUSES
NO COMMUNICATION WITH MIC
NO COMMUNICATION WITH PCM
INTERMITTENT WIRING AND CONNECTORS
TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase TCM DTC's. **Note: Erase P0700 DTC in the PCM to turn the MIL light off after making transmission repairs.** Start the engine in park. Did the DTC reset after the engine was started? Yes → Go To 2 No → Go To 5	All
2	Ignition on, engine not running. With the DRBIII®, attempt communication with the MIC Can you communicate with the MIC? Yes → Go To 3 No → Refer to the Communication category for the related symptom(s). Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
3	Ignition on, engine not running. With the DRBIII®, select the following screens in order: ″BODY″ ″MIC″ ″MONITOR DISPLAY″ ″PCI BUS ENGINE INFO″. Does the DRBIII®, read ″NO RESPONSE″ from any of the listed PCM monitors? Yes → Refer to Communication Category for the related symptom(s). Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All

P1652-SERIAL COMMUNICATION LINK MALFUNCTION — Continued

TEST	ACTION	APPLICABILITY
4	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
5	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P1684-BATTERY WAS DISCONNECTED

When Monitored and Set Condition:

P1684-BATTERY WAS DISCONNECTED

When Monitored: Whenever the key is in the Run/Start position.

Set Condition: This code is set whenever Transmission Control Module (TCM) is disconnected from battery power B+ or ground. It will also be set during the DRBIII® Quick Battery Disconnect procedure.

POSSIBLE CAUSES
QUICK LEARN WAS PERFORMED
RECENT BATTERY DISCONNECTION
TCM WAS REPLACED OR DISCONNECTED
INTERMITTENT WIRING AND CONNECTORS
FUSED B+ CIRCUIT TO TCM OPEN
GROUND CIRCUIT OPEN

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P1684-BATTERY WAS DISCONNECTED — Continued

TEST	ACTION	APPLICABILITY
2	Turn ignition off to the lock position. Disconnect the TCM harness connector. Ignition on, engine not running. Measure the voltage of the Fused B+ circuit in the TCM harness connector. Is the voltage below 10.0 volts? Yes → Go To 3 No → Go To 5	All
3	Turn the ignition off to the lock position. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Fused B+ circuit in the TCM harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused B+ circuit for an open or high resistance. If the fuse is open make sure to check for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
4	Turn ignition off to the lock position. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Using a 12-volt test light connected to 12-volts, check all the ground circuits in the TCM harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the light illuminate brightly at all the ground circuits? Yes → Test Complete. No → Repair the Ground circuit(s) as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Has the battery been disconnected, lost it's charge, or been replaced recently? Yes → This is the cause of the DTC. Erase the DTC and return the vehicle to the customer. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Has the Quick Learn procedure been performed? Yes → This is the cause of the DTC. Erase the DTC and return the vehicle to the customer. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Has the TCM been replaced or disconnected? Yes → Replacing or disconnecting the TCM will set this DTC. Erase the DTC and return the vehicle to the customer. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All

P1684-BATTERY WAS DISCONNECTED — Continued

TEST	ACTION	APPLICABILITY
8	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P1687-NO COMMUNICATION WITH THE MIC

When Monitored and Set Condition:

P1687-NO COMMUNICATION WITH THE MIC

When Monitored: Continuously with engine running.

Set Condition: The DTC sets in approximately 25 seconds if no BUS messages are received form the MIC.

POSSIBLE CAUSES
OTHER BUS PROBLEMS PRESENT
INTERMITTENT WIRING AND CONNECTORS
MIC - NO COMMUNICATION
TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, Check the STARTS SINCE SET counter for P1687. **Note: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter set at 0? Yes → Go To 2 No → Go To 5	All
2	With the DRBIII®, check all of the other modules on the vehicle for evidence of a vehicle bus problem. Bus related DTC's in other modules point to an overall vehicle bus problem. Other symptoms such as a customer complaint of intermittent operation of bus controlled features also indicate a bus problem. Does the PRNDL display indicate ″No Bus″ or is there any evidence of an overall vehicle bus problem? Yes → Refer to the Communications category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	Ignition on, engine not running. With the DRBIII®, clear all DTC's. Start the engine in park. With the DRBIII®, read the MIC DTC's. **NOTE: It may take up to 30 seconds of a consistent fault to set this DTC.** Can the DRBIII® communicate with the MIC? Yes → Go To 4 No → Refer to the Communication category and perform the appropriate symptom related to No Response to MIC. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P1687-NO COMMUNICATION WITH THE MIC — Continued

TEST	ACTION	APPLICABILITY
4	Ignition on, engine not running. With the DRBIII®, erase Transmission DTC's. Start the engine in park. With the DRBIII®, read Transmission DTC's. Is the DTC, P1687- No Communication with the MIC, present? Yes → Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P1694-BUS COMMUNICATION WITH ENGINE MODULE

When Monitored and Set Condition:

P1694-BUS COMMUNICATION WITH ENGINE MODULE

When Monitored: Continuously with ignition key on.

Set Condition: If no bus messages are received from the Powertrain Control Module for 10 seconds.

POSSIBLE CAUSES
NO COMMUNICATION WITH PCM
OTHER BUS PROBLEMS PRESENT
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, Check the STARTS SINCE SET counter for P1694. **Note: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter for P1694 set to 0? Yes → Go To 2 No → Go To 5	All
2	With the DRBIII®, check all of the other modules on the vehicle for evidence of a vehicle bus problem. Bus related DTC's in other modules point to an overall vehicle bus problem. Other symptoms such as a customer complaint of intermittent operation of bus controlled features also indicate a bus problem. Does the PRNDL display indicate ″No Bus″ or is there any evidence of an overall vehicle bus problem? Yes → Refer to the Communication category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	Ignition on, engine not running. With the DRBIII®, attempt to communicate with the Powertrain Control Module (PCM). Can the DRBIII® communicate with the PCM? Yes → Go To 4 No → Refer to the Communication category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P1694-BUS COMMUNICATION WITH ENGINE MODULE — Continued

TEST	ACTION	APPLICABILITY
4	Ignition on, engine not running. With the DRBIII®, erase Transmission DTC's. Start the engine in park. With the DRBIII®, read Transmission DTC's. Did the DTC, P1694, return? Yes → Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION

When Monitored and Set Condition:

P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION

When Monitored: During an attempted shift into 1st gear.

Set Condition: This DTC is set if three unsuccessful attempts are made to shift into 1st gear in one given ignition start.

POSSIBLE CAUSES
RELATED DTC P0841 PRESENT
L/R PRESSURE SWITCH
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
L/R PRESSURE SWITCH SENSE CIRCUIT OPEN
L/R PRESSURE SWITCH CIRCUIT SHORT TO GROUND
L/R PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other Transmission DTC's Is the DTC P0841 present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter for P1775. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 4 No → Go To 10	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the DRBIII®, monitor the L/R Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. With the Transmission Simulator, select the L/R on the Pressure Switch selector. While observing the LR pressure switch state with the DRBIII®, depress the Pressure Switch Test button. Did the L/R Pressure Switch state change from OPEN to CLOSED when the test button was pressed? Yes → Inspect the Solenoid Switch Valve in the Valve Body per the Service Information and repair or replace as necessary. If no problems are found in Valve Body, replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the L/R Pressure Switch Sense circuit from the TCM harness connector to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the L/R Pressure Switch Sense circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All

P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the L/R Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the L/R Pressure Switch Sense circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the L/R Pressure Switch Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the L/R Pressure Switch Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between Fused B+ circuit and the Transmission Control Relay Output circuit. Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit in the Solenoid/Pressure Switch Assembly harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 9 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
9	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION — Continued

TEST	ACTION	APPLICABILITY
10	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. Test drive the vehicle. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Did you experience any 2nd gear launches or no TCC engagement? Yes → Inspect the Valve Body for signs of a stuck valve or other problem in the SSV area. If no problems are found, replace the Solenoid/ Pressure Switch Assembly. If excessive debris is present in the Pan or Valve Body, repair cause of the debris as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION

When Monitored and Set Condition:

P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION

When Monitored: Continuously when doing partial or full EMCC (PEMCC or FEMCC).

Set Condition: This DTC will set if the TCM senses the L/R Pressure Switch closing while performing PEMCC or FEMCC or after two unsuccessful attempts to perform PEMCC or FEMCC.

POSSIBLE CAUSES
RELATED DTC P0841 PRESENT
L/R PRESSURE SWITCH
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
L/R PRESSURE SWITCH SENSE CIRCUIT OPEN
L/R PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
L/R PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other Transmission DTCs Is the DTC P0841 present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter for P1776. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 4 No → Go To 10	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the FWD Adapter Cable kit, Miller tool #8333-1A. Ignition on, engine not running. On the Transmission Simulator select L/R on the Pressure Switch selector switch. With the DRBIII®, monitor the L/R Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. Did the Pressure Switch state change from OPEN to CLOSED when the test button was pressed? Yes → Inspect the Solenoid Switch Valve in the Valve Body per the Service Information and repair or replace as necessary. If no problems are found in Valve Body, replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the L/R Pressure Switch Sense circuit from the TCM harness connector to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the L/R Pressure Switch Sense circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All

P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the L/R Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the L/R Pressure Switch Sense circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the L/R Pressure Switch Sense circuit. Is the voltage above 0.5 volts? Yes → Repair the L/R Pressure Switch Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 9 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
9	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION — Continued

TEST	ACTION	APPLICABILITY
10	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. Test drive the vehicle. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Did you experience any 2nd gear launches or no TCC engagement? Yes → Inspect the Valve Body for signs of a stuck valve or other problem in the SSV area. If no problems are found, replace the Solenoid/ Pressure Switch Assembly. If excessive debris is present in the Pan or Valve Body, repair the cause of debris as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P1790-FAULT IMMEDIATELY AFTER SHIFT

When Monitored and Set Condition:

P1790-FAULT IMMEDIATELY AFTER SHIFT

When Monitored: After a speed ratio error is stored.

Set Condition: This code is set if the associated speed ratio code is stored within 1.3 seconds after a shift.

POSSIBLE CAUSES
CONDITION P1790 PRESENT

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	This DTC is set along with a gear ratio DTC. Perform the appropriate test for the Gear Ratio DTC stored. **NOTE: Check 1 trip failures if there are no Gear Ratio DTC's current.** With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. If there are no possible causes remaining, view repair. Repair Refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P1793-TRD LINK COMMUNICATION ERROR

When Monitored and Set Condition:

P1793-TRD LINK COMMUNICATION ERROR

When Monitored: The transmission controller pulses the 12 volt TRD signal from the PCM to ground, during torque managed shifts with the throttle angle above 54 degrees. The TRD system is also tested whenever the vehicle is stopped and the engine speed is at idle.

Set Condition: This code is set when the Transmission Control Module (TCM) sends two subsequent torque reduction messages to the Powertrain Control Module (PCM) via the TRD link circuit and does not receive a confirmation from the PCM over the communication bus.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
TORQUE MANAGEMENT REQUEST SENSE CIRCUIT OPEN
TORQUE MANAGEMENT REQUEST SENSE SHORT TO GROUND
TORQUE MANAGEMENT REQUEST SENSE CIRCUIT SHORT TO VOLTAGE
POWERTRAIN CONTROL MODULE
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P1793-TRD LINK COMMUNICATION ERROR — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's. Are any of the following DTCs P1694, P0731, P0732, P0733, P0734, P0736 present also? Yes → If any of these codes are present, disregard the P1793 DTC and refer to the Transmission category and perform the appropriate symptom. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter. **Note: This counter only applies to the last DTC set.** Is the STARTS SINCE SET equal to 0? Yes → Go To 4 No → Go To 9	All
4	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Torque Management Request Sense circuit from the TCM harness connector to the PCM harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Torque Management Request Sense circuit for an open. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Torque Management Request Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair Torque Management Request Sense circuit for a short to ground. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Ignition on, engine not running. Measure the voltage of the Torque Management Request Sense circuit. Is the voltage above 10.5 volts? Yes → Repair Torque Management Request Sense circuit for a short to voltage. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P1793-TRD LINK COMMUNICATION ERROR — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Ignition on, engine not running. Measure the voltage of the Torque Management Request Sense circuit in the TCM harness connector. Is the voltage above 7.0 volts? Yes → Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module per the Service Information. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All
9	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P1794-SPEED SENSOR GROUND ERROR

When Monitored and Set Condition:

P1794-SPEED SENSOR GROUND ERROR

When Monitored: The transmission gear ratio is monitored continuously while the transmission is in gear.

Set Condition: After a TCM reset in neutral and Input/Output equals a ratio of input to output of 2.5 to 1.

POSSIBLE CAUSES
SPEED SENSOR GROUND CIRCUIT OPEN
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P1794-SPEED SENSOR GROUND ERROR — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit, Miller tool #8333-1A. Ignition on, engine not running. Using the Transmission Simulator, set the selector switch to the 3000/1250 position. Turn the Input/Output switch to ON. With the DRBIII®, read the Input and Output Speed Sensor RPM. Does the Input Speed read 3000 RPM and the Output Speed read 1250 RPM within 50 RPM? Yes → Go To 3 No → Go To 4	All
3	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
4	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the TRS harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Input Speed Sensor Ground circuit from the TCM harness connector to the Speed Sensor harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Speed Sensor Ground circuit for an open or high resistance. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P1797-MANUAL SHIFT OVERHEAT

When Monitored and Set Condition:

P1797-MANUAL SHIFT OVERHEAT

When Monitored: Whenever engine is running and transmission is in the AutoStick mode.

Set Condition: If the engine temperature exceeds 124° C or 255° F or the transmission temperature exceeds 135° C or 275° F while in AutoStick mode. Note: Aggressive driving or driving in low for extended periods of time in AutoStick® mode will set this DTC.

POSSIBLE CAUSES
MANUAL SHIFT OVERHEAT

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many Transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing Transmission Symptom Diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Transmission Control Module. Some problems are corrected by software upgrades to the Transmission Control Module.** **NOTE: Check for applicable TSB's related to the symptom.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P1797-MANUAL SHIFT OVERHEAT — Continued

TEST	ACTION	APPLICABILITY
2	This is an informational DTC only. Check the Engine and Transmission Cooling Systems for proper operation. Check the Radiator Cooling Fan operation. Check the Transmission Cooling Fan operation if equipped. Check the Transmission Fluid Level. Make sure it is not overfilled. **NOTE: Aggressive driving or driving in low for extended periods of time in Autostick® mode will set this DTC.** With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
*CHECKING PARK/NEUTRAL SWITCH OPERATION

POSSIBLE CAUSES
P/N POSITION SWITCH SENSE CIRCUIT OPEN
P/N POSITION SWITCH SENSE CIRCUIT SHORTED TO GROUND
TRANSMISSION RANGE SENSOR
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition on. With the DRBIII®, read the Park/Neutral Position Switch input state. While moving the gear selector through all gear positions, Park to 1 and back to Park, watch the DRBIII® display. Did the DRBIII® display show P/N and D/R in the correct gear positions? Yes → Test Complete. No → Go To 2	All
2	Turn the ignition off. Disconnect the PCM harness connectors. Disconnect the Transmission Range Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the P/N Position Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Repair the P/N Position Switch Sense circuit for an open.	All
3	Turn the ignition off. Disconnect the PCM harness connectors. Disconnect the Transmission Range Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the P/N Position Switch Sense circuit. Is the resistance above 100k ohms? Yes → Go To 4 No → Repair the P/N Position Switch Sense circuit for a short to ground.	All
4	Turn the ignition off. Disconnect the PCM harness connectors. Move the Gear selector through all gear positions, from Park to 1st and back. While moving the gear selector through each gear, measure the resistance between ground and the P/N Position Switch Sense circuit. Did the resistance change from above 10.0 ohms to below 10.0 ohms? Yes → Go To 5 No → Replace the Transmission Range Sensor per the Service Information.	All

*CHECKING PARK/NEUTRAL SWITCH OPERATION — Continued

TEST	ACTION	APPLICABILITY
5	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module per the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 2.	All

Symptom:

*INCORRECT TRANSMISSION FLUID LEVEL

POSSIBLE CAUSES
INCORRECT FLUID LEVEL

TEST	ACTION	APPLICABILITY
1	The transmission must be above 70 degree F. prior to checking fluid level. Adjusting fluid level on a cold transmission will result in an overfilled transmission. Check the transmission fluid level per the service information. Is the fluid level OK? Yes → Test Complete. No → Adjust fluid level and inspect the Transmission and cooler lines for any leaks and repair as necessary.	All

Symptom:

***NO SPEEDOMETER OPERATION**

POSSIBLE CAUSES
NO SPEEDOMETER OPERATION

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, under Transmission, check the pinion factor setting. Is the pinion factor missing or set incorrectly? Yes → One possible cause is the pinion factor is not set or is set incorrectly in the TCM. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
*PRNDL FAULT CLEARING PROCEDURE

POSSIBLE CAUSES
PRNDL FAULT CLEARING PROCEDURE .

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase Transmission DTCs. Cycle the ignition off, then start the vehicle. Firmly apply the brakes and shift into Overdrive. **NOTE: Vehicle must remain in Overdrive for at least 3.0 seconds.** With the brakes firmly applied, shift slowly through all gears (PRNDL) as least three times, pausing momentarily in each gear. **NOTE: If all the PRNDL lights box individually then the error was cleared.** Shift into park and turn the ignition off to the lock position. Ignition on, engine not running. With the DRBIII®, read Transmission DTCs. Does the DTC P0706 reset, or do all the PRNDL indicators remain boxed in park or neutral? Yes → Return to the symptom list and perform diagnostics for P0706 CHECK SHIFTER SIGNAL. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete. Perform 41TE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

*TRANSMISSION NOISY WITH NO DTC'S PRESENT

POSSIBLE CAUSES
INCORRECT FLUID LEVEL
INTERNAL TRANSMISSION PROBLEM - NOISY
INTERNAL TRANSMISSION PROBLEM - NOISY WHILE STANDING STILL

TEST	ACTION	APPLICABILITY
1	Check the Transmission Fluid Level per the Service Information. Is the fluid level OK? Yes → Go To 2 No → Adjust fluid level and repair cause of incorrect fluid level.	All
2	Place vehicle on hoist. **WARNING: BE SURE TO KEEP HANDS AND FEET CLEAR OF ROTATING WHEELS.** Run vehicle on hoist under conditions necessary to duplicate the noise. **NOTE: It may be necessary to test drive the vehicle to duplicate the noise.** Using Chassis Ears or other suitable listening device, verify the source of the noise. Is the noise coming from the transmission? Yes → Go To 3 No → Test Complete.	All
3	With the shift lever in neutral, raise the engine speed and listen to the noise. **NOTE: THE RADIO MUST BE TURNED OFF. Alternator noise can come through the speakers and be misinterpreted as Transmission Pump Whine. This can happen even with the volume turned down.** Does the noise get louder or change pitch while the engine speed is changing? Yes → Go To 4 No → Go To 5	All
4	If there are no possible causes remaining, view repair. Repair Repair internal transmission problem as necessary. Inspect all of the transmission components for signs of wear. If no problems found, replace the Transmission oil pump..	All
5	If there are no possible causes remaining, view repair. Repair Repair internal transmission problem as necessary. Inspect all of the transmission components for signs of wear. Pay particular attention to bearings, pinion gears, etc. Repair or replace as necessary.	All

Symptom:

***TRANSMISSION SHIFTS EARLY WITH NO DTC'S**

POSSIBLE CAUSES
INTERNAL TRANSMISSION PROBLEM - NOISY

TEST	ACTION	APPLICABILITY
1	If there are no possible causes remaining, view repair. Repair Repair internal transmission problem as necessary. Inspect all of the transmission components for signs of wear. Pay particular attention to bearings, pinion gears, etc. Repair or replace as necessary.	All

Symptom:

***TRANSMISSION SIMULATOR 8333 WILL NOT POWER UP**

TEST	ACTION	APPLICABILITY
1	**NOTE: If the Transmission Simulator Miller tool #8333 will not power up, this is a symptom of the Transmission Relay being open, such as Limp-in, and/or this also could be a indication of the Transmission Simulator not installed correctly on the vehicle.** **NOTE: Check the Simulator ground cable connection.** **NOTE: Check all Transmission Simulator harness connections.** Repair these symptoms before having the Transmission Simulator Miller Tool #8333 repaired. Continue Test Complete.	All

Symptom:
P0122-THROTTLE POSITION SENSOR/APPS LOW

When Monitored and Set Condition:

P0122-THROTTLE POSITION SENSOR/APPS LOW

When Monitored: Continuously with the ignition on and engine running.

Set Condition: This DTC will set if the monitored TPS voltage drops below .078 volts for the period of 0.48 seconds.

POSSIBLE CAUSES
RELATED TPS ENGINE DTC'S PRESENT
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check Engine DTC's, this includes all one trip failures. Are there any Engine TPS DTCs present? Yes → Refer to the Powertrain category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All

P0122-THROTTLE POSITION SENSOR/APPS LOW — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII®, record the EATX EVENT DATA to help identify the conditions in which the DTC was set. With the DRBIII®, erase Transmission DTCs. **NOTE: To erase EATX EVENT DATA information, a BATTERY DISCONNECT must be performed. Performing a BATTERY DISCONNECT will reset all learned Transmission values to controller defaults which may lead to erratic shift schedules.** Drive the vehicle and try to duplicate the conditions in which the DTC was reported by the EATX EVENT DATA. With the DRBIII®, read Transmission DTCs. Did the DTC P0122 THROTTLE POSITION SENSOR LOW, reset? Yes → Go To 4 No → Go To 5	All
4	**NOTE: Due to the integration of the Powertrain and Transmission Control Modules, bus communication between the modules is internal.** Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
5	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. Pay particular attention to the TPS signal and sensor ground circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0123-THROTTLE POSITION SENSOR/APPS HIGH

When Monitored and Set Condition:

P0123-THROTTLE POSITION SENSOR/APPS HIGH

When Monitored: Continuously with the ignition on and engine running.

Set Condition: This DTC will set if the monitored TPS voltage rises above 4.94 volts for the period of 0.48 seconds.

POSSIBLE CAUSES
RELATED TPS ENGINE DTC'S PRESENT
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check Engine DTC's, this includes all one trip failures. Are there any Engine TPS DTCs present? Yes → Refer to the Powertrain category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All

P0123-THROTTLE POSITION SENSOR/APPS HIGH — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII®, record the EATX EVENT DATA to help identify the conditions in which the DTC was set. With the DRBIII®, erase Transmission DTCs. **NOTE: To erase EATX EVENT DATA information, a BATTERY DISCONNECT must be performed. Performing a BATTERY DISCONNECT will reset all learned Transmission values to controller defaults which may lead to erratic shift schedules.** Drive the vehicle and try to duplicate the conditions in which the DTC was reported by the EATX EVENT DATA. With the DRBIII®, read Transmission DTCs. Did the DTC P0123 THROTTLE POSITION SENSOR HIGH, reset? Yes → Go To 4 No → Go To 5	All
4	**NOTE: Due to the integration of the Powertrain and Transmission Control Modules, communication between the modules is internal.** Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
5	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. Pay particular attention to the TPS signal and sensor ground circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0124-THROTTLE POSITION SENSOR/APPS INTERMITTENT

When Monitored and Set Condition:

P0124-THROTTLE POSITION SENSOR/APPS INTERMITTENT

When Monitored: Continuously with the ignition on and engine running.

Set Condition: This DTC will set if the monitored TPS throttle angle between the angles of 6° and 120° and the degree change is greater than 5° within a period of less than 7.0 ms.

POSSIBLE CAUSES
RELATED TPS ENGINE DTC'S PRESENT
THROTTLE POSITION SENSOR
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check Engine DTC's, this includes all one trip failures. Are there any Engine TPS DTCs present? Yes → Refer to the Powertrain category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All

P0124-THROTTLE POSITION SENSOR/APPS INTERMITTENT — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII®, record the EATX EVENT DATA to help identify the conditions in which the DTC was set. With the DRBIII®, erase Transmission DTCs. **NOTE: To erase EATX EVENT DATA information, a BATTERY DISCONNECT must be performed. Performing a BATTERY DISCONNECT will reset all learned Transmission values to controller defaults which may lead to erratic shift schedules.** Drive the vehicle and try to duplicate the conditions in which the DTC was reported by the EATX EVENT DATA. With the DRBIII®, read Transmission DTCs. Did the DTC P0124 THROTTLE POSITION SENSOR INTERMITTENT, reset? Yes → Go To 4 No → Go To 6	All
4	Ignition On, Engine Not Running. With the DRBIII®, under Transmission Sensors, monitor the TPS voltage in the following step. Slowly open and close the throttle while checking for erratic voltage changes. Did the TPS voltage change smooth and consistent? Yes → Go To 5 No → Replace the Throttle Position Sensor per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
5	**NOTE: Due to the integration of the Powertrain and Transmission Control Modules, communication between the modules is internal.** Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. Pay particular attention to the TPS signal and sensor ground circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0218-HIGH TEMPERATURE OPERATION ACTIVATED

When Monitored and Set Condition:

P0218-HIGH TEMPERATURE OPERATION ACTIVATED

When Monitored: Whenever the engine is running. NOTE: This is an informational DTC designed to aid the technician in diagnosing shift quality complaints.

Set Condition: Immediately when a Overheat shift schedule is activated when the Transmission Oil Temperature reaches 155° C or 240° F.

POSSIBLE CAUSES
ENGINE COOLING SYSTEM MALFUNCTION
TRANSMISSION OIL COOLER PLUGGED
HIGH TEMPERATURE OPERATIONS ACTIVATED

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	Perform Engine Cooling System diagnostics per the Service Information. Is the Engine Cooling System functioning properly? Yes → Go To 3 No → Repair the cause of the engine overheating. Refer to the Service Information for the related symptoms or repair procedures. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0218-HIGH TEMPERATURE OPERATION ACTIVATED — Continued

TEST	ACTION	APPLICABILITY
3	Perform Transmission Cooler Flow Check per the Service Information. Did the Transmission Cooler Flow Check test pass? Yes → Go To 4 No → Repair or replace the plugged Transmission Oil Cooler per the Service Information. Repair the cause of the plugged Transmission Oil Cooler as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
4	This DTC is an informational DTC designed to aid the Technician in diagnosing shift quality complaints. This DTC indicates that the transmission has been operating in the ″Overheat″ shift schedule which may generate a customer complaint. The customer driving patterns may indicate the need for an additional transmission oil cooler. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. View repair options. Repair Repair the cause of transmission overheating per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0562-LOW BATTERY VOLTAGE

When Monitored and Set Condition:

P0562-LOW BATTERY VOLTAGE

When Monitored: With the engine running and the PCM has closed the Transmission Control Relay.

Set Condition: If the battery voltage of the Transmission Control Relay Output Sense circuit(s) to the PCM is less than 10.0 volts for the period of 15 seconds. Note: P0562 generally indicates a gradually falling battery voltage or a resistive connection(s) to the PCM. The DTC will also set if the battery voltage sensed at the PCM is less than 6.5v for 200ms or where Transmission Control Relay Output circuits is less than 7.2v for 200ms.

POSSIBLE CAUSES
RELATED CHARGING SYSTEM DTC'S
GROUND CIRCUIT OPEN OR HIGH RESISTANCE
FUSED B+ CIRCUIT TO PCM HIGH RESISTANCE
TRANSMISSION CONTROL RELAY OUTPUT TO TCM OPEN OR HIGH RESISTANCE
TRANSMISSION CONTROL RELAY
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0562-LOW BATTERY VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read the Engine DTC's. Are there any Charging System related DTC's present also? Yes → Refer to the Charging System category and repair any PCM Charging System DTC's, before testing DTC P0562. NOTE: After repairing the PCM Charging System DTC's, perform the Transmission Verification test to verify the transmission was not damaged. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	**NOTE: Generator, battery, and charging system must be fully functional before performing this test.** With the DRBIII®, read Transmission DTC's. With the DRBIII®, Check the STARTS SINCE SET counter for P0562. **Note: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter set at 0? Yes → Go To 4 No → Go To 9	All
4	Turn the ignition off to the lock position. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Using a 12-volt test light connected to 12-volts, check the Ground circuits in the appropriate terminal of special tool #8815. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly for all the Ground circuits? Yes → Go To 5 No → Repair the Ground circuit and/or circuits for an open or high resistance. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0562-LOW BATTERY VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Relay connector. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Using a 12-volt test light connected to ground, check the Fused B+ circuit in the appropriate terminal of special tool #8815. **NOTE: The Test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 6 No → Repair the Fused B+ Circuit circuit for an open or high resistance. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Connect a jumper wire between Fused B+ circuit and the Transmission Control Relay Output circuit. Ignition on, engine not running. Using a 12-volt test light connected to ground, check both Transmission Control Relay Output circuits in the appropriate terminal of special tool #8815. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 7 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0562-LOW BATTERY VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Install a substitute Relay in place of the Transmission Control Relay. Start the engine. Using a voltmeter, measure the battery voltage. With the DRBIII®, monitor the Transmission Switched Battery Voltage. Compare the DRBIII® Transmission Switched Battery voltage to the actual battery voltage. Is the DRBIII® voltage within 2.0 volts of the battery voltage? Yes → Replace the Transmission Control Relay. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
9	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorts and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom List:

P0604-INTERNAL TCM
P0605-INTERNAL TCM
P0613-INTERNAL TCM

Test Note: All symptoms listed above are diagnosed using the same tests. The title for the tests will be P0604-INTERNAL TCM.

POSSIBLE CAUSES
PCM - INTERNAL ERROR

TEST	ACTION	APPLICABILITY
1	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0706-CHECK SHIFTER SIGNAL

When Monitored and Set Condition:

P0706-CHECK SHIFTER SIGNAL

When Monitored: Continuously with the ignition on.

Set Condition: After 3 occurrences in one ignition cycle of an invalid PRNDL DTC which lasts for more than 0.1 second. Note: All indicator lights on the instrument cluster will illuminate boxed when the vehicle engine is not running, ignition on or engine running in park or neutral if a problem exists.

POSSIBLE CAUSES
SHIFTER OUT OF ADJUSTMENT
TRS T1 SENSE CIRCUIT OPEN
TRS T3 SENSE CIRCUIT OPEN
TRS T41 SENSE CIRCUIT OPEN
TRS T42 SENSE CIRCUIT OPEN
TRS T1 SENSE CIRCUIT SHORT TO GROUND
TRS T3 SENSE CIRCUIT SHORT TO GROUND
TRS T41 SENSE CIRCUIT SHORT TO GROUND
TRS T42 SENSE CIRCUIT SHORT TO GROUND
TRS T1 SENSE CIRCUIT SHORT TO VOLTAGE
TRS T3 SENSE CIRCUIT SHORT TO VOLTAGE
TRS T41 SENSE CIRCUIT SHORT TO VOLTAGE
TRS T42 SENSE CIRCUIT SHORT TO VOLTAGE
TRANSMISSION RANGE SENSOR
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, erase Transmission DTCs. Cycle the ignition off, then start the vehicle. Firmly apply the brakes and shift into Overdrive. **NOTE: Vehicle must remain in Overdrive for at least 3.0 seconds.** With the brakes firmly applied, shift slowly through all gears (PRNDL) as least three times, pausing momentarily in each gear. **NOTE: If all the PRNDL lights box individually then the error was cleared.** Shift into park and turn the ignition off to the lock position. Ignition on, engine not running. With the DRBIII®, read Transmission DTCs. Does the DTC P0706 reset, or do all the PRNDL indicators remain boxed in park or neutral? Yes → Go To 3 No → Go To 21	All
3	With the DRBIII®, perform the Shift Lever Position Test. Select the test outcome from the following: Test passes Go To 21 Test fails with DTC Go To 4 Test fails without DTC Go To 20	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the DRBIII®, perform the Shift Lever Position Test. When the DRBIII ® instructs you to put the Gear Selector in a particular position, you must do so using the Transmission Simulator. The LED for the gear position in question must be illuminated on the Transmission Simulator, prior to pressing the ENTER key on the DRBIII®. Did the Shift Lever Position Test pass? Yes → Go To 5 No → Go To 6 **NOTE: After completion of this procedure, make sure to disconnect the Transmission Simulator, Miller tool #8333 and FWD adaptor cable kit, Miller tool #8333-1 and reconnect all connectors.**	All
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Range Sensor per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Ignition on, engine not running. With the DRBIII®, monitor the TRS Sense circuits on the Input/Output screen - C1 thru C4. Move the shift lever through all gear positions, pausing momentarily in each gear position and watch for one of the circuits to not change state. Pick the one that did not change state. TRS T1 sense (C4) Go To 7 TRS T3 sense (C3) Go To 10 TRS T41 sense (C1) Go To 13 TRS T42 sense (C2) Go To 16	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the TRS T1 Sense circuit from the appropriate terminal of special tool #8815 to the TRS harness connector. Is the resistance above 5.0 ohms? Yes → Repair the TRS T1 Sense circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the TRS T1 Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the TRS T1 Sense circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the PCM harness connector. Remove the Transmission Control Relay from the PDC. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the TRS T1 Sense circuit at the appropriate terminal of special tool #8815. Is the voltage above 0.5 volt? Yes → Repair the TRS T1 Sense circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 19	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
10	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the TRS T3 Sense circuit from the appropriate terminal of special tool #8815 to the TRS harness connector. Is the resistance above 5.0 ohms? Yes → Repair the TRS T3 Sense circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 11	All
11	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the TRS T3 Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the TRS T3 Sense circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 12	All
12	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the PCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the TRS T3 Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the TRS T3 Sense circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 19	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
13	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the TRS T41 Sense circuit from the appropriate terminal of special tool #8815 to the TRS harness connector. Is the resistance above 5.0 ohms? Yes → Repair the TRS T41 Sense circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 14	All
14	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the TRS T41 Sense circuit Is the resistance below 5.0 ohms? Yes → Repair the TRS T41 Sense circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 15	All
15	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the PCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the TRS T41 Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the TRS T1 Sense circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 19	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
16	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the TRS T42 Sense circuit from the appropriate terminal of special tool #8815 to the TRS harness connector. Is the resistance above 5.0 ohms? Yes → Repair the TRS T42 Sense circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 17	All
17	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the TRS T42 Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the TRS T42 Sense circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 18	All
18	Turn the ignition off to the lock position. Disconnect the TRS harness connector. Disconnect the PCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the TRS T42 Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the TRS T42 Sense circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 19	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
19	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
20	If there are no possible causes remaining, view repair. Repair Adjust the Shift Linkage and/or cable per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
21	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. Check the Shift Linkage and cable for proper operation per the Service Information. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Perform *PRNDL FAULT CLEARING PROCEDURE after completion of any repairs. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0711-TRANSMISSION TEMPERATURE SENSOR PERFORMANCE

When Monitored and Set Condition:

P0711-TRANSMISSION TEMPERATURE SENSOR PERFORMANCE

When Monitored: Continuously with the ignition on and engine running.

Set Condition: This DTC will set when the desired transmission temperature does not reach a normal operating temperature within a given time frame. Time is variable due to ambient temperature. Approximate times are starting temperature to warm up time: (-40° F / -40° C - 35 min) (-20° F / -28° C - 25 min) (20° F / -6.6° C - 20 min) (60° F / 15.5 ° C - 10 min)

POSSIBLE CAUSES
RELATED DTC'S PRESENT
TRANSMISSION TEMPERATURE SENSOR
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0711-TRANSMISSION TEMPERATURE SENSOR PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check Transmission DTC's. Are there any other Transmission Temperature Sensor related DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0711. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 4 No → Go To 7	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator, turn the Input/Output switch to OFF. With the DRBIII®, monitor the TRANS TEMP VOLTS while turning the Thermistor Voltage switch to all three positions on the Transmission Simulator. Compare the DRBIII® readings with the numbers listed on the Transmission Simulator. Do the readings on the Transmission Simulator match the DRBIII® readings ± 0.2 volts? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/TRS assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0711-TRANSMISSION TEMPERATURE SENSOR PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0712-TRANSMISSION TEMPERATURE SENSOR LOW

When Monitored and Set Condition:

P0712-TRANSMISSION TEMPERATURE SENSOR LOW

When Monitored: Continuously with the ignition on and engine running.

Set Condition: The DTC will set when the monitored Temperature Sensor voltage drops below 0.078 volts for the period of 0.45 seconds.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
TRANSMISSION TEMPERATURE SENSOR SIGNAL CIRCUIT SHORT TO GROUND
TRANSMISSION TEMPERATURE SENSOR
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check Transmission DTC's. Are there any Speed Sensor DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All

P0712-TRANSMISSION TEMPERATURE SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0712. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 4 No → Go To 8	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator, turn the Input/Output switch to OFF. With the DRBIII®, monitor the TRANS TEMP VOLTS while turning the Thermistor Voltage switch to all three positions on the Transmission Simulator. Compare the DRBIII® readings with the numbers listed on the Transmission Simulator. Do the readings on the Transmission Simulator match the DRBIII® readings ± 0.2 volts? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/TRS assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the PCM C4 harness connector. Disconnect the Transmission Solenoid/TRS Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the Transmission Temperature Sensor Signal circuit. Is the resistance below 5.0 ohms? Yes → Repair the Transmission Temperature Sensor Signal circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0712-TRANSMISSION TEMPERATURE SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
7	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
8	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0713-TRANSMISSION TEMPERATURE SENSOR HIGH

When Monitored and Set Condition:

P0713-TRANSMISSION TEMPERATURE SENSOR HIGH

When Monitored: Continuously with the ignition on and engine running.

Set Condition: The DTC will set when the monitored Temperature Sensor voltage rises above 4.94 volts for the period of 0.45 seconds.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
TRANSMISSION TEMPERATURE SENSOR SIGNAL CIRCUIT OPEN
TRANSMISSION TEMPERATURE SENSOR SIGNAL CIRCUIT SHORT TO VOLTAGE
TRANSMISSION TEMPERATURE SENSOR
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0713-TRANSMISSION TEMPERATURE SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check Transmission DTC's. Are there any Speed Sensor DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0713. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 4 No → Go To 9	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator, turn the Input/Output switch to OFF. With the DRBIII®, monitor the TRANS TEMP VOLTS while turning the Thermistor Voltage switch to all three positions on the Transmission Simulator. Compare the DRBIII® readings with the numbers listed on the Transmission Simulator. Do the readings on the Transmission Simulator match the DRBIII® readings ± 0.2 volts? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/TRS assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0713-TRANSMISSION TEMPERATURE SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the PCM C4 harness connector.. Disconnect the Transmission Solenoid /TRS Assembly harness connector **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Transmission Temperature Sensor Signal circuit from the appropriate terminal of special tool #8815 to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Transmission Temperature Sensor Signal circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off to the lock position. Disconnect the PCM C4 harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the Transmission Temperature Sensor Signal circuit in the appropriate terminal of special tool #8815. Is the voltage above 0.5 volts? Yes → Repair the Transmission Temperature Sensor Signal circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0713-TRANSMISSION TEMPERATURE SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
9	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0714-TRANSMISSION TEMPERATURE SENSOR INTERMITTENT

When Monitored and Set Condition:

P0714-TRANSMISSION TEMPERATURE SENSOR INTERMITTENT

When Monitored: Continuously with the ignition on and engine running.

Set Condition: The DTC will set when the monitored Temperature Sensor voltage fluctuates or changes abruptly within a predetermined period of time.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
TRANSMISSION TEMPERATURE SENSOR
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check Transmission DTC's. Are there any Speed Sensor and/or other Temperature Sensor DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All

P0714-TRANSMISSION TEMPERATURE SENSOR INTERMITTENT — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0714. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 4 No → Go To 7	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator, turn the Input/Output switch to OFF. With the DRBIII®, monitor the TRANS TEMP VOLTS while turning the Thermistor Voltage switch to all three positions on the Transmission Simulator. Compare the DRBIII® readings with the numbers listed on the Transmission Simulator. Do the readings on the Transmission Simulator match a non-fluctuating DRBIII® reading ± 0.2 volts? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/TRS assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0715-INPUT SPEED SENSOR ERROR

When Monitored and Set Condition:

P0715-INPUT SPEED SENSOR ERROR

When Monitored: The transmission gear ratio is monitored continuously while the transmission is in gear.

Set Condition: If there is an excessive change in the Input RPM in any gear.

POSSIBLE CAUSES
INPUT SPEED SENSOR SIGNAL CIRCUIT OPEN
SPEED SENSOR GROUND CIRCUIT OPEN
INPUT SPEED SENSOR SIGNAL CIRCUIT SHORT TO GROUND
INPUT SPEED SENSOR SIGNAL CIRCUIT SHORT TO VOLTAGE
SPEED SENSOR GROUND CIRCUIT SHORT TO VOLTAGE
INPUT SPEED SENSOR
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0715-INPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
2	Start the engine. Place the shifter in park. With the DRBIII®, read the Input Speed Sensor RPM. Is the Input Speed Sensor reading below 400 RPM? Yes → Go To 3 No → Go To 11	All
3	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the Transmission Simulator, set the ″Input/Output Speed″ switch to ″ON″ and the rotary switch to the ″3000/1250″ position. With the DRBIII®, read the Input and Output RPM. Does the Input speed read 3000 RPM and the Output speed read 1250 RPM ± 50 RPM? Yes → Go To 4 No → Go To 5	All
4	If there are no possible causes remaining, view repair. Repair Replace the Input Speed Sensor per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Input Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Input Speed Sensor Signal circuit from the appropriate terminal of special tool #8815 to the Input Speed Sensor connector. Is the resistance above 5.0 ohms? Yes → Repair the Input Speed Sensor Signal circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All

P0715-INPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Input Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Speed Sensor Ground circuit from the Pinout Box to the Input Speed Sensor harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Speed Sensor Ground circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Input Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the Input Speed Sensor Signal circuit. Is the resistance Below 5.0 ohms? Yes → Repair the Input Speed Sensor Signal circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the Input Speed Sensor harness connector. Disconnect the PCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the Input Speed Sensor Signal circuit. Is the voltage above 0.5 volts? Yes → Repair the Input Speed Sensor Signal circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All

P0715-INPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the TRS harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the Speed Sensor Ground circuit in the Pinout Box. Is the voltage above 0.5 volt? Yes → Repair the Speed Sensor Ground circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
11	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0720-OUTPUT SPEED SENSOR ERROR

When Monitored and Set Condition:

P0720-OUTPUT SPEED SENSOR ERROR

When Monitored: The transmission gear ratio is monitored continuously while the transmission is in gear.

Set Condition: If there is an excessive change in the Output RPM in any gear.

POSSIBLE CAUSES
OUTPUT SPEED SENSOR SIGNAL CIRCUIT OPEN
SPEED SENSOR GROUND CIRCUIT OPEN
OUTPUT SPEED SENSOR SIGNAL CIRCUIT SHORT TO GROUND
OUTPUT SPEED SENSOR SIGNAL CIRCUIT SHORT TO VOLTAGE
SPEED SENSOR GROUND CIRCUIT SHORT TO VOLTAGE
OUTPUT SPEED SENSOR
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0720-OUTPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
2	Start the engine in park. Raise the drive wheels off of the ground. **WARNING: PROPERLY SUPPORT THE VEHICLE.** Firmly apply the brakes and place the transmission selector in drive. **WARNING: BE SURE TO KEEP HANDS AND FEET CLEAR OF ROTATING WHEELS.** Release the brakes and allow the drive wheels to spin freely. **Note: The drive wheels must be turning at this point.** With the DRBIII®, read the Output RPM Is the Output RPM below 100? Yes → Go To 3 No → Go To 11	All
3	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the Transmission Simulator, set the ″Input/Output Speed″ switch to ″ON″ and the rotary switch to the ″3000/1250″ position. With the DRBIII®, read the Input and Output RPM. Does the Input RPM read 3000 and the Output RPM read 1250 (within 50 RPM)? Yes → Go To 4 No → Go To 5	All
4	If there are no possible causes remaining, view repair. Repair Replace the Output Speed Sensor per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Output Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Output Speed Sensor Signal circuit from appropriate terminal of special tool #8815 to the Output Speed Sensor harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Output Speed Sensor Signal circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All

P0720-OUTPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Output Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Speed Sensor Ground circuit from the appropriate terminal of special tool #8815 to the Output Speed Sensor harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Speed Sensor Ground circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Output Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the Output Speed Sensor Signal circuit. Is the resistance below 5.0 ohms? Yes → Repair the Output Speed Sensor Signal circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Output Speed Sensor harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the Output Speed Sensor Signal circuit. Is the voltage above 0.5 volt? Yes → Repair the Output Speed Sensor Signal circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All

P0720-OUTPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the TRS harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ and Transmission Control Relay Output circuits in the Transmission Control Relay connector. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the Speed Sensor Ground circuit. Is the voltage above 0.5 volts? Yes → Repair the Speed Sensor Ground circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
11	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0725-ENGINE SPEED SENSOR CIRCUIT

When Monitored and Set Condition:

P0725-ENGINE SPEED SENSOR CIRCUIT

When Monitored: Whenever the engine is running.

Set Condition: The Engine RPM is less than 390 or greater than 8000 for more than 2 seconds while the engine is running.

POSSIBLE CAUSES
ENGINE DTCS PRESENT
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	Start the engine. **NOTE: This DTC is not a Transmission Input Speed Sensor DTC.** With the DRBIII®, Check the STARTS SINCE SET counter for P0725. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter for P0725 set at 0? Yes → Go To 3 No → Go To 5	All

P0725-ENGINE SPEED SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII®, read Engine DTCs. Are there any Engine DTC's present? Yes → Refer to the Powertrain category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
5	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0731-GEAR RATIO ERROR IN 1ST

When Monitored and Set Condition:

P0731-GEAR RATIO ERROR IN 1ST

When Monitored: The Transmission gear ratio is monitored continuously while the transmission is in gear.

Set Condition: If the ratio of the Input RPM to the Output RPM does not match the current gear ratio.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
INTERNAL TRANSMISSION
INTERMITTENT GEAR RATIO ERRORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0731-GEAR RATIO ERROR IN 1ST — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's. If any of these DTC's are present, perform their respective tests first. Are there any Loss of Prime, Line Pressure Sensor and/or Speed Sensor DTCs present? Yes → Refer to appropriate symptom in the Transmission category. If any of these DTC's are present, they will cause a gear ratio error. Perform the test for Loss of Prime first if it is present. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, perform the 1st gear clutch test. Follow the instructions on the DRBIII®. Increase the throttle angle or TPS Degree to 30° for no more than a few seconds. **CAUTION: Do not overheat the transmission.** Did the Clutch Test pass, Input Speed remain at zero? Yes → Go To 4 No → Go To 5	All
4	The conditions to set this DTC are not current at this time. Check the gearshift linkage adjustment. Gear ratio DTC's can be set by problems in the Input and Output Speed Sensor circuits. If the vehicle passes the Clutch Test and still sets Gear Ratio DTC, check the Speed Sensors for proper operation. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Check the wiring and connectors for the Speed Sensors for a good connection, then perform a wiggle test using the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. This DTC can also be set under extreme temperature conditions, this is usually caused by an internal problem. Verify if the problem is only experienced under extreme hot or cold conditions. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	If there are no possible causes remaining, view repair. Repair Repair internal Transmission per the Service Information. Check all of the components related to the UD and LR clutches. Inspect the Oil Pump and repair or replace per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P0732-GEAR RATIO ERROR IN 2ND

When Monitored and Set Condition:

P0732-GEAR RATIO ERROR IN 2ND

When Monitored: The Transmission gear ratio is monitored continuously while the Transmission is in gear.

Set Condition: If the ratio of the Input RPM to the Output RPM does not match the current gear ratio.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
TRANSMISSION SOLENOID/PRESSURE SWITCH ASSEMBLY
INTERNAL TRANSMISSION
INTERMITTENT GEAR RATIO ERRORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0732-GEAR RATIO ERROR IN 2ND — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's. If any of these DTC's are present, perform their respective tests first. Are there any Loss of Prime, Line Pressure Sensor and/or Speed Sensor DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. If any of these DTC's are present, they will cause a gear ratio error. Perform the test for Loss of Prime first if it is present. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, perform the 2nd gear clutch test. Follow the instructions on the DRBIII®. Increase the throttle angle or TPS Degree to 30° for no more than a few seconds. **CAUTION: Do not overheat the transmission.** Did the Clutch Test pass - Input Speed remain at zero? Yes → Go To 4 No → Go To 5	All
4	The conditions to set this DTC are not current at this time. Check the Gearshift Linkage adjustment. Gear ratio DTC's can be set by problems in the Input and Output Speed Sensor circuits. If the vehicle passes the Clutch Test and still sets Gear Ratio DTC's, check the Speed Sensors for proper operation. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Check the Speed Sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. This DTC can also be set under extreme temperature conditions, this is usually caused by an internal problem. Verify if the problem is only experienced under extreme hot or cold conditions. Check for any Technical Service Bulletins (TSBs) that may apply. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	With the DRBIII®, read Transmission DTC's. Are the DTC's P0845 and/or P0846 present also? Yes → Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All

P0732-GEAR RATIO ERROR IN 2ND — Continued

TEST	ACTION	APPLICABILITY
6	If there are no possible causes remaining, view repair. Repair Repair internal transmission per the Service Information. Check all of the components related to the UD and 2/4 clutches. Inspect the Oil Pump and repair or replace per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0733-GEAR RATIO ERROR IN 3RD

When Monitored and Set Condition:

P0733-GEAR RATIO ERROR IN 3RD

When Monitored: The Transmission gear ratio is monitored continuously while the Transmission is in gear.

Set Condition: If the ratio of the Input RPM to the Output RPM does not match the current gear ratio.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
TRANSMISSION SOLENOID/PRESSURE SWITCH ASSEMBLY
INTERNAL TRANSMISSION
INTERMITTENT GEAR RATIO ERRORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0733-GEAR RATIO ERROR IN 3RD — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's. If any of these DTC's are present, perform their respective tests first. Are there any Loss of Prime, Line Pressure Sensor and/or Speed Sensor DTCs present? Yes → Refer to appropriate symptom in the Transmission category. If any of these DTC's are present, they will cause a gear ratio error. Perform the test for Loss of Prime DTC first if it is present. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, perform the 3rd Gear Clutch test. Follow the instructions on the DRBIII®. Increase the throttle angle or TPS Degree to 30° for no more than a few seconds. **CAUTION: Do not overheat the transmission.** Did the clutch test pass, Input Speed remain at zero? Yes → Go To 4 No → Go To 5	All
4	The conditions to set this DTC are not current at this time. Check the gearshift linkage adjustment. Gear ratio DTC's can be set by problems in the input and output speed sensor circuits. If the vehicle passes the clutch test and still sets gear ratio DTC's, check the Speed Sensors for proper operation. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Check the speed sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. This DTC can also be set under extreme temperature conditions, this is usually caused by an internal problem. Verify if the problem is only experienced under extreme hot or cold conditions. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	With the DRBIII®, read Transmission DTC's. Are the DTC's P0870 and/or P0871 present also? Yes → Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All

P0733-GEAR RATIO ERROR IN 3RD — Continued

TEST	ACTION	APPLICABILITY
6	If there are no possible causes remaining, view repair. Repair Repair internal transmission per the Service Information. Check all of the components related to the UD and OD clutches. Inspect the Oil Pump and repair or replace per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P0734-GEAR RATIO ERROR IN 4TH

When Monitored and Set Condition:

P0734-GEAR RATIO ERROR IN 4TH

When Monitored: The Transmission gear ratio is monitored continuously while the Transmission is in gear.

Set Condition: If the ratio of the Input RPM to the Output RPM does not match the current gear ratio.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
TRANSMISSION SOLENOID/PRESSURE SWITCH ASSEMBLY
INTERNAL TRANSMISSION
INTERMITTENT GEAR RATIO ERRORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0734-GEAR RATIO ERROR IN 4TH — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's. If any of these DTC's are present, perform their respective tests first. Are there any Loss of Prime, Line Pressure Sensor and/or Speed Sensor DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. If any of these DTC's are present, they will cause a gear ratio error. Perform the test for Loss of Prime first if it is present. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, perform the 4th gear clutch test. Follow the instructions on the DRBIII®. Increase the throttle angle or TPS Degree to 30° for no more than a few seconds. **CAUTION: Do not overheat the transmission.** Did the clutch test pass - Input Speed remain at zero? Yes → Go To 4 No → Go To 5	All
4	The conditions to set this DTC are not current at this time. Check the gearshift linkage adjustment. Gear ratio DTC's can be set by problems in the Input and Output Speed Sensor circuits. If the vehicle passes the clutch test and still sets gear ratio DTC's, check the Speed Sensors for proper operation. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Check the Speed Sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. This DTC can also be set under extreme temperature conditions, this is usually caused by an internal problem. Verify if the problem is only experienced under extreme hot or cold conditions. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	With the DRBIII®, read Transmission DTC's. Are the DTC's P0870 and/or P0871 present also? Yes → Replace the Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All

P0734-GEAR RATIO ERROR IN 4TH — Continued

TEST	ACTION	APPLICABILITY
6	If there are no possible causes remaining, view repair. Repair Repair internal transmission per the Service Information. Check all of the components related to the OD and 2/4 clutches. Inspect the Oil Pump and repair or replace per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0736-GEAR RATIO ERROR IN REVERSE

When Monitored and Set Condition:

P0736-GEAR RATIO ERROR IN REVERSE

When Monitored: The Transmission gear ratio is monitored continuously while the Transmission is in gear.

Set Condition: If the ratio of the Input RPM to the Output RPM does not match the current gear ratio.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
INTERNAL TRANSMISSION
INTERMITTENT GEAR RATIO ERRORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0736-GEAR RATIO ERROR IN REVERSE — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's. If any of these DTC's are present, perform their respective tests first. Are there any Loss of Prime, Line Pressure Sensor and/or Speed Sensor DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. If any of these DTC's are present, they will cause a gear ratio error. Perform the test for Loss of Prime first if it is present. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, perform the Reverse Gear Clutch test. Follow the instructions on the DRBIII®. Increase the throttle angle or TPS Degree to 30° for no more than a few seconds. **CAUTION: Do not overheat the transmission.** Did the clutch test pass - Input Speed remain at zero? Yes → Go To 4 No → Go To 5	All
4	The conditions to set this DTC are not current at this time. Check the gearshift linkage adjustment. Gear ratio DTC's can be set by problems in the Input and Output Speed Sensor circuits. If the vehicle passes the clutch test and still sets gear ratio DTC's, check the Speed Sensors for proper operation. Remove the Starter Relay. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Check the Speed Sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool #8333 and Electronic Transmission Adapter kit, Miller tool #8333-1. This DTC can also be set under extreme temperature conditions, this is usually caused by an internal problem. Verify if the problem is only experienced under extreme hot or cold conditions. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	If there are no possible causes remaining, view repair. Repair Repair internal transmission per the Service Information. Check all of the components related to the Reverse and LR clutches. Inspect the Oil Pump and repair or replace per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P0740-TORQUE CONVERTER CLUTCH CONTROL CIRCUIT

When Monitored and Set Condition:

P0740-TORQUE CONVERTER CLUTCH CONTROL CIRCUIT

When Monitored: The Torque Converter Clutch (TCC) is in FEMCC or PEMCC, Transmission temperature is hot, Engine temperature is greater than 38° C or 100° F, Transmission Input Speed greater than 1750 RPM, TPS less than 30°.

Set Condition: The TCC is modulated by controlling the duty cycle of the L/R Solenoid until the difference between the Engine and the Transmission Input Speed RPM or duty cycle is within a desired range. The DTC is set after the period of 10 seconds and 3 occurrences of either: FEMCC - with slip greater than 100 RPM or PEMCC - duty cycle greater than 85%.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
INTERNAL TRANSMISSION
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0740-TORQUE CONVERTER CLUTCH CONTROL CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's Are the DTC's P0750 and/or P0841 present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	Ignition on, engine not running. With the DRBIII®, record and erase DTC's. Drive the vehicle until it is fully warmed up. At least 110 degrees. Perform the following step 3 times. Drive the vehicle at 50 MPH and allow 4th gear to engage for at least 10 seconds. Close the throttle, then tip back in until the throttle angle is between 25 and 29 degrees. Note that if you go over 30 degrees, you must back off of the throttle and retry. Did the TCC engage during any of the attempts? Yes → Go To 4 No → Go To 5	All
4	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. This DTC can also be set under extreme temperature conditions, this is usually caused by an internal problem. Verify if the problem is only experienced under extreme hot or cold conditions. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	If there are no possible causes remaining, view repair. Repair Perform the Hydraulic Pressure test per the Service Information and repair the internal transmission components and Torque convertor as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P0750-LR SOLENOID CIRCUIT

When Monitored and Set Condition:

P0750-LR SOLENOID CIRCUIT

When Monitored: Initially at power-up, then every 10 seconds thereafter. The solenoids will also be tested immediately after a gear ratio or pressure switch error is detected.

Set Condition: Three consecutive solenoid continuity test failures, or one failure if test is run in response to a gear ratio or pressure switch error.

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
LR SOLENOID CONTROL CIRCUIT OPEN
LR SOLENOID CONTROL CIRCUIT SHORT TO GROUND
LR SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
LR SOLENOID/PRESSURE SWITCH ASSEMBLY
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0750-LR SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's Are there any Transmission Control Relay DTC's present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter for P0750 set at 0? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the DRBIII®, actuate the L/R Solenoid. Monitor the L/R Solenoid LED on the Transmission Simulator. Did the L/R Solenoid LED on the Transmission Simulator blink on and off during actuation? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the LR Solenoid Control circuit from the appropriate terminal of special tool #8815 to the Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the LR Solenoid Control circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0750-LR SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the LR Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the LR Solenoid Control circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the LR Solenoid Control circuit. Is the voltage above 0.5 volts? Yes → Repair the LR Solenoid Control circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Using a 12-volt test light connected to ground, check the Transmission Relay Output circuit in the Transmission Solenoid/Pressure Switch harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 10 No → Repair the Transmission Control Relay Output circuit for an open. If the fuse is open make sure to check for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0750-LR SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
11	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0755-2/4 SOLENOID CIRCUIT

When Monitored and Set Condition:

P0755-2/4 SOLENOID CIRCUIT

When Monitored: Initially at power-up, then every 10 seconds thereafter. They will also be tested immediately after a gear ratio or pressure switch error is detected.

Set Condition: Three consecutive solenoid continuity test failures, or one failure if test is run in response to a gear ratio or pressure switch error.

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
2/4 SOLENOID CONTROL CIRCUIT OPEN
2/4 SOLENOID CONTROL CIRCUIT SHORT TO GROUND
2/4 SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
2/4 SOLENOID
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0755-2/4 SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's Are there any Transmission Control Relay DTC's present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0755. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter set at 0? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the DRBIII®, actuate the 2/4 Solenoid. With the Transmission Simulator, monitor the 2/4 Solenoid LED. Did the 2/4 Solenoid LED on the Transmission Simulator blink on and off during actuation? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the 2/4 Solenoid Control circuit from the appropriate terminal of special tool #8815 to the Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the 2-4 Solenoid Control circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0755-2/4 SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the 2/4 Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the 2/4 Solenoid Control circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the 2/4 Solenoid Control circuit. Is the voltage above 0.5 volts? Yes → Repair the 2/4 Solenoid Control circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit in the Solenoid/Pressure Switch Assembly harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 10 No → Repair the Transmission Control Relay Output circuit for an open. If the fuse is open make sure to check for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0755-2/4 SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
11	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0760-OD SOLENOID CIRCUIT

When Monitored and Set Condition:

P0760-OD SOLENOID CIRCUIT

When Monitored: Initially at power-up, then every 10 seconds thereafter. Also tested immediately after a gear ratio or pressure switch error is detected.

Set Condition: Three consecutive solenoid continuity test failures, or one failure if test is run in response to a gear ratio or pressure switch error.

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
OD SOLENOID CONTROL CIRCUIT OPEN
OD SOLENOID CONTROL CIRCUIT SHORT TO GROUND
OD SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
OD SOLENOID
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0760-OD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's Are there any Transmission Control Relay DTC's present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0760. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter set at 0? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the Transmission Simulator, monitor the OD Solenoid LED. With the DRBIII®, actuate the OD Solenoid. Did the OD Solenoid LED on the Transmission Simulator blink on and off during actuation? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the OD Solenoid Control circuit from the appropriate terminal of special tool #8815 to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the OD Solenoid Control circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0760-OD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the OD Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the OD Solenoid Control circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the OD Solenoid Control circuit. Is the voltage above 0.5 volts? Yes → Repair the OD Solenoid Control circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit in the Solenoid/Pressure Switch Assembly harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 10 No → Repair the Transmission Control Relay Output circuit for an open. If the fuse is open make sure to check for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0760-OD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
11	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0765-UD SOLENOID CIRCUIT

When Monitored and Set Condition:

P0765-UD SOLENOID CIRCUIT

When Monitored: Initially at power-up, then every 10 seconds thereafter. They will also be tested immediately after a gear ratio or pressure switch error is detected.

Set Condition: Three consecutive solenoid continuity test failures, or one failure if test is run in response to a gear ratio or pressure switch error.

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
UD SOLENOID CONTROL CIRCUIT OPEN
UD SOLENOID CONTROL CIRCUIT SHORT TO GROUND
UD SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
UD SOLENOID
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0765-UD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's Are there any Transmission Control Relay DTC's present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0765. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter set at 0? Yes → Go To 4 No → Go To 9	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. Monitor the UD Solenoid LED on the Transmission Simulator. With the DRBIII®, actuate the UD Solenoid. Did the UD Solenoid LED on the Transmission Simulator blink on and off? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the UD Solenoid Control circuit from the appropriate terminal of special tool #8815 to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the UD Solenoid Control circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0765-UD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the UD Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the UD Solenoid Control circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the UD Solenoid Control circuit. Is the voltage above 0.5 volts? Yes → Repair the UD Solenoid Control circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
9	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0841-LR PRESSURE SWITCH SENSE CIRCUIT

When Monitored and Set Condition:

P0841-LR PRESSURE SWITCH SENSE CIRCUIT

When Monitored: Whenever the engine is running.

Set Condition: The DTC is set if one of the pressure switches are open or closed at the wrong time in a given gear.

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
LOSS OF PRIME P0944 PRESENT
L/R PRESSURE SWITCH SENSE CIRCUIT OPEN
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
L/R PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
L/R PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
L/R PRESSURE SWITCH
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0841-LR PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's Are there any Transmission Control Relay DTC's present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, check for other Transmission DTC's. Is the DTC P0944 present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	With the DRBIII®, Check the STARTS SINCE SET counter for P0841. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 5 No → Go To 12	All
5	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator, turn the Pressure Switch selector to L/R. With the DRBIII®, monitor the L/R Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. Did the L/R Pressure Switch state change? Yes → Go To 6 No → Go To 7	All
6	If there are no possible causes remaining, view repair. Repair Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0841-LR PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the L/R Pressure Switch Sense circuit from the appropriate terminal of special tool #8815 to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the L/R Pressure Switch Sense circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the L/R Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the L/R Pressure Switch Sense circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the L/R Pressure Switch Sense circuit. Is the voltage above 0.5 volts? Yes → Repair the L/R Pressure Switch Sense circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All

P0841-LR PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
10	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit in the Transmission Solenoid/Pressure Switch Assembly harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 11 No → Repair the Transmission Control Relay Output circuit for an open. If the fuse is open make sure to check for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
11	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
12	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0845-2/4 HYDRAULIC PRESSURE TEST FAILURE

When Monitored and Set Condition:

P0845-2/4 HYDRAULIC PRESSURE TEST FAILURE

When Monitored: In any forward gear with engine speed above 1000 RPM, shortly after a shift and every minute thereafter.

Set Condition: After a shift into a forward gear, with engine speed greater than 1000 RPM, the PCM momentarily turns on element pressure to the clutch circuits that don't have pressure to identify the correct pressure switch closes. If the pressure switch does not close 2 times the DTC sets.

POSSIBLE CAUSES
LOSS OF PRIME P0944 PRESENT
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
2/4 PRESSURE SWITCH SENSE CIRCUIT OPEN
2/4 PRESSURE SWITCH CIRCUIT SHORT TO GROUND
INTERNAL TRANSMISSION
2/4 PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
TRANSMISSION SOLENOID/TRS ASSEMBLY
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

P0845-2/4 HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check for other Transmission DTC's. Is the DTC P0944 present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, read Transmission DTC's. Are any of the DTCs P0732, P0734 and/or P0846 present also? Yes → Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	With the DRBIII®, Check the STARTS SINCE SET counter for P0845. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 5 No → Go To 12	All

P0845-2/4 HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator, turn the Pressure Switch selector switch to 2/4. With the DRBIII®, monitor the UD Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. Wiggle the wires leading to the PCM while pressing and holding the Pressure Switch Test button. Did the 2/4 Pressure Switch state change to closed and remain closed while wiggling the wires? Yes → Go To 6 No → Go To 7	All
6	If there are no possible causes remaining, view repair. Repair Disassemble and inspect the Valve Body per the Service Information and repair or replace as necessary. If no problems are found in the Valve Body, replace the Transmission Solenoid/Pressure Switch Assembly. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
7	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **NOTE: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the 2/4 Pressure Switch Sense circuit from the appropriate terminal of special tool #8815 to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the 2-4 Pressure Switch Sense circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All

P0845-2/4 HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the 2/4 Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the 2-4 Pressure Switch Sense circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the 2/4 Pressure Switch Sense circuit. Is the voltage above 0.5 volts? Yes → Repair the 2-4 Pressure Switch Sense circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, check Transmission Control Relay Output circuit in the Transmission Solenoid/Pressure Switch Assembly harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 11 No → Repair the Transmission Control Relay Output circuit for an open. If the fuse is open make sure to check for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0845-2/4 HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
11	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
12	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0846-2/4 PRESSURE SWITCH SENSE CIRCUIT

When Monitored and Set Condition:

P0846-2/4 PRESSURE SWITCH SENSE CIRCUIT

When Monitored: Whenever the engine is running.

Set Condition: The DTC is set if one of the pressure switches are open or closed at the wrong time in a given gear .

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
2/4 PRESSURE SWITCH SENSE CIRCUIT OPEN
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
2/4 PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
2/4 PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
2/4 PRESSURE SWITCH
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0846-2/4 PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's Are there any Transmission Control Relay DTC's present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0846. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator turn the Pressure Switch selector to 2/4. With the DRBIII®, monitor the 2/4 Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. Did the state of the 2/4 Pressure Switch change while pressing the Pressure Switch Test button? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the 2/4 Pressure Switch Sense circuit from the appropriate terminal of special tool #8815 to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the 2/4 Pressure Switch Sense circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0846-2/4 PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the 2/4 Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the 2/4 Pressure Switch Sense circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the PCM harness connector Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the 2/4 Pressure Switch Sense circuit. Is the voltage above 0.5 volts? Yes → Repair the 2/4 Pressure Switch Sense circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit in the Transmission Solenoid/Pressure Switch Assembly harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 10 No → Repair the Transmission Control Relay Output circuit for an open. If the fuse is open make sure to check for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0846-2/4 PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
11	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0870-OD HYDRAULIC PRESSURE TEST FAILURE

When Monitored and Set Condition:

P0870-OD HYDRAULIC PRESSURE TEST FAILURE

When Monitored: In any forward gear with engine speed above 1000 RPM shortly after a shift and every minute thereafter.

Set Condition: After a shift into a forward gear, with engine speed greater than 1000 RPM, the TCM momentarily turns on element pressure to the clutch circuits that don't have pressure to identify the correct pressure switch closes. If the pressure switch does not close 2 times the DTC sets

POSSIBLE CAUSES
LOSS OF PRIME - P0944 PRESENT
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
OD PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
OD PRESSURE SWITCH SENSE CIRCUIT OPEN
OD PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
TRANSMISSION SOLENOID/PRESSURE SWITCH ASSEMBLY
INTERNAL TRANSMISSION
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check for other Transmission DTC's. Is the DTC P0944 present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, read Transmission DTC's. Is the DTC P0733 and/or P0871 present also? Yes → Replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	With the DRBIII®, Check the STARTS SINCE SET counter for P0870. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 5 No → Go To 12	All

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. **Note: Check connectors - Clean/repair as necessary.** With the Transmission Simulator select the OD Pressure Switch. With the DRBIII®, monitor the OD Pressure Switch state in the following step: Wiggle the wiring and connectors pertaining to this circuit while pressing the Pressure Switch Test button on the Transmission Simulator. Did the OD Pressure Switch state change to closed and remain closed while wiggling the wires? Yes → Go To 6 No → Go To 7	All
6	If there are no possible causes remaining, view repair. Repair Disassemble and inspect the Valve Body per the Service Information and repair or replace as necessary. If no problems are found in the Valve Body, replace the Transmission Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
7	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the OD Pressure Switch Sense circuit from the appropriate terminal of special tool #8815 to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the OD Pressure Switch Sense circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the OD Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the OD Pressure Switch Sense circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the OD Pressure Switch Sense circuit. Is the voltage above 0.5 volts? Yes → Repair the OD Pressure Switch Sense circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit in the Solenoid/Pressure Switch Assembly harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery..** Does the test light illuminate brightly? Yes → Go To 11 No → Repair the Transmission Control Relay Output circuit for an open. If the fuse is open make sure to check for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
11	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
12	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0871-OD PRESSURE SWITCH SENSE CIRCUIT

When Monitored and Set Condition:

P0871-OD PRESSURE SWITCH SENSE CIRCUIT

When Monitored: Whenever the engine is running.

Set Condition: The DTC is set if one of the pressure switches are open or closed at the wrong time in a given gear.

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
OD PRESSURE SWITCH SENSE CIRCUIT OPEN
OD PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
TRANSMISSION RELAY OUTPUT CIRCUIT OPEN
OD PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
OD PRESSURE SWITCH
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0871-OD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTC's Are there any Transmission Control Relay DTC's present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0871. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator turn the Pressure Switch selector to OD. With the DRBIII®, monitor the OD Pressure Switch state while pressing Pressure Switch test button. Did the OD Pressure Switch state change while pressing the Pressure Switch test button? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Replace the Solenoid/Pressure Switch Assembly per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the OD Pressure Switch Sense circuit from the appropriate terminal of special tool #8815 and the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the OD Pressure Switch Sense circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0871-OD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the OD Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the OD Pressure Switch Sense circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the OD Pressure Switch Sense circuit. Is the voltage above 0.5 volts? Yes → Repair the OD Pressure Switch Sense circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit. **NOTE: The Test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 10 No → Repair the Transmission Control Relay Output circuit for an open. If the fuse is open make sure to check for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0871-OD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
11	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0884-POWER UP AT SPEED

When Monitored and Set Condition:

P0884-POWER UP AT SPEED

When Monitored: When the Transmission Control Module initially powers up. Note: the Transmission Control Module is integrated with Powertrain Control Module. The Transmission Control Module has separate powers and grounds specifically to its portion of the PCM.

Set Condition: This DTC will set if the TCM powers up and senses the vehicle in a valid forward gear (no PRNDL DTCs) with a output speed above 800 RPM (approximately 32Km/h or 20 MPH).

POSSIBLE CAUSES
P0884 POWER UP AT SPEED

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0884-POWER UP AT SPEED — Continued

TEST	ACTION	APPLICABILITY
2	This DTC is set when the PCM is initialized while the vehicle is moving down the road in a valid forward gear. This is usually a momentarily loss of power to the Transmission portion of the PCM. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** **NOTE: Due to the integration of the Powertrain and Transmission Control Modules, the transmission part of the PCM has its own specific power and ground circuits.** Check all of the Fused B+, Fused Ignition Switch Output, and Ground circuits related to the PCM for an intermittent open or short to ground. Perform a wiggle test on all wiring and connectors pertaining to the PCM while looking for shorts and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. If there are no possible causes remaining, view repair. Repair Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0888-RELAY OUTPUT ALWAYS OFF

When Monitored and Set Condition:

P0888-RELAY OUTPUT ALWAYS OFF

When Monitored: Continuously

Set Condition: This DTC is set when less than 3 volts are present at the Transmission Control Relay output circuits at the Transmission Control Module (TCM) when the TCM is energizing the relay. Note: Due to the integration of the Powertrain and Transmission Control Modules, the transmission part of the PCM has its own specific power and ground circuits.

POSSIBLE CAUSES
FUSED B+ CIRCUIT OPEN
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
TRANSMISSION CONTROL RELAY CONTROL CIRCUIT OPEN
TRANSMISSION CONTROL RELAY GROUND CIRCUIT OPEN
TRANSMISSION CONTROL RELAY STUCK OPEN
TRANSMISSION CONTROL RELAY CONTROL CIRCUIT SHORT TO GROUND
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT SHORT TO GROUND
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

P0888-RELAY OUTPUT ALWAYS OFF — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, Check the STARTS SINCE SET counter for P0888. **Note: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter equal to 0? Yes → Go To 3 No → Go To 11	All
3	Turn the ignition off to the lock position. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Using a 12-volt test light connected to ground, check the Fused B+ circuit in the Transmission Control Relay connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 4 No → Repair the Fused B+ circuit for an open. If the fuse is open make sure to check for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
4	Turn the ignition off to the lock position. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Transmission Control Relay ground circuit. Is the resistance above 5.0 ohms? Yes → Repair the Transmission Control Relay Ground circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All

P0888-RELAY OUTPUT ALWAYS OFF — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of all the Transmission Control Relay Output circuits between the Transmission Control Relay connector and the appropriate terminals of special tool #8815. Is the resistance above 5.0 ohms on either circuit? Yes → Repair the Transmission Control Relay Output circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Remove the Transmission Control Relay. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Transmission Control Relay Control circuit between the Transmission Control Relay connector and the appropriate terminal of special tool #8815. Is the resistance above 5.0 ohms? Yes → Repair the Transmission Control Relay Control circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the Transmission Control Relay Output circuit. Is the resistance below 5.0 ohms? Yes → Repair the Transmission Control Relay Output circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All

P0888-RELAY OUTPUT ALWAYS OFF — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the Transmission Control Relay Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the Transmission Control Relay Control circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit in the appropriate terminal of special tool #8815. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 10 No → Replace the Transmission Control Relay. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P0888-RELAY OUTPUT ALWAYS OFF — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0890-SWITCHED BATTERY

When Monitored and Set Condition:

P0890-SWITCHED BATTERY

When Monitored: When the ignition is turned from the ″off″ position to the ″run″ position and/or the ignition is turned from the ″crank″ position to the ″run″ position.

Set Condition: This DTC is set if the Transmission Control Module (TCM) senses voltage on any of the pressure switch inputs prior to the TCM energizing the relay. Note: Due to the integration of the Powertrain and Transmission Control Modules, the transmission part of the PCM has its own specific power and ground circuits.

POSSIBLE CAUSES
2/4 PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
L/R PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
OD PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0890-SWITCHED BATTERY — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, Check the STARTS SINCE SET counter for P0890. **Note: This counter only applies to the last DTC set.** Is the ″STARTS SINCE SET″ counter set at 0? Yes → Go To 3 No → Go To 7	All
3	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the OD Pressure Switch Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the OD Pressure Switch Sense circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the 2/4 Pressure Switch Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the 2/4 Pressure Switch Sense circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All

P0890-SWITCHED BATTERY — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the L/R Pressure Switch Sense circuit. Is the voltage above 0.5 volts? Yes → Repair the L/R Pressure Switch Sense circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
7	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0891-TRANSMISSION RLY ALWAYS ON

When Monitored and Set Condition:

P0891-TRANSMISSION RLY ALWAYS ON

When Monitored: When the ignition is turned from the ″off″ position to the ″run″ position and/or the ignition is turned from the ″crank″ position to the ″run″ position.

Set Condition: This DTC set if the Transmission Control Module (TCM) senses greater than 3 volts at the Transmission Control Relay Output circuits at the TCM prior to the TCM energizing the relay. Note: Due to the integration of the Powertrain and Transmission Control Modules, the transmission part of the PCM has its own specific power and ground circuits.

POSSIBLE CAUSES
TRANSMISSION CONTROL RELAY STUCK CLOSED
TRANSMISSION CONTROL RELAY CONTROL CIRCUIT SHORT TO VOLTAGE
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT SHORT TO VOLTAGE
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0891-TRANSMISSION RLY ALWAYS ON — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, Check the STARTS SINCE SET counter for P0891. **Note: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter equal to 0? Yes → Go To 3 No → Go To 7	All
3	Turn the ignition off to the lock position. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between the Fused B+ circuit and the Transmission Control Relay Output Circuit in the Transmission Control Relay. Is the resistance above 5.0 ohms? Yes → Go To 4 No → Replace the Transmission Control Relay. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
4	Turn the ignition off to the lock position. Remove the Transmission Control Relay. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage at the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Is the voltage above 0.5 volts? Yes → Repair the Transmission Control Relay Output circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off to the lock position. Remove the Transmission Control Relay. Ignition on, engine not running. **Note: Check connectors - Clean/repair as necessary.** Measure the voltage at the Transmission Control Relay Control circuit. Is the voltage above 0.5 volts? Yes → Repair the Transmission Control Relay Control circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All

P0891-TRANSMISSION RLY ALWAYS ON — Continued

TEST	ACTION	APPLICABILITY
6	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
7	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0897-WORN OUT/BURNT TRANSAXLE FLUID

When Monitored and Set Condition:

P0897-WORN OUT/BURNT TRANSAXLE FLUID

When Monitored: With each transition from full Torque Convertor to partial Torque Convertor engagement for A/C bump prevention.

Set Condition: When vehicle shudder is detected during partial engagement (PEMCC).

POSSIBLE CAUSES
WORN OUT/ BURNT TRANSAXLE FLUID

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0897-WORN OUT/BURNT TRANSAXLE FLUID — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off to the lock position. Flush the Transmission Oil Cooler and lines, replace the Transmission Oil Filter, refill with new Transmission Fluid, start the engine, and adjust the fluid per the Service Information. **Note: The Transmission Cooler must be flushed before prodceeding.** Allow the engine to idle for 10 minutes, in Park. Turn the ignition off to the lock position. Again, flush the Transmission Oil Cooler and lines, replace the Transmission Oil Filter, refill with new Transmission Fluid, start the engine, and adjust the fluid per the Service Information. With the DRBIII®, perform a Battery Disconnect. **NOTE: The Battery Disconnect must be done to re-enable EMCC during an A/C Clutch engagement.** **NOTE: The vehicle may exhibit intermittent shudder during the first few hundred miles. The new Transmission Fluid will gradually penetrate the Torque Convertor Clutch friction material and the shudder should disappear.** Erase the DTC and return the vehicle to the customer. Did the DTC reset and/or does the vehicle still shudder after a few thousand miles? Yes → Replace the Torque Converter per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0944-LOSS OF PRIME

When Monitored and Set Condition:

P0944-LOSS OF PRIME

When Monitored: If the transmission is slipping in any forward gear and the pressure switches are not indicating pressure, a loss of prime test is run.

Set Condition: If the Transmission begins to slip in a forward gear and the pressure switch(s) that should be closed are open, a loss of prime test begins. Available elements are turned on by the PCM to see if pump prime exists. The DTC sets if no pressure switches respond.

POSSIBLE CAUSES
SHIFT LEVER POSITION
PLUGGED TRANSMISSION OIL FILTER
TRANSMISSION OIL PUMP
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0944-LOSS OF PRIME — Continued

TEST	ACTION	APPLICABILITY
2	Place the gear selector in park. Start the engine. **NOTE: The TRANS TEMP DEG must be at least 43° C or 110° F before performing the following steps.** The Transmission must be at operating temperature prior to checking pressure. A cold Transmission will give higher readings. Place the Transmission in Reverse. With the DRBIII®, observe the Transmission Pressure Switch states. Are any of the Pressure Switches closed? Yes → Go To 3 No → Go To 5	All
3	The conditions necessary to set this DTC are not present at this time. Test drive the vehicle. Allow the Transmission to shift through all gears and ranges. Did you experience a delayed engagement and/or a no drive condition? Yes → Go To 5 No → Go To 4	All
4	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
5	With the DRBIII®, perform a Shift Lever Position test. Follow the instructions on the DRBIII®. Did the Shift Lever Position Test pass? Yes → Go To 6 No → Refer to symptom list and perform test for DTC P0706. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Remove and inspect the Transmission Oil Pan and Transmission Oil Filter per the Service Information. Does the Transmission Oil Pan contain excessive debris and/or is the Oil Filter plugged? Yes → Repair the cause of the plugged Transmission Oil Filter. Refer to the Service Information for the proper repair procedure. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0944-LOSS OF PRIME — Continued

TEST	ACTION	APPLICABILITY
7	If there are no possible causes remaining, view repair. Repair Replace the Transmission Oil Pump per the Service Information. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P0952-AUTOSTICK INPUT CIRCUIT LOW

When Monitored and Set Condition:

P0952-AUTOSTICK INPUT CIRCUIT LOW

When Monitored: The AutoStick circuit is checked every .007 seconds, with the ignition on, and in both AutoStick and non-AutoStick modes.

Set Condition: If either the monitored upshift or downshift switch voltages are reported closed in a non AutoStick mode or the monitored voltage drops below 0.3 volts.

POSSIBLE CAUSES
AUTOSTICK/OD OFF MUX INPUT CIRCUIT SHORT TO GROUND
AUTOSTICK SWITCH
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, Check the STARTS SINCE SET counter for P0952. **Note: This counter only applies to the last DTC set.** Is the Starts Since Set counter set at 0? Yes → Go To 3 No → Go To 6	All

P0952-AUTOSTICK INPUT CIRCUIT LOW — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the AutoStick/OD Switch harness connector. **NOTE: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the AutoStick/OD Off MUX Input circuit. Is the resistance below 5.0 ohms? Yes → Repair the AutoStick/OD Off MUX Input circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Replace the AutoStick Switch per the Service Information. Ignition on, engine not running. With the DRBIII®, erase Transmission DTCs. In AutoStick mode, perform multiple AutoStick upshifts and downshifts. With the DRBIII®, read Transmission DTCs. Does the DTC return? Yes → Go To 5 No → Test Complete. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
6	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0953-AUTOSTICK INPUT CIRCUIT HIGH

When Monitored and Set Condition:

P0953-AUTOSTICK INPUT CIRCUIT HIGH

When Monitored: The AutoStick circuit is checked every .007 seconds, with the ignition on, and in both AutoStick and non-AutoStick modes.

Set Condition: When the monitored circuit voltage rises above 4.8 volts.

POSSIBLE CAUSES
AUTOSTICK SWITCH GROUND CIRCUIT OPEN
AUTOSTICK/OD OFF MUX INPUT CIRCUIT OPEN
AUTOSTICK/OD OFF MUX INPUT CIRCUIT SHORT TO VOLTAGE
AUTOSTICK SWITCH
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, Check the STARTS SINCE SET counter for P0953. **Note: This counter only applies to the last DTC set.** Is the Starts Since Set counter set at 0? Yes → Go To 3 No → Go To 8	All

P0953-AUTOSTICK INPUT CIRCUIT HIGH — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the AutoStick/OD Switch harness connector. **NOTE: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the AutoStick/OD Off MUX Input circuit between the AutoStick/OD Switch harness connector and the PCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the AutoStick/OD Off MUX Input circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
4	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the AutoStick/OD Switch harness connector. **NOTE: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the ground circuit between the AutoStick/OD Switch harness connector and ground. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the AutoStick Switch Ground circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Autostick/OD switch harness connector. **NOTE: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the AutoStick/OD Off MUX Input circuit. Is the voltage above 0.5 volts? Yes → Repair the AutoStick/OD Off MUX Input circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All

P0953-AUTOSTICK INPUT CIRCUIT HIGH — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Replace the AutoStick Switch per the Service Information. Ignition on, engine not running. With the DRBIII®, erase Transmission DTCs. In AutoStick mode, perform multiple AutoStick upshifts and downshifts. With the DRBIII®, read Transmission DTCs. Does the DTC return? Yes → Go To 7 No → Test Complete. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
7	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
8	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P0992-2-4/OD HYDRAULIC PRESSURE TEST FAILURE

When Monitored and Set Condition:

P0992-2-4/OD HYDRAULIC PRESSURE TEST FAILURE

When Monitored: In any forward gear with engine speed above 1000 RPM shortly after a shift and every minute thereafter.

Set Condition: After a shift into a forward gear, with engine speed >1000 RPM, the PCM momentarily turns on element pressure to the clutch circuits that don't have pressure to identify the correct pressure switch closes. If the pressure switch does not close 2 times, the DTC sets.

POSSIBLE CAUSES
CONDITION P0992 PRESENT

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P0992-2-4/OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
2	**NOTE: The vehicle must be driven to set this DTC. The transmission must be warm or hot with the Engine RPM above 1000 RPM.** This DTC is an indication of both the 2/4 and the O/D Hydraulic Pressure Switch DTCs present. Perform diagnostics for both P0870 and P0845 to determine which switch is failing. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. If there are no possible causes remaining, view repair. Repair Refer to the Transmission category and perform the symptoms for P0845 and P0870. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P1652-SERIAL COMMUNICATION LINK MALFUNCTION

When Monitored and Set Condition:

P1652-SERIAL COMMUNICATION LINK MALFUNCTION

When Monitored: Continuously with engine running.

Set Condition: The DTC sets in approximately 20 seconds if no BUS messages are received by the TCM. Note: Due to the integration of the Powertrain and Transmission Control Modules, bus communication between the modules is internal.

POSSIBLE CAUSES
ENGINE COMMUNICATION DTCS PRESENT
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, read Engine DTC's. Are there any Engine Communication DTC's present? Yes → Refer to the Powertrain category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 2	All
2	With the DRBIII®, erase Transmission DTC's. Start the Engine in Park. With the DRBIII®, read Transmission DTCs. **NOTE: The Engine must run for at least 20 seconds to reset this DTC.** Did the DTC reset after the engine was started? Yes → Go To 3 No → Go To 4	All
3	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P1652-SERIAL COMMUNICATION LINK MALFUNCTION — Continued

TEST	ACTION	APPLICABILITY
4	The conditions necessary to set the DTC are not present at this time. Make sure to check for any Communication DTCs or customer concerns of possible bus problems. This includes any other controllers on the bus on this vehicle. If there is a bus problem refer to the Communication Category for diagnosis. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P1684-BATTERY WAS DISCONNECTED

When Monitored and Set Condition:

P1684-BATTERY WAS DISCONNECTED

When Monitored: Whenever the ignition is in the Run/Start position.

Set Condition: This DTC is set whenever the Transmission Control Module (TCM) is disconnected from battery power (B+) or ground. It will also be set during the DRBIII® Quick Battery Disconnect procedure. Note: Due to the integration of the Powertrain and Transmission Control Modules, the transmission part of the PCM has its own specific power and ground circuits.

POSSIBLE CAUSES
BATTERY WAS DISCONNECTED
PCM WAS REPLACED OR DISCONNECTED
QUICK LEARN WAS PERFORMED
FUSED B+ CIRCUIT TO TCM OPEN
GROUND CIRCUIT OPEN
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P1684-BATTERY WAS DISCONNECTED — Continued

TEST	ACTION	APPLICABILITY
2	Has the battery been disconnected, lost it's charge, or been replaced recently? Yes → Disconnecting or replacing the battery will set this DTC. Erase the DTC. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	Has a Quick Learn procedure been performed? Yes → Performing Quick Learn will set this DTC. Erase the DTC. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Has the PCM been replaced or disconnected? Yes → Replacing or disconnecting the PCM will set this DTC. Erase the DTC. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off to the lock position. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Using a 12-volt test light connected to ground, check the Fused B+ circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 6 No → Repair the Fused B+ circuit for an open. If the fuse is open make sure to check for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P1684-BATTERY WAS DISCONNECTED — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the PCM harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Using a 12-volt test light connected to 12-volts, check the Ground circuits in the appropriate terminal of special tool #8815. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly for all the ground circuits? Yes → Go To 7 No → Repair the Ground circuits for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
7	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P1687-NO COMMUNICATION WITH THE MIC

When Monitored and Set Condition:

P1687-NO COMMUNICATION WITH THE MIC

When Monitored: Continuously with engine running.

Set Condition: The DTC sets in approximately 25 seconds if no BUS messages are received form the MIC.

POSSIBLE CAUSES
OTHER BUS PROBLEMS PRESENT
MIC - NO COMMUNICATION
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, Check the STARTS SINCE SET counter for P1687. **Note: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter set to zero? Yes → Go To 3 No → Go To 6	All

P1687-NO COMMUNICATION WITH THE MIC — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII®, check all of the other modules on the vehicle for evidence of a vehicle bus problem. Bus related DTC's in other modules point to an overall vehicle bus problem. Other symptoms such as a customer complaint of intermittent operation of bus controlled features also indicate a bus problem. Does the PRNDL display indicate ″No Bus″ or is there any evidence of an overall vehicle bus problem? Yes → Refer to the Communications category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Ignition on, engine not running. With the DRBIII®, clear all DTC's. Start the engine in park. **NOTE: May take up to 30 seconds of a consistent fault to set this DTC.** With the DRBIII®, read the BCM DTC's. Does the Body Control Module have a ″MIC MESSAGES NOT RECEIVED″ DTC? Yes → Refer to the Communications category and perform test for ″MIC MESSAGES NOT RECEIVED″. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Ignition on, engine not running. With the DRBIII®, erase Transmission DTC's. Start the engine in park. With the DRBIII®, read Transmission DTC's. Is the DTC ″P1687 NO COMMUNICATION WITH THE MIC″ present? Yes → Replace the Powertrain Control Module. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
6	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wiring and connectors while checking for shorts and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P1694-BUS COMMUNICATION WITH ENGINE MODULE

When Monitored and Set Condition:

P1694-BUS COMMUNICATION WITH ENGINE MODULE

When Monitored: Continuously with ignition key on.

Set Condition: If no bus messages are received from the Powertrain Control Module (PCM) for 10 seconds. Note: Due to the integration of the Powertrain and Transmission Control Modules, bus communication between the modules is internal.

POSSIBLE CAUSES
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase Transmission DTC's. Start the Engine in Park. With the DRBIII®, read Transmission DTCs. **NOTE: The Engine must run for at least 20 seconds to reset this DTC.** Did the DTC reset after the engine was started? Yes → Go To 2 No → Go To 3	All
2	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
3	The conditions necessary to set the DTC are not present at this time. Make sure to check for any Communication DTCs or customer concerns of possible bus problems. This includes any other controllers on the bus on this vehicle. If there is a bus problem refer to the Communication Category for diagnosis. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION

When Monitored and Set Condition:

P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION

When Monitored: During an attempted shift into 1st gear.

Set Condition: This DTC is set if three unsuccessful attempts are made to get into 1st gear in one given ignition start.

POSSIBLE CAUSES
RELATED DTC P0841 PRESENT
INTERMITTENT WIRING AND CONNECTORS
L/R PRESSURE SWITCH SENSE CIRCUIT OPEN
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
L/R PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
L/R PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
INTERNAL TRANSMISSION
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other Transmission DTC's Is the DTC P0841 present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter for P1775. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the Transmission Simulator, turn the Pressure Switch selector switch to L/R. With the DRBIII®, monitor the L/R Pressure Switch State while pressing the Pressure Switch Test button. Did the Pressure Switch state change from open to closed when the test button was pressed? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Repair internal transmission as necessary per the Service Information. Inspect the Solenoid Switch Valve per the Service Information and repair or replace as necessary. If no problems are found, replace the Transmission Solenoid/Pressure Switch Assembly. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the L/R Pressure Switch Sense circuit from the appropriate terminal of special tool #8815 to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the L/R Pressure Switch Sense circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the L/R Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the L/R Pressure Switch Sense circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the voltage of the L/R Pressure Switch Sense circuit. Is the voltage above 0.5 volts? Yes → Repair the L/R Pressure Switch Sense circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All

P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Disconnect the PCM C4 harness connector. Using a 12-volt test light connected to ground, check all three Transmission Control Relay Output circuits in the appropriate terminals of special tool #8815. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly on all three output circuits? Yes → Repair the Transmission Control Relay Output circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
11	The conditions necessary to set this DTC are not present at this time. Test drive and verify if the transmission is launching in 2nd gear and/or no TCC engagement. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Are there 2nd gear launches and/or no TCC engagement? Yes → Disassemble and inspect the Valve Body per the Service Information and repair or replace as necessary. If no problems are found in the Valve Body, replace the Transmission Solenoid Pressure Switch Assembly. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION

When Monitored and Set Condition:

P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION

When Monitored: Continuously when doing partial or full EMCC (PEMCC or FEMCC).

Set Condition: If the PCM senses the L/R Pressure Switch closing while performing PEMCC or FEMCC. This DTC will be set after two unsuccessful attempts to perform PEMCC or FEMCC.

POSSIBLE CAUSES
RELATED DTC P0841 PRESENT
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
L/R PRESSURE SWITCH SENSE CIRCUIT OPEN
L/R PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
L/R PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
INTERNAL TRANSMISSION
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other transmission DTC's Is the DTC P0841 present also? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, Check the STARTS SINCE SET counter for P1776. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 4 No → Go To 11	All
4	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the Transmission Simulator, turn the Pressure Switch selector switch to L/R. With the DRBIII® monitor the L/R Pressure Switch State while pressing the Pressure Switch Test button on the Transmission Simulator. Did the Pressure Switch state change from open to closed when test button was pressed? Yes → Go To 5 No → Go To 6	All
5	If there are no possible causes remaining, view repair. Repair Repair Internal Transmission as necessary. Inspect the Solenoid Switch Valve per the Service Information and repair or replace as necessary. If no problems are found, replace the Transmission Solenoid/Pressure Switch Assembly. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit in the Solenoid/Pressure Switch Assembly harness connector. **NOTE: The Test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 7 No → Repair the Transmission Control Relay Output circuit for an open. If the fuse is open make sure to check for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
7	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the L/R Pressure Switch Sense circuit from the Pinout Box to the Transmission Solenoid/Pressure Switch Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the L/R Pressure Switch Sense circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the L/R Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the L/R Pressure Switch Sense circuit for a short to ground. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All

P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Transmission Solenoid/Pressure Switch Assembly harness connector. Remove the Transmission Control Relay. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Connect a jumper wire between the Fused B+ circuit and Transmission Control Relay Output circuit. Ignition on, engine not running. Measure the voltage of the L/R Pressure Switch Sense circuit. Is the voltage above 0.5 volt? Yes → Repair the L/R Pressure Switch Sense circuit for a short to voltage. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All
11	The conditions necessary to set this DTC are not present at this time. Test Drive and verify if the transmission is launching in 2nd gear and/or no TCC engagement. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Are there 2nd gear launches and/or no TCC engagement? Yes → Disassemble and inspect the Valve Body per the Service Information and repair or replace as necessary. If no problems are found in the Valve Body, replace the Transmission Solenoid Pressure Switch Assembly. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
P1790-FAULT IMMEDIATELY AFTER SHIFT

When Monitored and Set Condition:

P1790-FAULT IMMEDIATELY AFTER SHIFT

When Monitored: After a speed ratio error is stored.

Set Condition: This DTC is set if the associated speed ratio DTC is stored within 1.3 seconds after a shift.

POSSIBLE CAUSES
FAULT AFTER SHIFT

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	This test is set along with a gear ratio DTC. Perform the appropriate test for the Gear Ratio DTC stored. **NOTE: Check 1 trip failures if there are no gear ratio DTCs current.** If there are no possible causes remaining, view repair. Repair Refer to the Transmission category and perform the appropriate symptom. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P1793-TRD LINK COMMUNICATION ERROR

When Monitored and Set Condition:

P1793-TRD LINK COMMUNICATION ERROR

When Monitored: The Transmission Control Module (TCM) pulses the 12 volt TRD signal from the Powertrain Control Module (PCM) to ground, during torque managed shifts with the throttle angle above 54 degrees. The TRD system is also tested whenever the vehicle is stopped and the engine speed is at idle.

Set Condition: This DTC is set when the Transmission Control Module (TCM) sends two subsequent torque reduction messages to the Powertrain Control Module (PCM) and does not receive a confirmation from the PCM. Note: Due to the integration of the Powertrain and Transmission Control Modules, bus communication between the modules is internal.

POSSIBLE CAUSES
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	**NOTE: Due to the integration of the Engine and Transmission controllers into one module, the TRD bus messages are sent over a internal bus circuit.** View repair. Repair Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P1794-SPEED SENSOR GROUND ERROR

When Monitored and Set Condition:

P1794-SPEED SENSOR GROUND ERROR

When Monitored: The transmission gear ratio is monitored continuously while the transmission is in gear.

Set Condition: After a PCM reset in neutral and Input/Output Ratio equals a ratio of 2.50 to 1.0 ± 50.0 RPM.

POSSIBLE CAUSES
SPEED SENSOR GROUND CIRCUIT OPEN
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P1794-SPEED SENSOR GROUND ERROR — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off to the lock position. Remove the Starter Relay. **CAUTION: Removal of the Starter Relay is to prevent a Transmission, NO RESPONSE, condition and disable the starter.** Install the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A. Ignition on, engine not running. With the Transmission Simulator, set the ″Input/Output Speed″ switch to ″ON″ and the rotary switch to the ″3000/1250″ position. With the DRBIII®, monitor the Input and Output Speed Sensor readings. Does the Input Speed read 3000 RPM and the Output Speed read 1250 RPM, ± 50 RPM? Yes → Go To 3 No → Go To 4	All
3	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorted and open circuits. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All
4	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the Input and Output Speed Sensor harness connectors. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Speed Sensor Ground circuit from the appropriate terminal of special tool #8815 to the Input and Output Speed Sensor harness connectors. Is the resistance above 5.0 ohms on either circuit? Yes → Repair the Speed Sensor Ground circuit for an open. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P1797-MANUAL SHIFT OVERHEAT

When Monitored and Set Condition:

P1797-MANUAL SHIFT OVERHEAT

When Monitored: Whenever the engine is running and transmission is in the AutoStick® mode.

Set Condition: If the Engine Temperature exceeds 123° C or 255° F, or the Transmission Temperature exceeds 135° C or 275° F while in AutoStick® mode. Note: Aggressive driving or driving in low for extended periods of time in AutoStick® mode will set this DTC.

POSSIBLE CAUSES
MANUAL SHIFT OVERHEAT

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read Engine DTC's. Check and repair all Engine DTC's prior to performing any transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **NOTE: Verify flash level of Powertrain Control Module. Some problems are corrected by software upgrades to the Transmission and Engine software.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All

P1797-MANUAL SHIFT OVERHEAT — Continued

TEST	ACTION	APPLICABILITY
2	This is an informational DTC only. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Check the engine and transmission cooling system for proper operation. Check the Radiator Cooling Fan operation. Check the Transmission Cooling Fan operation if equipped. Check the Transmission Fluid Level per the Service Information. Make sure it is not overfilled. **NOTE: Aggressive driving or driving in low for extended periods of time in AutoStick mode will set this DTC.** If there are no possible causes remaining, view repair. Repair If the Transmission Fluid is low, repair any Transmission Fluid leak as necessary and adjust the Transmission Fluid Level per the Service Information. Refer to Service Information for the related symptoms and repair as necessary. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

*CHECKING PARK/NEUTRAL SWITCH OPERATION

POSSIBLE CAUSES
P/N POSITION SWITCH SENSE CIRCUIT OPEN
P/N POSITION SWITCH SENSE CIRCUIT SHORT TO GROUND
TRANSMISSION RANGE SENSOR
POWERTRAIN CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, monitor the Park/Neutral Position Switch input state. Move the gear selector through all gear positions, Park to 1 and back to Park. Did the DRBIII® display show P/N and D/R in the correct gear positions? Yes → Test Complete. No → Go To 2	All
2	Turn the ignition off to the lock position. Disconnect the PCM harness connectors. Disconnect the TRS harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the P/N Position Switch Sense circuit from the appropriate terminal of special tool #8815 to the Transmission Range Sensor harness connector. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Repair the P/N Position Switch Sense circuit for an open.	All
3	Turn the ignition off to the lock position. Disconnect the PCM harness connectors. Disconnect the TRS harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance between ground and the P/N Position Switch Sense circuit. Is the resistance above 100 kohms? Yes → Go To 4 No → Repair the P/N Position Switch Sense circuit for a short to ground.	All

*CHECKING PARK/NEUTRAL SWITCH OPERATION — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off to the lock position. Disconnect the PCM harness connectors. Move the Gear selector through all gear positions, from Park to 1st and back. While moving the gear selector through each gear, measure the resistance between ground and the P/N Position Switch Sense circuit in the appropriate terminal of special tool #8815. **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Did the resistance change from above 10.0 ohms to below 10.0 ohms? Yes → Go To 5 No → Replace the Transmission Range Sensor per the Service Information.	All
5	Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits. If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module per the Service Information.	All

Symptom:
*NO MANUAL AUTOSTICK OPERATION

POSSIBLE CAUSES
AUTOSTICK® DOWNSHIFT SENSE CIRCUIT OPEN
AUTOSTICK® GROUND CIRCUIT OPEN
AUTOSTICK® UPSHIFT SENSE CIRCUIT OPEN
FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
PCM - AUTOSTICK®

TEST	ACTION	APPLICABILITY
1	Turn the ignition off to the lock position. Disconnect the AutoStick® Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Measure the voltage of the Fused Ignition Switch Output circuit in the AutoStick® Switch harness connector. Is the voltage above 10.0 volts? Yes → Go To 2 No → Repair the Fused Ignition Switch Output circuit for an open.	All
2	Turn the ignition off to the lock position. Disconnect the AutoStick® Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the AutoStick® Ground circuit at the AutoStick® harness connector. Is the resistance above 5.0 ohms? Yes → Repair the AutoStick® Ground circuit for an open. No → Go To 3	All
3	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the AutoStick® Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Upshift Sense circuit between the Pinout Box and the AutoStick® Switch harness connector. Is the resistance above 5.0 ohms? Yes → Repair the AutoStick® Upshift Sense circuit for an open. No → Go To 4	All

*NO MANUAL AUTOSTICK OPERATION — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the AutoStick® Switch harness connector. **Note: Check connectors - Clean/repair as necessary.** **CAUTION: DO NOT PROBE THE PCM HARNESS CONNECTORS. PROBING THE PCM HARNESS CONNECTORS WILL DAMAGE THE PCM TERMINALS RESULTING IN POOR TERMINAL TO PIN CONNECTION. INSTALL MILLER SPECIAL TOOL #8815 TO PERFORM DIAGNOSIS.** Measure the resistance of the Downshift Sense circuit between the Pinout Box and the AutoStick® Switch harness connector. Is the resistance above 5.0 ohms? Yes → Repair the AutoStick® Downshift Sense circuit for an open. No → Go To 5	All
5	Ignition on, engine not running. With the DRBIII® monitor the AutoStick® Switch status. Firmly apply the brake and shift into AutoStick®. Push the shift lever to the right several times to actuate the AutoStick® Upshift Switch and then to the left several times to actuate the AutoStick® Downshift Switch. Do both AutoStick® Upshift and Downshift Switch states toggle? Yes → Test Complete. No → Replace the Powertrain Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR.	All

Symptom:
*PRNDL FAULT CLEARING PROCEDURE

POSSIBLE CAUSES
PRNDL FAULT CLEARING PROCEDURE .

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, erase Transmission DTCs. Cycle the ignition off, then start the vehicle. Firmly apply the brakes and shift into Overdrive. **NOTE: Vehicle must remain in Overdrive for at least 3.0 seconds.** With the brakes firmly applied, shift slowly through all gears (PRNDL) as least three times, pausing momentarily in each gear. **NOTE: If all the PRNDL lights box individually then the error was cleared.** Shift into park and turn the ignition off to the lock position. Ignition on, engine not running. With the DRBIII®, read Transmission DTCs. Does the DTC P0706 reset, or do all the PRNDL indicators remain boxed in park or neutral? Yes → Return to the symptom list and perform diagnostics for P0706 CHECK SHIFTER SIGNAL. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete. Perform 41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
*TRANSMISSION NOISY WITH NO DTC'S PRESENT

POSSIBLE CAUSES
INTERNAL TRANSMISSION PROBLEM - NOISY
INTERNAL TRANSMISSION PROBLEM - NOISY WHILE STANDING STILL

TEST	ACTION	APPLICABILITY
1	Check and adjust the oil level per the Service Information before continuing. Place vehicle on hoist. Run vehicle on hoist under conditions necessary to duplicate the noise. **CAUTION: BE SURE TO KEEP HANDS AND FEET CLEAR OF ROTATING WHEELS.** Using Chassis Ears or other suitable device, verify that the noise is coming from the transmission. Is the noise coming from the transmission? Yes → Go To 2 No → Test Complete.	All
2	With the shift lever in neutral, raise the engine speed and listen to the noise. **NOTE: THE RADIO MUST BE TURNED OFF. Alternator noise can come through the speakers and be misinterpreted as Transmission Pump Whine. This can happen even with the volume turned down.** Does the noise get louder or change pitch while the engine speed is changing? Yes → Go To 3 No → Go To 4	All
3	If there are no possible causes remaining, view repair. Repair Repair internal transmission problem as necessary. Inspect all of the transmission components for signs of wear. If no problems found, replace the Transmission Oil pump.	All
4	If there are no possible causes remaining, view repair. Repair Repair internal transmission problem as necessary. Inspect all of the transmission components for signs of wear. Pay particular attention to bearings, pinion gears, etc. Repair or replace as necessary.	All

Symptom:

*TRANSMISSION SHIFTS EARLY WITH NO DTC'S

POSSIBLE CAUSES
VEHICLE BUS PROBLEMS
CHECK FOR INTERMITTENT WIRING & CONNECTORS
COLD TRANSMISSION

TEST	ACTION	APPLICABILITY
1	Using the DRBIII®, check all other Modules for signs of a PCI bus problem such as bus related DTC's and/or communication problems. Check and diagnose all 1 trip failures as a hard code. Although it takes two occurences of a missed TRD link message to set the DTC P1793, one missed message will cause the transmission to short shift until the next start up. If the vehicle has any indications of a bus problem, the bus must be repaired first Do any of the other modules show signs of a bus problem? Yes → Refer to the Communication category and perform the appropriate diagnostics. No → Go To 2	All
2	The conditions necessary to set the DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Although it takes two occurences of a missed TRD link message to set the DTC P1793, one missed message will cause the transmission to short shift until the next start up. If the vehicle has any indications of a bus problem, the bus must be repaired first Were there any problems found? Yes → Repair as necessary. No → Go To 3	All
3	If the transmission shifts too early when the transmission is cold, this is a normal condition. The software is designed to protect the transmission from high torque and/or high RPM shifts during cold operation. Did the problem occur when the transmission temperature was cold? Yes → This is a normal condition. The software is designed to protect the transmission from high torque and/or high RPM shifts during cold operation. No → Test Complete.	All

Symptom:

***TRANSMISSION SIMULATOR 8333 WILL NOT POWER UP**

POSSIBLE CAUSES
TRANSMISSION SIMULATOR WILL NOT POWER UP

TEST	ACTION	APPLICABILITY
1	**NOTE: Make sure to check for any Transmission Control Relay DTCs. or conditions. A stuck open Transmission Control Relay can cause the Transmission Simulator to not Power up.** **NOTE: If the Transmission Simulator, Miller tool #8333 and the Electronic Transmission Adapter kit 8333-1A will not power up make sure to check all connectors and the ground cable for proper installation.** If there are no possible causes remaining, view repair. Repair Check and repair these symptoms before having the Transmission Simulator repaired.	All

Verification Tests

41TE (NGC) TRANSMISSION VERIFICATION TEST - VER 1	APPLICABILITY
1. NOTE: After completion of the Transmission Verification Test, the Powertrain Verification Test must be performed. Refer to the Powertrain Category. 2. Connect the DRBIII® to the Data Link Connector (DLC). 3. Reconnect any disconnected components. 4. With the DRBIII®, erase all Transmission DTC's, also erase the PCM DTC's. 5. Perform *PRNDL FAULT CLEARING PROCEDURE after completion of repairs for P0706 CHECK SHIFTER SIGNAL. 6. With the DRBIII®, display Transmission Temperature. Start and run the engine until the Transmission Temperature is HOT, above 43° C or 110° F. 7. Check the transmission fluid and adjust if necessary. Refer to the Service Information for the Fluid Fill procedure. **8. NOTE: If the Transmission Control Module or Torque Converter has been replaced or if the Transmission has been repaired or replaced it is necessary to perform the DRBIII® Quick Learn Procedure and reset the "Pinion Factor"** 9. Road test the vehicle. With the DRBIII®, monitor the engine RPM. Make 15 to 20 1-2, 2-3, 3-4 upshifts. Perform these shifts from a standing start to 45 MPH with a constant throttle opening of 20 to 25 degrees. 10. Below 25 MPH, make 5 to 8 wide open throttle kickdowns to 1st gear. Allow at least 5 seconds each in 2nd and 3rd gear between each kickdown. 11. For a specific DTC, drive the vehicle to the Symptom's When Monitored/When Set conditions to verify the DTC is repaired. 12. If equipped with AutoStick®, upshift and downshift several times using the AutoStick® feature during the road test. **13. NOTE: Use the EATX OBDII task manager to run Good Trip time in each gear, this will confirm the repair and to ensure that the DTC has not re-matured.** 14. Check for Diagnostic Trouble Codes (DTC's) during the road test. If a DTC sets during the road test , return to the Symptom list and perform the appropriate symptom. **15. NOTE: Erase P0700 DTC in the PCM to turn the MIL light off after making transmission repairs.** Were there any Diagnostic Trouble Codes set during the road test? Yes → Repair is not complete, refer to the appropriate symptom. No → Repair is complete.	All

Verification Tests — Continued

41TE TRANSMISSION VERIFICATION TEST - VER 1	APPLICABILITY
1. Connect the DRBIII® to the Data Link Connector (DLC). 2. Reconnect any disconnected components. 3. With the DRBIII®, erase all Transmission DTC's, also erase the PCM DTC's. 4. Perform *PRNDL FAULT CLEARING PROCEDURE after completion of repairs for P0706 CHECK SHIFTER SIGNAL. **5. NOTE: Erase DTC P0700 in the PCM to turn the Malfunction Indicator Lamp (MIL) off after making Transmission repairs.** 6. With the DRBIII®, display Transmission Temperature. Start and run the engine until the Transmission Temperature is HOT - above 43° C or 110° F. 7. Check the Transmission Fluid and adjust if necessary. Refer to the Service information for the Fluid Fill procedure. **8. NOTE: If the Transmission Control Module or the Transmission has been repaired or replaced it is necessary to perform the DRBIII® Quick Learn Procedure and reset the "Pinion Factor"** 9. Road test the vehicle. With the DRBIII®, monitor the engine RPM. Make 15 to 20 1-2, 2-3, 3-4 upshifts. Perform these shifts from a standing start to 45 MPH with a constant throttle opening of 20 to 25 degrees. 10. Below 25 MPH, make 5 to 8 wide open throttle kickdowns to 1st gear. Allow at least 5 seconds each in 2nd and 3rd gear between each kickdown. 11. For a specific DTC, drive the vehicle to the Symptom's When Monitored/When Set conditions to verify the DTC repair. 12. If equipped with AutoStick®, up-shift and down-shift several times using the AutoStick® feature during the road test. **13. NOTE: Use the EATX OBDII Task Manager to run Good Trip time in each gear, this will confirm the repair and to ensure that the DTC has not re-matured.** 14. Check for Diagnostic Trouble Codes (DTC's) during the road test. If a DTC sets during the road test , return to the Symptom list and perform the appropriate Symptom. Were there any Diagnostic Trouble Codes (DTCs) set during the road test? Yes → Refer to the Symptom List for appropriate Symptom(s). No → Repair is complete.	All

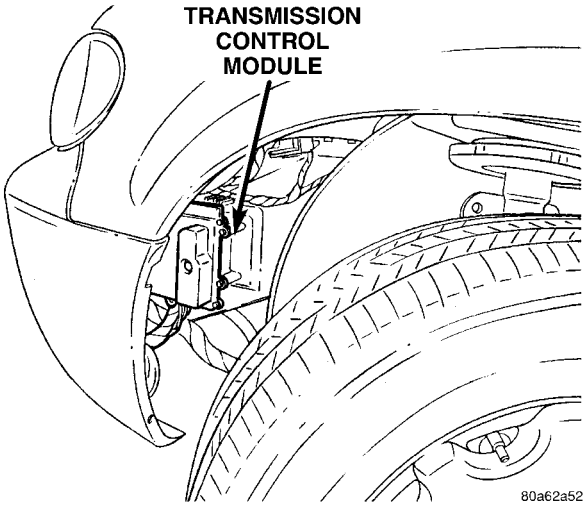
Verification Tests — Continued

POWERTRAIN VERIFICATION TEST VER - 2	APPLICABILITY
1. NOTE: If the PCM has been replaced and the correct VIN and mileage have not been programmed, a DTC will be set in the ABS Module, Airbag Module and the SKIM. **2. NOTE: If the vehicle is equipped with a Sentry Key Immobilizer System, Secret Key data must be updated. Refer to the Service Information for the PCM, SKIM and the Transponder (ignition key) for programming information.** 3. Inspect the vehicle to ensure that all components related to the repair are connected properly. 4. With the DRBIII®, clear DTCs and Reset Memory all engine values. 5. Run the engine for one warm-up cycle to verify proper operation. 6. Road test the vehicle. Use all accessories that may be related to this repair. 7. With the DRBIII®, confirm that no DTC's or Secondary Indicators are present and that all components are functioning properly. 8. If this test is being performed after a No Trouble Code test, verify the symptom is no longer present. 9. If the symptom is still present, or any other symptom or DTC is present refer to the appropriate category and perform the corresponding symptom. 10. Refer to any Technical Service Bulletins that may apply. 11. If there are no DTCs present and all components are functional properly, the repair is complete. Are any DTCs present? Yes → Repair is not complete, refer to appropriate symptom. No → Repair is complete.	All

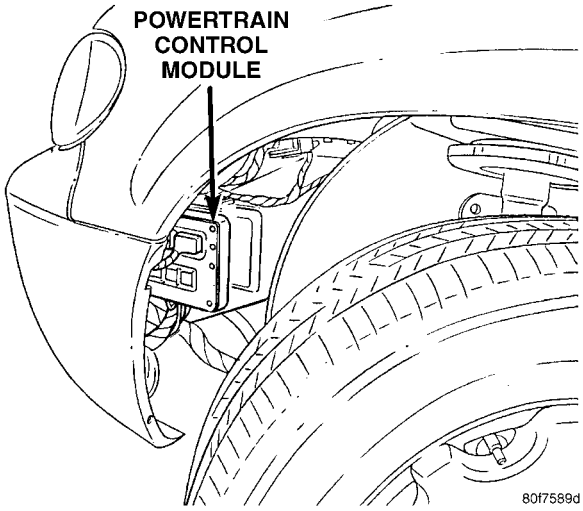
8.0 COMPONENT LOCATIONS

8.1 CONTROL MODULE LOCATIONS

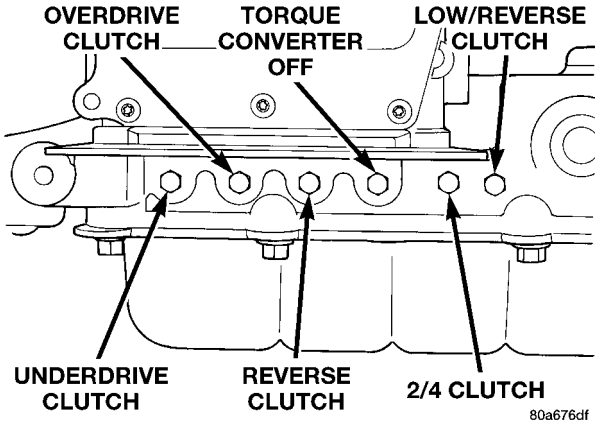
EATX



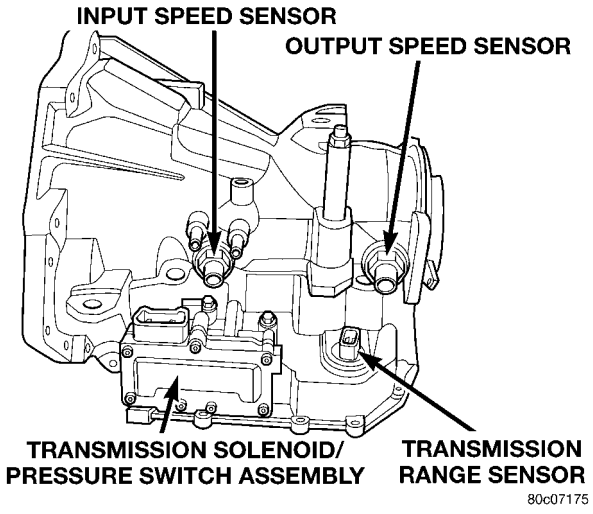
NGC



8.2 PRESSURE PORT LOCATIONS

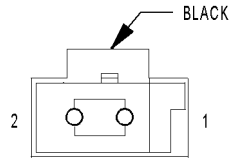


8.3 TRANSMISSION COMPONENT LOCATIONS



NOTES

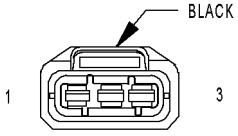
9.0 CONNECTOR PINOUTS



AUTOSTICK SWITCH (EXCEPT EXPORT)

AUTOSTICK SWITCH (EXCEPT EXPORT)

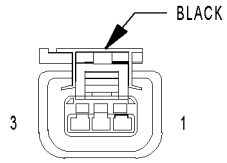
CAV	CIRCUIT	FUNCTION
1	T55 20YL/VT	AUTOSTICK/OVERDRIVE OFF MUX INPUT
2	Z65 20BK/YL	GROUND



CRANKSHAFT POSITION SENSOR (DIESEL)

CRANKSHAFT POSITION SENSOR (DIESEL)

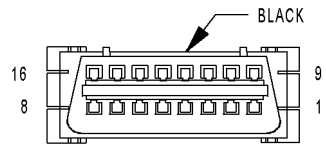
CAV	CIRCUIT	FUNCTION
1	Z122 18WT	GROUND (DRAIN)
2	K3 20BR/OR	CRANKSHAFT POSITION SENSOR SIGNAL NO. 1
3	K24 20BR/LB	CRANKSHAFT POSITION SENSOR SIGNAL NO. 2



CRANKSHAFT POSITION SENSOR (GAS)

CRANKSHAFT POSITION SENSOR (GAS)

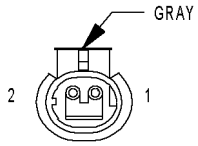
CAV	CIRCUIT	FUNCTION
1	F888 18BR/PK (3.3L/3.8L)	8 VOLT SUPPLY
1	F855 20PK/YL (2.4L)	5 VOLT SUPPLY
2	K900 18DB/DG (3.3L/3.8L)	SENSOR GROUND
2	K900 20DB/DG (2.4L)	SENSOR GROUND
3	K24 18BR/LB (2.4L)	CKP SIGNAL
3	K24 18BR/LB (3.3L/3.8L)	CRANKSHAFT POSITION SENSOR SIGNAL



DATA LINK CONNECTOR

DATA LINK CONNECTOR

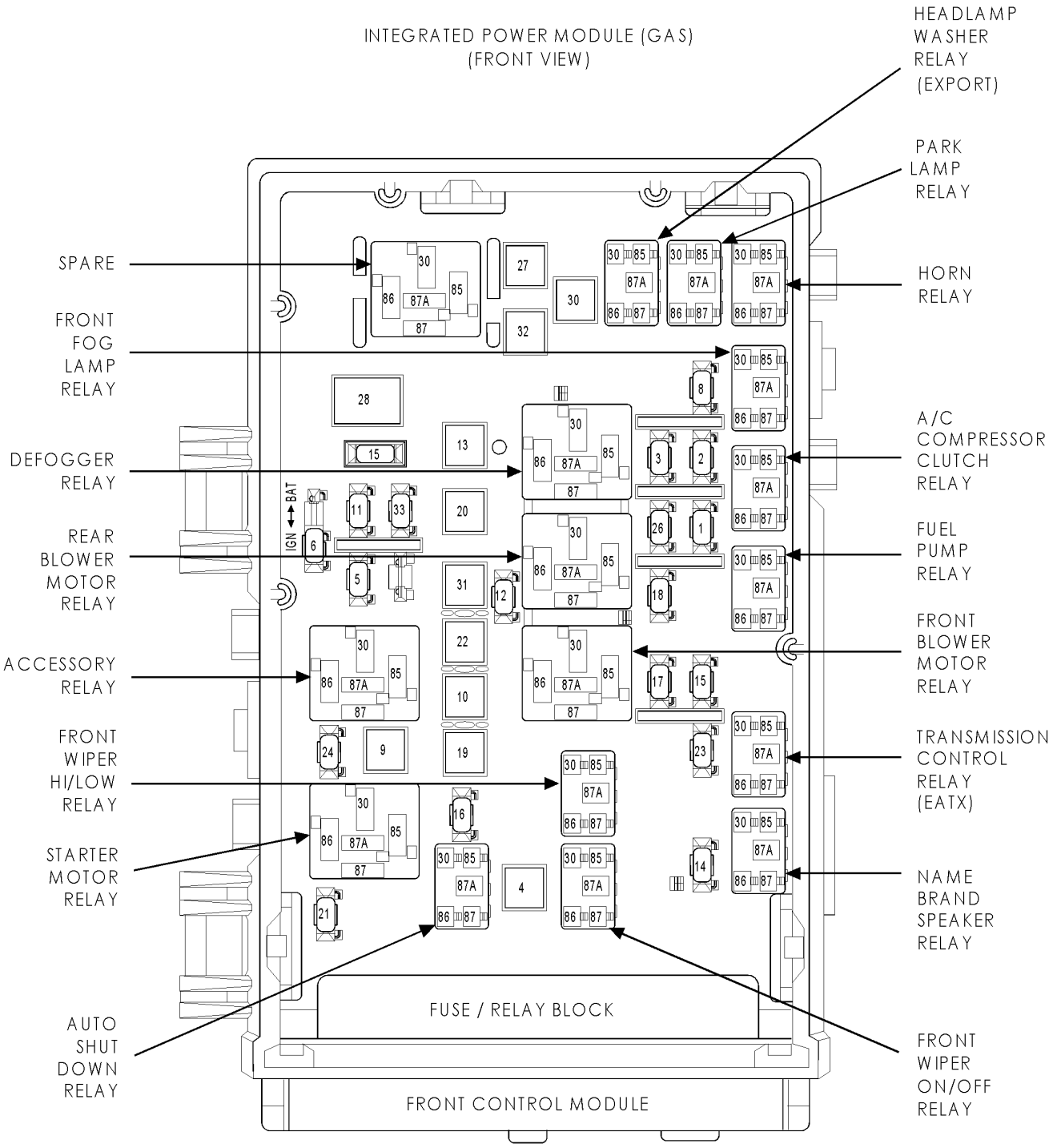
CAV	CIRCUIT	FUNCTION
1	-	-
2	D25 20WT/VT	PCI BUS
3	-	-
4	Z11 18BK/LG	GROUND
5	Z111 18BK/WT	GROUND
6	-	-
7	D21 20WT/DG (GAS)	SCI TRANSMIT (PCM)
7	D21 20WT/DG (DIESEL)	SCI TRANSMIT (ECM)
8	-	-
9	D123 20WT/BR	FLASH PROGRAM ENABLE
10	-	-
11	-	-
12	D20 20WT/LG (GAS)	SCI RECEIVE (PCM)
13	-	-
14	-	
15	D15 20DG/YL (GAS)	SCI TRANSMIT (TCM)
16	A105 20DB/RD	FUSED B(+)



INPUT SPEED SENSOR (EATX)

INPUT SPEED SENSOR (EATX)

CAV	CIRCUIT	FUNCTION
1	T13 18DG/VT	SPEED SENSOR GROUND
2	T52 18DG/WT	INPUT SPEED SENSOR SIGNAL

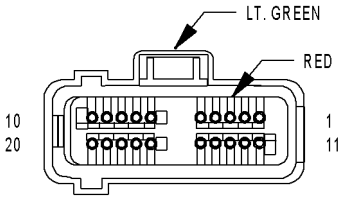

INTEGRATED POWER MODULE (GAS)
(FRONT VIEW)
HEADLAMP WASHER RELAY (EXPORT)
PARK LAMP RELAY
SPARE
HORN RELAY
FRONT FOG LAMP RELAY
A/C COMPRESSOR CLUTCH RELAY
DEFOGGER RELAY
FUEL PUMP RELAY
REAR BLOWER MOTOR RELAY
FRONT BLOWER MOTOR RELAY
ACCESSORY RELAY
TRANSMISSION CONTROL RELAY (EATX)
FRONT WIPER HI/LOW RELAY
NAME BRAND SPEAKER RELAY
STARTER MOTOR RELAY
FRONT WIPER ON/OFF RELAY
AUTO SHUT DOWN RELAY
IGN BAT
FUSE / RELAY BLOCK
FRONT CONTROL MODULE

FUSES (IPM)

FUSE NO.	AMPS	FUSED CIRCUIT	FUNCTION
1	20A	INTERNAL	FUSED B(+)
2	15A	INTERNAL	FUSED PARK LAMP RELAY OUTPUT
3	15A	INTERNAL	FUSED PARK LAMP RELAY OUTPUT
4	30A	INTERNAL	FUSED B(+)
5	20A	F306 16DB/PK	FUSED ACCESSORY RELAY OUTPUT
6	20A	F307 16LB/PK (BATTERY POSITION)	FUSED B(+)
6	20A	F307 16LB/PK (ACCESSORY RELAY POSITION)	FUSED ACCESSORY RELAY OUTPUT
8	20A	INTERNAL	FUSED B(+)
9	40A	INTERNAL	FUSED B(+)
10	40A	C7 12DB	FUSED FRONT BLOWER MOTOR RELAY OUTPUT
11	20A	F302 18GY/PK	FUSED ACCESSORY RELAY OUTPUT
12	25A	C51 12LB/BR	FUSED REAR BLOWER MOTOR RELAY OUTPUT
13	40A	C15 12DB/WT	FUSED REAR WINDOW DEFOGGER RELAY OUTPUT
14	15A	INTERNAL	FUSED B(+) (I.O.D.)
15	20A	INTERNAL (EATX)	FUSED B(+)
15	20A	INTERNAL (DIESEL)	FUSED B(+)
16	25A	INTERNAL	FUSED B(+)
17	20A	INTERNAL	FUSED B(+)
18	15A	INTERNAL	FUSED B(+)
19	40A	A101 12VT/RD	FUSED B(+)
20	40A	A102 12WT/RD	FUSED B(+)
21	25A	A111 12DG/RD	FUSED B(+)
22	40A	A110 12OR/RD	FUSED B(+)
23	10A	A106 20LB/RD	FUSED B(+)
24	20A	A701 16BR/RD	FUSED B(+) (HAZARD)
26	20A	A103 18GY/RD	FUSED B(+)
27	40A	A112 12OR/RD	FUSED B(+)
28	40A	F30 12PK/YL	FUSED ACCESSORY RELAY OUTPUT
30	40A	INTERNAL (EXPORT)	FUSED B(+)
31	40A	A113 12WT/RD	FUSED B(+)
32	40A	A115 12YL/RD	FUSED B(+)
33	15A	INTERNAL	FUSED ACCESSORY RELAY OUTPUT

TRANSMISSION CONTROL RELAY (EATX)

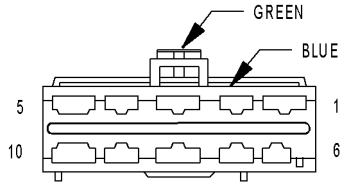
CAV	CIRCUIT	FUNCTION
30	T16 18YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
85	Z115 18BK/OR (2.4L)	GROUND
85	Z115 20BK/OR (3.3L/3.8L)	GROUND
86	T15 18YL/BR	TRANSMISSION CONTROL RELAY CONTROL
87	INTERNAL	FUSED B(+)
87A	-	-



INTEGRATED POWER MODULE C1

INTEGRATED POWER MODULE C1

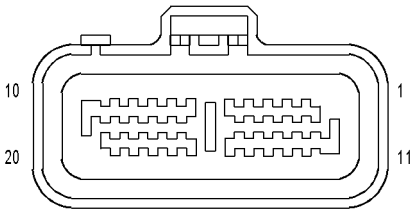
CAV	CIRCUIT	FUNCTION
1	F301 18VT/PK	FUSED ACCESSORY RELAY OUTPUT
2	-	-
3	-	-
4	L43 18WT/DB	LEFT LOW BEAM DRIVER
5	Z344 16BK/TN	GROUND
6	L34 16WT/GY	RIGHT HIGH BEAM DRIVER
7	W1 18BR/TN	WASHER FLUID LEVEL SWITCH SENSE
8	L33 18WT/LG	LEFT HIGH BEAM DRIVER
9	G31 18VT/LG (EXCEPT 2.4L/BASE)	AMBIENT TEMPERATURE SENSOR SIGNAL
9	G31 18VT/LG (2.4L)	AAT SIGNAL
10	L44 16WT/TN	RIGHT LOW BEAM DRIVER
11	F300 18OR/PK	FUSED ACCESSORY RELAY OUTPUT
12	-	-
13	Z343 18BK/LG	GROUND
14	-	-
15	L78 18WT/OR	FUSED PARK LAMP RELAY OUTPUT (RIGHT)
16	L77 18WT/BR	FUSED PARK LAMP RELAY OUTPUT (LEFT)
17	-	-
18	G931 18VT/BR (EXCEPT 2.4L/BASE)	AMBIENT TEMPERATURE SENSOR RETURN
19	W20 18BR/YL	REAR WASHER PUMP MOTOR CONTROL
20	W10 18BR	FRONT WASHER PUMP MOTOR CONTROL



INTEGRATED POWER MODULE C2

INTEGRATED POWER MODULE C2

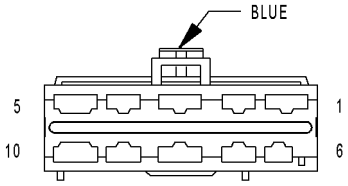
CAV	CIRCUIT	FUNCTION
1	N173 16DB/VT (GAS)	RADIATOR FAN RELAY CONTROL
2	V53 12BR/OR (EXPORT)	HEADLAMP WASHER RELAY OUTPUT
3	L60 16WT/TN (EXPORT)	RIGHT FRONT TURN SIGNAL DRIVER
3	L60 16WT/TN (EXCEPT EXPORT)	RIGHT FRONT TURN SIGNAL DRIVER
4	L13 18WT/YL (EXPORT)	HEADLAMP ADJUST SIGNAL
5	X2 18DG/OR	HORN RELAY OUTPUT
6	L90 18WT/OR (FOG LAMPS)	FRONT FOG LAMP RELAY OUTPUT
7	L61 16WT/LG	LEFT FRONT TURN SIGNAL DRIVER
8	-	-
9	A112 12OR/RD	FUSED B(+)
10	L89 18WT/YL (FOG LAMPS)	FRONT FOG LAMP RELAY OUTPUT



INTEGRATED
POWER
MODULE C3

INTEGRATED POWER MODULE C3

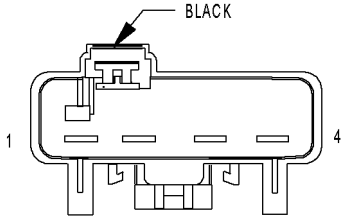
CAV	CIRCUIT	FUNCTION
1	Z115 18BK/OR (2.4L EATX)	GROUND
1	Z115 20BK/OR (3.3L/3.8L EATX)	GROUND
1	N21 20DB/TN (DIESEL)	LIFT PUMP RELAY CONTROL
2	F1 18PK/WT (GAS EATX)	FCM OUTPUT (UNLOCK-RUN-START)
3	T751 18YL (GAS)	FUSED IGNITION SWITCH OUTPUT (START)
3	T751 20YL (DIESEL)	FUSED IGNITION SWITCH OUTPUT (START)
4	T2 18DG/WT (2.4L/DIESEL MTX)	TRS REVERSE SENSE
5	T16 18YL/OR (GAS EATX)	TRANSMISSION CONTROL RELAY OUTPUT
5	N2 18DB/YL (DIESEL)	LIFT PUMP RELAY OUTPUT
6	F202 18PK/GY (DIESEL)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
6	T15 18YL/BR (GAS EATX)	TRANSMISSION CONTROL RELAY CONTROL
7	C3 20DB/YL (GAS)	A/C COMPRESSOR CLUTCH RELAY OUTPUT
7	C3 18DB/YL (DIESEL)	A/C COMPRESSOR CLUTCH RELAY OUTPUT
8	Z114 18BK/LG (DIESEL)	GROUND
8	K31 18BR (GAS)	FUEL PUMP RELAY CONTROL
9	C13 18LB/OR (GAS)	A/C COMPRESSOR CLUTCH RELAY CONTROL
9	C13 20LB/OR (DIESEL)	A/C COMPRESSOR CLUTCH RELAY CONTROL
10	A119 16RD/OR (DIESEL)	FUSED B(+)
10	A104 18YL/RD (3.3L/3.8L EATX)	FUSED B(+)
11	C41 20LB/DG (DIESEL)	CABIN HEATER ASSIST CONTROL
12	-	-
13	D25 18WT/VT (GAS)	PCI BUS
13	D25 20WT/VT (DIESEL)	PCI BUS
14	T752 18DG/OR (2.4L)	STARTER RELAY CONTROL
14	T752 18DG/OR (3.3L/3.8L)	STARTER MOTOR RELAY CONTROL
14	T752 20DG/OR (DIESEL)	STARTER MOTOR RELAY CONTROL
15	Z116 18BK/VT	GROUND
16	K51 18BR/WT (GAS)	AUTOMATIC SHUT DOWN RELAY CONTROL
16	K51 20BR/WT (DIESEL)	ECM/PCM RELAY CONTROL
17	F202 18PK/GY (DIESEL)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
17	F202 20PK/GY (GAS)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
18	K173 18BR/VT (3.3L/3.8L)	RADIATOR FAN RELAY CONTROL
18	K173 18BR/WT (2.4L)	RAD FAN RELAY CONTROL
19	F202 20PK/GY (GAS)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
19	K342 16BR/WT (DIESEL)	ECM/PCM RELAY OUTPUT
20	A109 18OR/RD (GAS)	FUSED B(+)



INTEGRATED
POWER
MODULE C4

INTEGRATED POWER MODULE C4

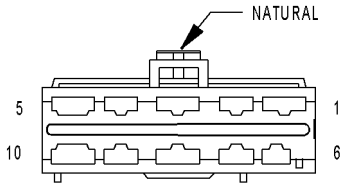
CAV	CIRCUIT	FUNCTION
1	Z127 12BK (2.4L EXCEPT EXPORT/3.3L/3.8L/ABS)	GROUND
2	T750 12YL/GY	STARTER MOTOR RELAY OUTPUT
3	K342 16BR/WT (GAS)	AUTOMATIC SHUT DOWN RELAY OUTPUT
3	K342 16BR/WT (DIESEL)	ECM/PCM RELAY OUTPUT
4	F500 16DG/PK (EATX)	FUSED IGNITION SWITCH OUTPUT (RUN)
5	-	-
6	D25 18WT/VT (ANTILOCK BRAKES)	PCI BUS
6	D25 18WT/VT (3.3L/3.8L)	PCI BUS
7	A107 12TN/RD (ANTILOCK BRAKES)	FUSED B(+)
8	A111 12DG/RD (ANTILOCK BRAKES)	FUSED B(+)
9	A710 14RD/BR	B(+) (HAZARD FEED)
10	-	-



INTEGRATED
POWER
MODULE C5

INTEGRATED POWER MODULE C5

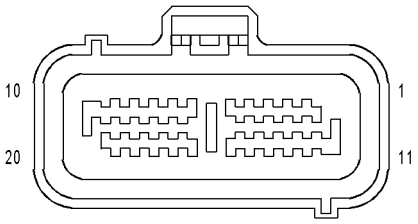
CAV	CIRCUIT	FUNCTION
1	A1 4RD	B(+)
2	-	-
3	-	-
4	-	-



INTEGRATED
POWER
MODULE C6

INTEGRATED POWER MODULE C6

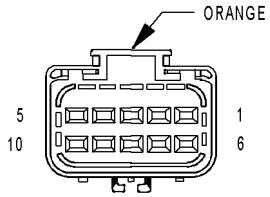
CAV	CIRCUIT	FUNCTION
1	A101 12VT/RD	FUSED B(+)
2	Z117 16BK/WT	GROUND
3	Z118 16BK/YL	GROUND
4	A110 12OR/RD (POWER SEAT)	FUSED B(+)
5	-	-
6	-	-
7	C7 12DB	FUSED FRONT BLOWER MOTOR RELAY OUTPUT
8	F307 16LB/PK (BATTERY POSITION)	FUSED B(+)
8	F307 18LB/PK (ACCESSORY RELAY POSITION)	FUSED ACCESSORY RELAY OUTPUT
9	A113 12WT/RD (POWER SLIDING DOOR)	FUSED B(+)
10	-	-



INTEGRATED POWER MODULE C7

INTEGRATED POWER MODULE C7

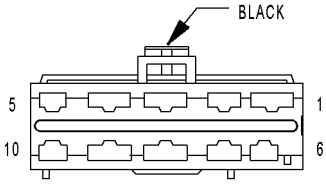
CAV	CIRCUIT	FUNCTION
1	C16 20DB/GY	FUSED REAR WINDOW DEFOGGER RELAY OUTPUT
2	T751 20YL (GAS)	FUSED IGNITION SWITCH OUTPUT (START)
2	T141 20YL/OR (DIESEL)	FUSED IGNITION SWITCH OUTPUT (START)
3	D25 20WT/VT	PCI BUS
4	L13 20WT/YL (EXPORT)	HEADLAMP ADJUST SIGNAL
5	K32 18DB/YL (GAS)	BRAKE TRANSMISSION SHIFT INTERLOCK SOLENOID CONTROL
6	-	-
7	W7 20BR/GY	FRONT WIPER PARK SWITCH SENSE
8	B20 20DG/OR	BRAKE FLUID LEVEL SWITCH SENSE
9	F201 18PK/OR	ORC RUN-START DRIVER
10	F214 18PK/LG (SIACM)	SIACM RUN-START DRIVER
11	A106 20LB/RD	FUSED B(+)
12	-	-
13	F2 18PK/YL (GAS)	FCM OUTPUT (UNLOCK-RUN-START)
14	-	-
15	A114 16GY/RD	FUSED B(+) (I.O.D.)
16	D123 20WT/BR	FLASH PROGRAM ENABLE
17	L50 18WT/TN	BRAKE LAMP SWITCH OUTPUT
18	X13 16DG/GY (PREMIUM 8 SPEAKER)	NAME BRAND SPEAKER RELAY OUTPUT
19	X3 20DG/VT	HORN SWITCH SENSE
20	F100 18PK/VT	ORC RUN ONLY DRIVER



INTEGRATED POWER MODULE C8

INTEGRATED POWER MODULE C8

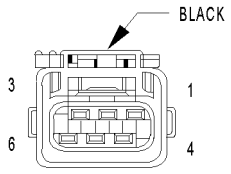
CAV	CIRCUIT	FUNCTION
1	W3 14BR/WT	FRONT WIPER HIGH/LOW RELAY LOW SPEED OUTPUT
2	N1 18DB/OR (GAS)	FUEL PUMP RELAY OUTPUT
2	N1 16DB/OR (DIESEL)	FUEL HEATER RELAY OUTPUT
3	A108 20LG/RD	FUSED B(+)
4	A103 18GY/RD	FUSED B(+)
5	L77 20WT/BR	FUSED PARK LAMP RELAY OUTPUT (LEFT)
6	W4 14BR/OR	FRONT WIPER HIGH/LOW RELAY HIGH SPEED OUTPUT
7	C51 12LB/BR (3 ZONE ATC/MTC)	FUSED REAR BLOWER MOTOR RELAY OUTPUT
8	-	-
9	L78 18WT/OR	FUSED PARK LAMP RELAY OUTPUT (RIGHT)
10	L60 18WT/TN	RIGHT FRONT TURN SIGNAL DRIVER



INTEGRATED POWER MODULE C9

INTEGRATED POWER MODULE C9

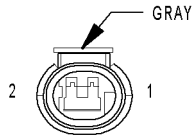
CAV	CIRCUIT	FUNCTION
1	A102 12WT/RD	FUSED B(+)
2	F20 18PK/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)
3	C15 12DB/WT	FUSED REAR WINDOW DEFOGGER RELAY OUTPUT
4	A105 18DB/RD	FUSED B(+)
5	L61 20WT/LB	LEFT FRONT TURN SIGNAL DIVER
6	A701 18BR/RD	FUSED B(+) (HAZARD)
6	A701 16BR/RD	FUSED B(+) (HAZARD)
7	F306 16DB/PK	FUSED ACCESSORY RELAY OUTPUT
8	F30 12PK/YL (POWER WINDOWS)	FUSED ACCESSORY RELAY OUTPUT
9	A115 20YL/RD (POWER DRIVER SEAT)	FUSED B(+)
9	A115 12YL/RD (POWER LIFTGATE/EXCEPT POWER DRIVER SEAT)	FUSED B(+)
10	F302 18GY/PK	FUSED ACCESSORY RELAY OUTPUT



LEFT REAR
LAMP ASSEMBLY

LEFT REAR LAMP ASSEMBLY

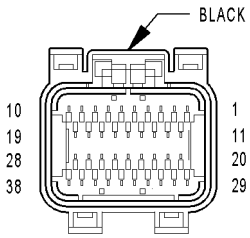
CAV	CIRCUIT	FUNCTION
1	Z363 18BK/DG (EXPORT)	GROUND
1	L63 18WT/DG (EXCEPT EXPORT)	LEFT REAR TURN SIGNAL DRIVER
2	L63 18WT/DG (EXPORT)	LEFT REAR TURN SIGNAL DRIVER
3	L50 18WT/TN (EXPORT)	BRAKE LAMP SWITCH OUTPUT
3	L77 18WT/BR (EXCEPT EXPORT)	FUSED PARK LAMP RELAY OUTPUT (LEFT)
4	L1 18WT/LG	BACK-UP LAMP DRIVER
5	L38 20WT/YL (EXPORT)	REAR FOG LAMP SWITCH OUTPUT
5	Z363 18BK/DG (EXCEPT EXPORT)	GROUND
6	L50 18WT/TN (EXCEPT EXPORT)	PRIMARY BRAKE SWITCH SIGNAL
6	L77 18WT/BR (EXPORT)	FUSED PARK RELAY OUTPUT (LEFT)



OUTPUT
SPEED
SENSOR
(EATX)

OUTPUT SPEED SENSOR (EATX)

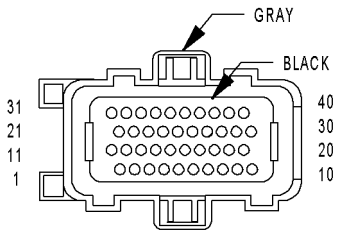
CAV	CIRCUIT	FUNCTION
1	T13 18DG/VT	SPEED SENSOR GROUND
2	T14 18DG/BR	OUTPUT SPEED SENSOR SIGNAL



POWERTRAIN CONTROL MODULE C1 (NGC)

POWERTRAIN CONTROL MODULE C1 (NGC)

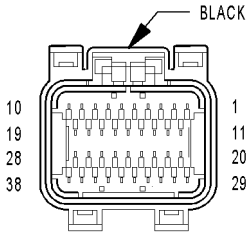
CAV	CIRCUIT	FUNCTION
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	Z130 18BK/BR	GROUND
10	-	-
11	F202 20PK/GY	FUSED IGNITION SWITCH OUTPUT (RUN-START)
12	F1 18PK/WT (EXCEPT EX-PORT)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
13	N7 18DB/OR (MTX)	VEHICLE SPEED SIGNAL
14	-	-
15	-	-
16	-	-
17	-	-
18	Z131 18BK/DG	GROUND
19	-	-
20	G6 16VT/GY	OIL PRESSURE SIGNAL
21	-	-
22	G31 18VT/LG	AAT SIGNAL
23	-	-
24	-	-
25	D20 20WT/LG	SCI RECEIVE (PCM)
26	D123 20WT/BR	SCI RECEIVE (TCM)
27	-	-
28	-	-
29	A109 18OR/RD	FUSED B(+)
30	T751 18YL	FUSED IGNITION SWITCH OUTPUT (START)
31	K141 18DB/YL	O2 1/2 SIGNAL
32	K904 18DB/DG	O2 RETURN (DOWN)
33	-	-
34	-	-
35	-	-
36	D21 20WT/BR	SCI TRANSMIT (PCM)
37	D15 18DG/YL	SCI TRANSMIT (TCM)
38	D25 18WT/VT	PCI BUS



POWERTRAIN CONTROL MODULE C1 (SBEC)

POWERTRAIN CONTROL MODULE C1 (SBEC)

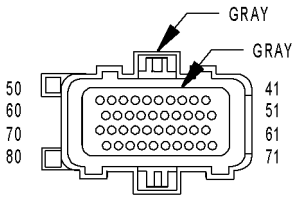
CAV	CIRCUIT	FUNCTION
1	-	-
2	K18 16DB/OR	IGNITION COIL NO. 3 DRIVER
3	K17 16DB/TN	IGNITION COIL NO. 2 DRIVER
4	-	-
5	V32 18VT/YL	SPEED CONTROL ON/OFF SWITCH SENSE
6	K342 16BR/WT	AUTOMATIC SHUT DOWN RELAY OUTPUT
7	K13 16BR/LB	FUEL INJECTOR NO. 3 DRIVER
8	K20 18BR/GY	GENERATOR FIELD CONTROL
9	-	-
10	Z130 18BK/BR	GROUND
11	K19 16DB/DG	IGNITION COIL NO. 1 DRIVER
12	G6 16VT/GY	ENGINE OIL PRESSURE SWITCH SENSE
13	K11 16BR/YL	FUEL INJECTOR NO. 1 DRIVER
14	K58 16BR/VT	FUEL INJECTOR NO. 6 DRIVER
15	K38 16BR/OR	FUEL INJECTOR NO. 5 DRIVER
16	K14 16BR/TN	FUEL INJECTOR NO. 4 DRIVER
17	K12 16BR/DB	FUEL INJECTOR NO. 2 DRIVER
18	K99 18BR/LG	OXYGEN SENSOR 1/1 HEATER CONTROL
19	-	-
20	F202 18PK/GY	FUSED IGNITION SWITCH OUTPUT (RUN-START)
21	-	-
22	-	-
23	-	-
24	-	-
25	K42 18DB/YL (ABS EXCEPT EXPORT)	KNOCK SENSOR SIGNAL
26	K2 18VT/OR	ENGINE COOLANT TEMPERATURE SENSOR SIGNAL
27	K902 18BR/DG	OXYGEN SENSOR GROUND
28	-	-
29	-	-
30	K41 18DB/LB	OXYGEN SENSOR 1/1 SIGNAL
31	T752 18DG/OR	STARTER MOTOR RELAY CONTROL
32	K24 18BR/LB	CRANKSHAFT POSITION SENSOR SIGNAL
33	K44 18DB/GY	CAMSHAFT POSITION SENSOR SIGNAL
34	-	-
35	K22 18BR/OR	THROTTLE POSITION SENSOR SIGNAL
36	K1 18VT/BR	MANIFOLD ABSOLUTE PRESSURE SENSOR SIGNAL
37	K21 18DB/LG	INTAKE AIR TEMPERATURE SENSOR SIGNAL
38	T751 18YL	FUSED IGNITION SWITCH OUTPUT (START)
39	-	-
40	K35 18DB/VT	EGR SOLENOID CONTROL



POWERTRAIN CONTROL MODULE C2 (NGC)

POWERTRAIN CONTROL MODULE C2 (NGC)

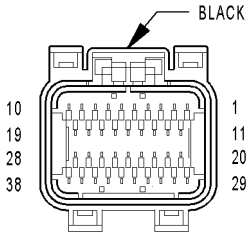
CAV	CIRCUIT	FUNCTION
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	K17 18DB/TN	COIL CONTROL NO. 2
10	K19 18DB/DG	COIL CONTROL NO. 1
11	K14 16 BR/TN	INJECTOR CONTROL NO. 4
12	K13 16BR/LB	INJECTOR CONTROL NO. 3
13	K12 16BR/DB	INJECTOR CONTROL NO. 2
14	K11 16BR/YL	INJECTOR CONTROL NO. 1
15	-	-
16	-	-
17	-	-
18	K99 18BR/LG	O2 1/1 HEATER CONTROL
19	K20 18BR/GY	GEN FIELD CONTROL
20	K2 18VT/OR	ECT SIGNAL
21	K22 18BR/OR	TP SIGNAL
22	-	-
23	K1 18VT/BR	MAP SIGNAL
24	K942 18BR/LG	KS RETURN
25	K42 18DB/YL	KS SIGNAL
26	-	-
27	K900 18DB/DG	SENSOR GROUND
28	K961 18BR/VT	IAC RETURN
29	F855 20PK/YL	5 VOLT SUPPLY
30	K21 18DB/LG	IAT SIGNAL
31	K41 18DB/LB	O2 1/1 SIGNAL
32	K902 18BR/DG	O2 RETURN (UP)
33	-	-
34	K44 18DB/GY	CMP SIGNAL
35	K24 18BR/LB	CKP SIGNAL
36	-	-
37	-	-
38	K61 18VT/GY	IAC MOTOR CONTROL



POWERTRAIN CONTROL MODULE C2 (SBEC)

POWERTRAIN CONTROL MODULE C2 (SBEC)

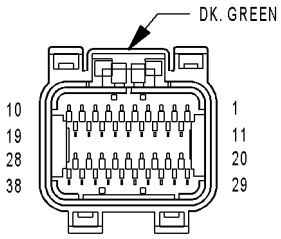
CAV	CIRCUIT	FUNCTION
41	V37 18VT	SPEED CONTROL SWITCH SIGNAL
42	C18 18LB/BR	A/C PRESSURE SENSOR SIGNAL
43	K900 18DB/DG	SENSOR GROUND
44	F888 18BR/PK	8 VOLT SUPPLY
45	-	-
46	A109 18OR/RD	FUSED B(+)
47	-	-
48	-	-
49	K39 18VT/DG	IDLE AIR CONTROL NO. 1 DRIVER
50	Z131 18BK/DG	GROUND
51	K141 18DB/YL	OXYGEN SENSOR 1/2 SIGNAL
52	-	-
53	-	-
54	-	-
55	-	-
56	V36 18VT/YL	SPEED CONTROL VACUUM SOLENOID CONTROL
57	K60 18VT/LG	IDLE AIR CONTROL NO. 2 DRIVER
58	-	-
59	D25 18WT/VT	PCI BUS
60	-	-
61	F855 18PK/YL (EXPORT)	5 VOLT SUPPLY
61	F855 20PK/YL (EXCEPT EXPORT)	5 VOLT SUPPLY
62	B29 18DG/WT	SECONDARY BRAKE SWITCH SIGNAL
63	T10 18DG/LG	TORQUE MANAGEMENT REQUEST SENSE
64	C13 18LB/OR	A/C COMPRESSOR CLUTCH RELAY CONTROL
65	D21 18WT/BR (EXPORT)	SCI TRANSMIT (PCM)
65	D21 20WT/BR (EXCEPT EXPORT)	SCI TRANSMIT (PCM)
66	N7 18DB/OR	VEHICLE SPEED SENSOR SIGNAL
67	K51 18BR/WT	AUTOMATIC SHUT DOWN RELAY CONTROL
68	K52 18DB/WT	EVAPORATIVE EMISSION SOLENOID CONTROL
69	-	-
70	K70 18DB/BR	EVAPORATIVE EMISSION SOLENOID SENSE
71	-	-
72	K107 20VT/WT (EXCEPT EXPORT)	LEAK DETECTION PUMP SWITCH SENSE
73	K173 18BR/VT	RADIATOR FAN RELAY CONTROL
74	K31 18BR	FUEL PUMP RELAY CONTROL
75	D20 20WT/LG	SCI RECEIVE (PCM)
76	T41 18YL/DB	PARK/NEUTRAL POSITION SWITCH SENSE (TRS T41)
77	K106 20VT/LB (EXCEPT EXPORT)	LEAK DETECTION PUMP SOLENOID CONTROL
78	-	-
79	-	-
80	V35 18VT/OR	SPEED CONTROL VENT SOLENOID CONTROL



POWERTRAIN CONTROL MODULE C3 (NGC)

POWERTRAIN CONTROL MODULE C3 (NGC)

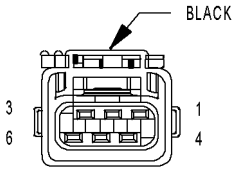
CAV	CIRCUIT	FUNCTION
1	-	-
2	-	-
3	K51 18BR/WT	AUTOMATIC SHUT DOWN RELAY CONTROL
4	-	-
5	V35 18VT/OR	S/C VENT CONTROL
6	K173 18BR/VT	RAD FAN RELAY CONTROL
7	V32 18VT/YL	S/C SUPPLY
8	-	-
9	K299 18BR/WT	O2 1/2 HEATER CONTROL
10	-	-
11	C13 18LB/OR	A/C CLUTCH RELAY CONTROL
12	V36 18VT/YL	S/C VACUUM CONTROL
13	-	-
14	-	-
15	-	-
16	-	-
17	-	-
18	-	-
19	K342 16BR/WT	AUTOMATIC SHUT DOWN RELAY OUTPUT
20	K52 18DB/WT	EVAP PURGE CONTROL
21	T141 18YL (MTX)	FUSED IGNITION SWITCH OUTPUT (START)
22	-	-
23	B29 18DG/WT	BRAKE SWITCH SIGNAL
24	-	-
25	-	-
26	-	-
27	-	-
28	K342 16BR/WT	AUTOMATIC SHUT DOWN RELAY OUTPUT
29	K70 18DB/BR	EVAP PURGE SIGNAL
30	-	-
31	C18 18LB/BR	A/C PRESSURE SIGNAL
32	K91 18DB/YL	BATTERY TEMP SIGNAL
33	-	-
34	V37 18VT	S/C SWITCH SIGNAL
35	K107 20VT/WT	NVLD SWITCH SIGNAL
36	-	-
37	K31 18BR	FUEL PUMP RELAY CONTROL
38	T752 18DG/OR	STARTER RELAY CONTROL



POWERTRAIN CONTROL MODULE C4 (NGC) (EATX)

POWERTRAIN CONTROL MODULE C4 (NGC) (EATX)

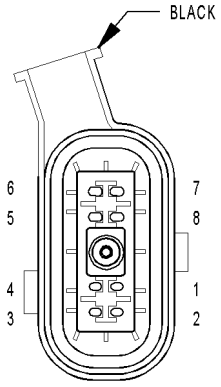
CAV	CIRCUIT	FUNCTION
1	T60 18YL/GY	OVERDRIVE SOLENOID CONTROL
2	T59 18YL/LB	UNDERDRIVE SOLENOID CONTROL
3	-	-
4	-	-
5	-	-
6	T19 18YL/DB	2-4 SOLENOID CONTROL
7	-	-
8	-	-
9	-	-
10	T20 18DG/WT	LOW/REVERSE SOLENOID CONTROL
11	-	-
12	Z133 16BK/LG	GROUND
13	Z133 16BK/LG	GROUND
14	-	-
15	T1 18DG/LB	TRS T1 SENSE
16	T3 18DG/DB	TRS T3 SENSE
17	-	-
18	T15 18YL/BR	TRANSMISSION CONTROL RELAY CONTROL
19	T16 18YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
20	-	-
21	-	-
22	T9 18DG/TN	OVERDRIVE PRESSURE SWITCH SENSE
23	-	-
24	-	-
25	-	-
26	-	-
27	T41 18DG/GY	TRS T41 SENSE
28	T16 18YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
29	T50 18YL/TN	LOW/REVERSE PRESSURE SWITCH SENSE
30	T47 18YL/DG	2-4 PRESSURE SWITCH SENSE
31	-	-
32	T14 18DG/BR	OUTPUT SPEED SENSOR SIGNAL
33	T52 18DG/WT	INPUT SPEED SENSOR SIGNAL
34	T13 18DG/VT	SPEED SENSOR GROUND
35	T54 18DG/OR	TRANSMISSION TEMPERATURE SENSOR SIGNAL
36	-	-
37	T42 18DG/YL	TRS T42 SENSE
38	T16 18YL/OR	TRANSMISSION CONTROL RELAY OUTPUT



RIGHT REAR LAMP ASSEMBLY

RIGHT REAR LAMP ASSEMBLY

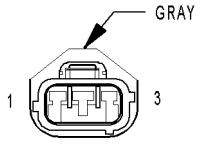
CAV	CIRCUIT	FUNCTION
1	Z362 18BK/BR (EXPORT)	GROUND
1	L62 18WT/BR (EXCEPT EXPORT)	RIGHT REAR TURN SIGNAL DRIVER
2	L62 18WT/BR (EXPORT)	RIGHT REAR TURN SIGNAL DRIVER
3	L50 18WT/TN (EXPORT)	BRAKE LAMP SWITCH OUTPUT
3	L78 18WT/OR (EXCEPT EXPORT)	FUSED PARK LAMP RELAY OUTPUT (RIGHT)
4	L1 18WT/LG	BACK-UP LAMP DRIVER
5	L38 20WT/YL (EXPORT)	REAR FOG LAMP SWITCH OUTPUT
5	Z362 18BK/BR (EXCEPT EXPORT)	GROUND
6	L50 18WT/TN (EXCEPT EXPORT)	PRIMARY BRAKE SWITCH SIGNAL
6	L78 18WT/OR (EXPORT)	FUSED PARK LAMP RELAY OUTPUT (RIGHT)



SOLENOID/
PRESSURE
SWITCH ASSY
(EATX)

SOLENOID/PRESSURE SWITCH ASSY (EATX)

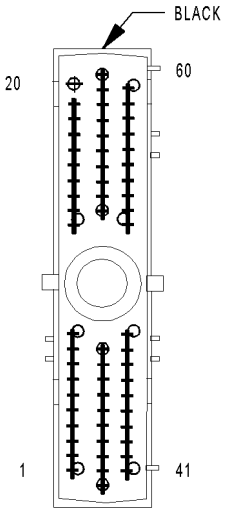
CAV	CIRCUIT	FUNCTION
1	T47 18YL/DG	2-4 PRESSURE SWITCH SENSE
2	T50 18YL/TN	LOW/REVERSE PRESSURE SWITCH SENSE
3	T9 18DG/TN	OVERDRIVE PRESSURE SWITCH SENSE
4	T16 18YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
5	T59 18YL/LB	UNDERDRIVE SOLENOID CONTROL
6	T60 18YL/GY	OVERDRIVE SOLENOID CONTROL
7	T20 18DG/WT	LOW/REVERSE SOLENOID CONTROL
8	T19 18YL/DB	2-4 SOLENOID CONTROL



THROTTLE
POSITION
SENSOR
(GAS)

THROTTLE POSITION SENSOR (GAS)

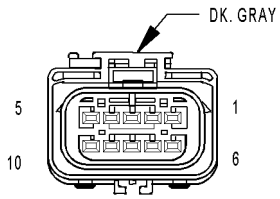
CAV	CIRCUIT	FUNCTION
1	K900 18DB/DG	SENSOR GROUND
2	K22 18BR/OR (3.3L/3.8L)	THROTTLE POSITION SENSOR SIGNAL
2	K22 18BR/OR (2.4L)	TP SIGNAL
3	F855 18PK/YL (3.3L/3.8L)	5 VOLT SUPPLY
3	F855 20PK/YL (2.4L)	5 VOLT SUPPLY



TRANSMISSION CONTROL MODULE (3.3L/3.8L)

TRANSMISSION CONTROL MODULE (3.3L/3.8L)

CAV	CIRCUIT	FUNCTION
1	T1 18DG/LB	TRS T1 SENSE
2	-	-
3	T3 18DG/DB	TRS T3 SENSE
4	-	-
5	-	-
6	K24 18BR/LB	CRANKSHAFT POSITION SENSOR SIGNAL
7	D15 20DG/YL	SCI TRANSMIT (TCM)
8	T751 18YL	FUSED IGNITION SWITCH OUTPUT (START)
9	T9 18DG/TN	OVERDRIVE PRESSURE SWITCH SENSE
10	T10 18DG/LG	TORQUE MANAGEMENT REQUEST SENSE
11	F1 18PK/WT	FCM OUTPUT (UNLOCK-RUN-START)
12	K22 18BR/OR	THROTTLE POSITION SENSOR SIGNAL
13	T13 18DG/VT	SPEED SENSOR GROUND
14	T14 18DG/BR	OUTPUT SPEED SENSOR SIGNAL
15	T15 18YL/BR	TRANSMISSION CONTROL RELAY CONTROL
16	T16 18YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
17	T16 18YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
18	-	-
19	T19 18YL/DB	2-4 SOLENOID CONTROL
20	T20 18DG/WT	LOW/REVERSE SOLENOID CONTROL
21	-	-
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
29	-	-
30	-	-
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-
36	-	-
37	-	-
38	-	-
39	-	-
40	-	-
41	T41 18YL/DB	TRS T41 SENSE
42	T42 18DG/YL	TRS T42 SENSE
43	D25 18WT/VT	PCI BUS
44	-	-
45	-	-
46	D123 20WT/OR	FLASH PROGRAM ENABLE
47	T47 18YL/DG	2-4 PRESSURE SWITCH SENSE
48	-	-
49	-	-
50	T50 18YL/TN	LOW/REVERSE PRESSURE SWITCH SENSE
51	K900 18DB/DG	SENSOR GROUND
52	T52 18DG/WT	INPUT SPEED SENSOR SIGNAL
53	Z132 16BK/YL	GROUND
54	T54 18DG/OR	TRANSMISSION TEMPERATURE SENSOR SIGNAL
55	T55 18YL/VT (AUTOSTICK)	AUTOSTICK/OVERDRIVE OFF MUX INPUT
56	A104 18YL/RD	FUSED B(+)
57	Z133 16BK/LG	GROUND
58	N7 18DB/OG	VEHICLE SPEED SENSOR SIGNAL
59	T59 18YL/LB	UNDERDRIVE SOLENOID CONTROL
60	T60 18YL/GY	OVERDRIVE SOLENOID CONTROL



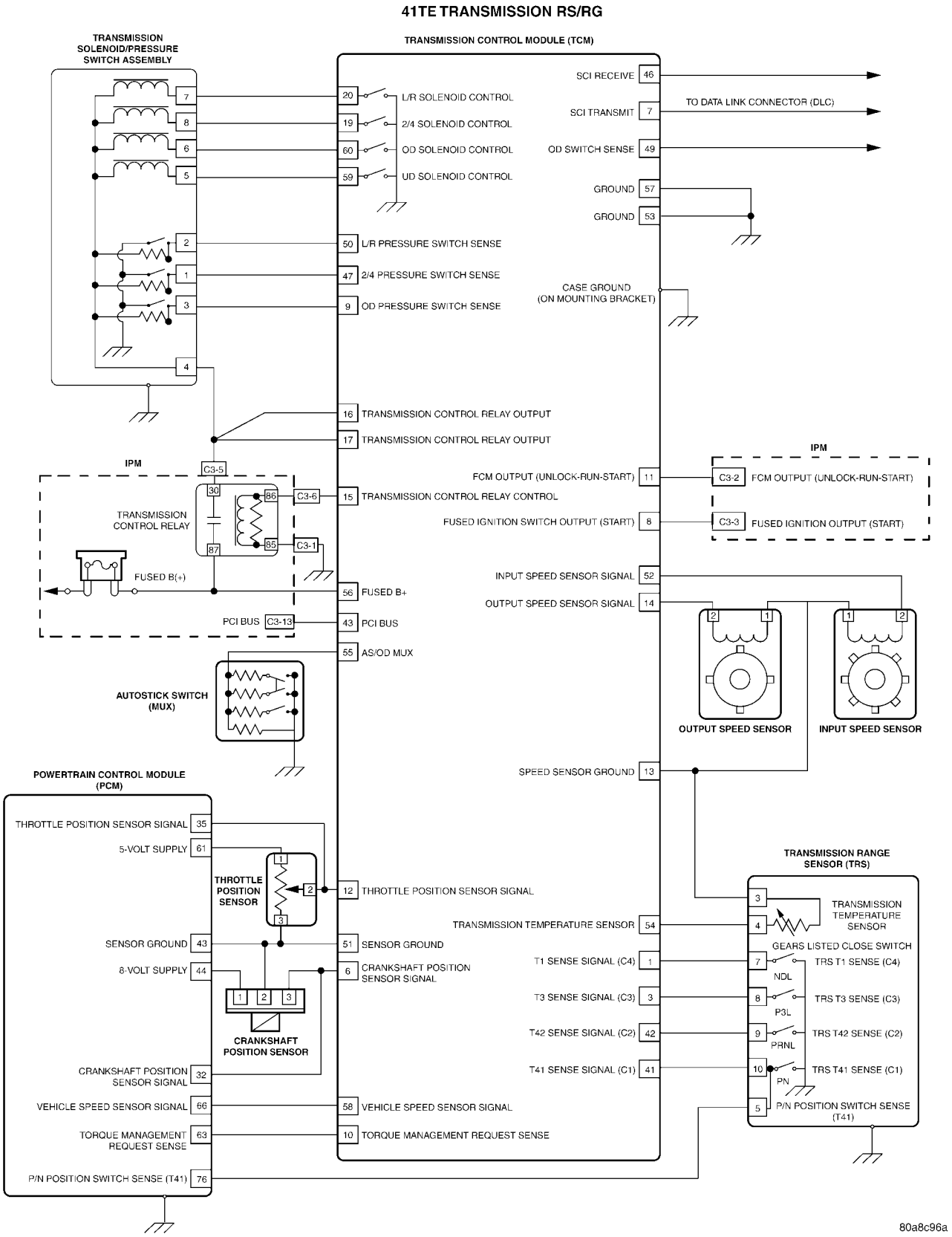
TRANSMISSION
RANGE
SENSOR
(EATX)

TRANSMISSION RANGE SENSOR (EATX)

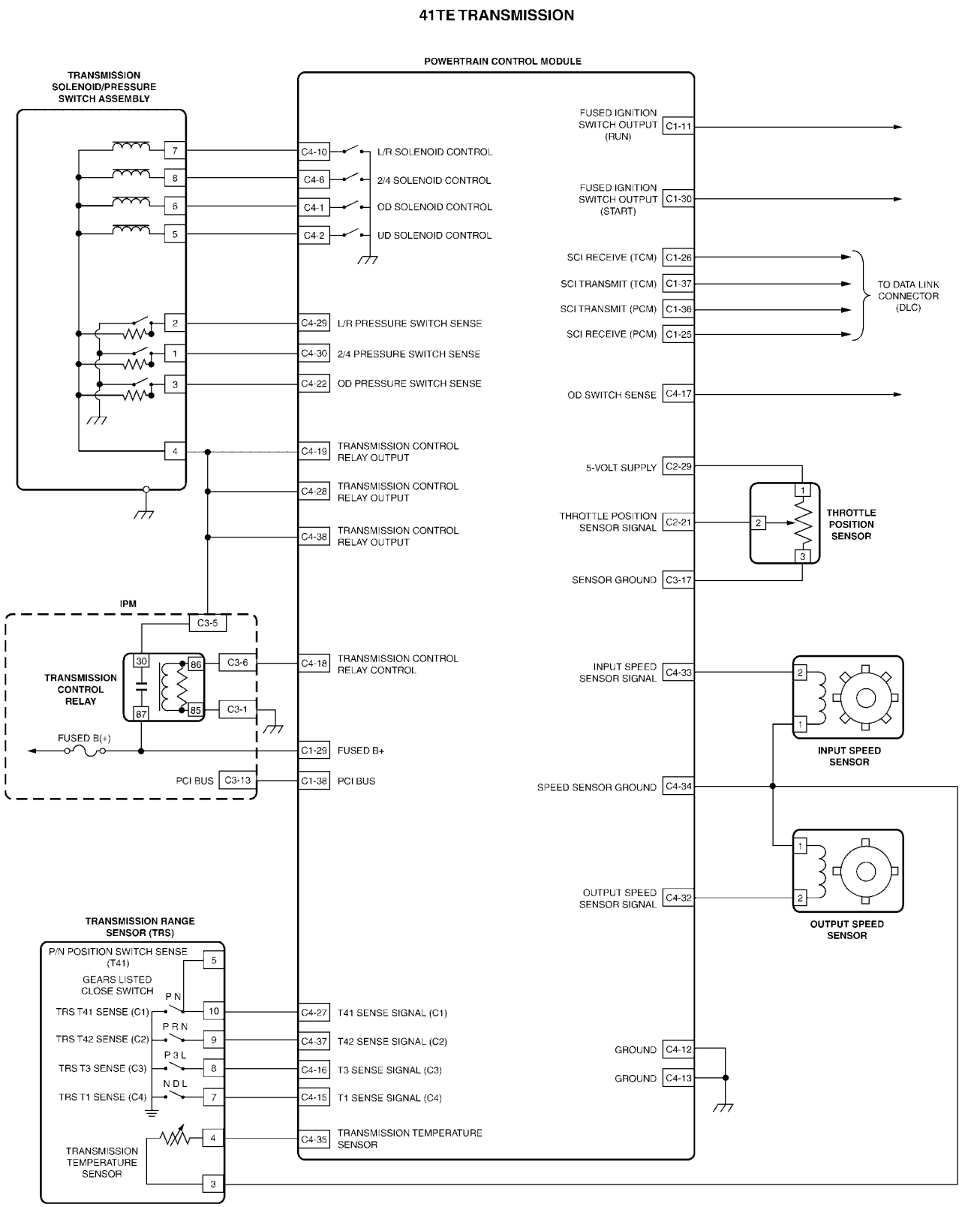
CAV	CIRCUIT	FUNCTION
1	-	-
2	-	-
3	T13 18DG/VT	SPEED SENSOR GROUND
4	T54 18DG/OR	TRANSMISSION TEMPERATURE SENSOR SIGNAL
5	T41 18DG/GY (3.3L/3.8L)	TRS T41 SENSE
6	-	-
7	T1 18DG/LB	TRS T1 SENSE
8	T3 18DG/DB	TRS T3 SENSE
9	T42 18DG/YL	TRS T42 SENSE
10	T41 18YL/DB (3.3L/3.8L)	PARK/NEUTRAL POSITION SWITCH SENSE (TRS T41)
10	T41 18DG/GY (2.4L)	TRS T41 SENSE

10.0 SCHEMATIC DIAGRAMS

10.1 EATX–3.3/3.8L



10.2 NGC–2.4L



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11.0 CHARTS AND GRAPHS

11.1 TRANSMISSION RANGE SENSOR STATES

TRANSMISSION RANGE SENSOR STATES											
TRS	PARK	T1	REVERSE	T2	NEUTRAL	T2	OD	T3	D3/AS	T3	L
T1 (C4)	OPEN	OPEN	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN	CLOSED	CLOSED
T3 (C3)	CLOSED	CLOSED	OPEN	OPEN	OPEN	OPEN	OPEN	CLOSED	CLOSED	CLOSED	CLOSED
T41 (C1)	CLOSED	OPEN	OPEN	OPEN	CLOSED	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN
T42 (C2)	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN	OPEN	OPEN	OPEN	CLOSED

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11.2 PRESSURE SWITCH STATES

PRESSURE SWITCH STATES

SWITCHES	R	N	1ST	2ND	3RD	4TH
L/R	OPEN	CLOSED	CLOSED	OPEN	OPEN	OPEN
2/4	OPEN	OPEN	OPEN	CLOSED	OPEN	CLOSED
O/D	OPEN	OPEN	OPEN	OPEN	CLOSED	CLOSED

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11.3 SOLENOID APPLICATION CHART

SOLENOID APPLICATION CHART

GEAR	UD	OD	REV	2/4	LR
PARK					X
REVERSE			X		X
NEUTRAL					X
1ST	X				X
2ND	X			X	
3RD	X	X			
4TH		X		X	

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11.4 SHIFT LEVER ERROR CODES

SHIFT LEVER ERROR CODES REPORTED BY THE DRBIII®

ERROR CODE	SWITCH STUCK	POSITION
1	T1/C4 STUCK	OPEN
2	T1/C4 STUCK	CLOSED
3	T3/C3 STUCK	OPEN
4	T3/C3 STUCK	CLOSED
5	T42/C2 STUCK	OPEN
6	T24/C2 STUCK	CLOSED
7	T41/C1 STUCK	OPEN
8	T41/C1 STUCK	CLOSED

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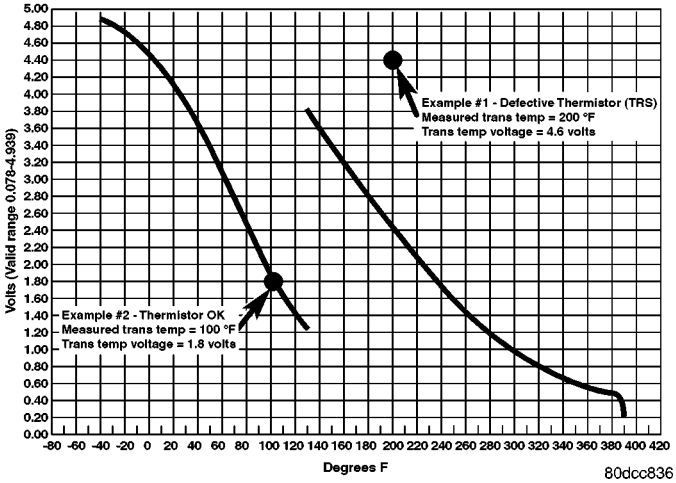
11.5 TRANSMISSION TEMPERATURE SENSOR

TRANSMISSION TEMPERATURE SENSOR (DUAL RANGE)

START ENGINE. WITH DRB, MONITOR AND RECORD TRANSMISSION TEMPERATURE VOLTAGE. COMPARE THE MEASURED TEMPERATURE AND VOLTAGE WITH THE GRAPH SHOWN BELOW. THE MEASURED VALUE SHOULD FALL ON ONE OF THE LINES ON THE GRAPH.



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