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1.0 INTRODUCTION

The procedures contained in this manual include all of the specifications, instructions, and graphics needed to diagnose *45RFE/545RFE Electronic Automatic Transmission (EATX) 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.

1.1 SYSTEM COVERAGE

This diagnostic procedures manual covers all KJ vehicles equipped with a 45RFE/545RFE EATX controlled Automatic Transmission.

1.2 SIX-STEP TROUBLESHOOTING PROCEDURE

Diagnosis of the 45RFE/545RFE electronic transmission 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 45RFE/545RFE Transmission family can be identified by confirming the presence of a 23 pin electrical connector on the left-hand side of the transmission oriented vertically near the manual lever. Refer to the Service Information for transmission ID descriptions.

3.0 SYSTEM DESCRIPTION AND FUNCTIONAL OPERATION

3.1 GENERAL DESCRIPTION

45RFE/545RFE

The 45RFE/545RFE electronic transmission is a conventional transmission 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.

The 45RFE/545RFE electronic transmission is a fully electronically controlled transmission. The Transmission Control Module (TCM) is similar to (but not the same as) the one used in the 41TE and 42LE transmissions, therefore many similarities exist in function and diagnosis.

The 45RFE/545RFE has an overrunning clutch (used in 1st gear), an electronically controlled torque converter clutch, 3 planetary gear sets, and six clutch packs. The clutches are called 2nd Clutch (2C), 4th Clutch (4C), Low/Reverse Clutch (LR), Reverse Clutch (RC), Underdrive Clutch (UD), and Overdrive Clutch (OD).

Although the 45RFE is considered a 4 speed transmission, it really has 5 forward gear ratios. The 545RFE is considered a 5 speed transmission, it really has 6 forward gear ratios. 2nd gear (1.67:1) and 2nd prime (1.50:1) gear are so close in ratio that they are not considered to be different gear ratios, although both are used as 2nd gear under certain conditions. During most upshift and downshift maneuvers, 2nd gear will be used. 2nd prime gear is only used for a high speed 4-2 downshift. The 545RFE transmission is essentially a software change to the TCM that allows an additional overdrive ratio of (.667:1). The gear ratio of 4th Prime is achieved by applying the 2C and OD clutches. The 4th Prime is used above 52 MPH. All gear ratios in the 45RFE/545RFE are achieved by applying two elements (clutches). During a shift, one element is released and another is applied, resulting in a different ratio. This is called a clutch to clutch shift.

In order to perform a 4-2 downshift, two elements would have to be released and two different elements applied. The 2nd prime gear ratio allows a clutch to clutch 4-2' (2nd prime) downshift.

The oil pump in the 45RFE/545RFE is a dual stage positive displacement gear type pump. At idle and low engine speeds, both stages are working. Once the engine speed reaches a point where one side of the pump can supply the necessary system requirements, the second stage is vented. This pump configuration gives the pressure and flow of a large displacement pump at low speeds, and the economy of a small displacement pump at higher engine speeds. The oil pump housing also contains some of the valves that are found in the valve body in a 41TE or 42LE transmission. The Converter Clutch Switch Valve, Converter Clutch Regulator Valve, Torque Converter Limit Valve, and the Pressure Regulator Valve, are all found in the oil pump housing.

GENERAL INFORMATION

The electronic control system consists of a Transmission Control Module (TCM), a Transmission Range Sensor (TRS), an Input Speed Sensor (ISS), an Output Speed Sensor (OSS), a Line Pressure Sensor (LPS), a Transmission Temperature Sensor (TTS), five pressure switches, and seven solenoids. Each clutch pack has a corresponding solenoid and pressure switch except for the reverse clutch, which is controlled by the manual valve. The other two solenoids are called the Multi Select (MS) solenoid and the Pressure Control Solenoid (PCS).

The PCS is used to control line pressure. The 45RFE/545RFE controls line pressure based on inputs to the TCM. The line pressure is torque based (line pressure increases with torque) most of the time, however it is set to a predetermined value just prior to a shift and reverts back to torque based after the shift.

The MS solenoid is used to control the LR clutch during P-R and N-R garage shifts and to control the OD clutch when the Manual Valve is in the "D" position as reported by the TRS. If the manual valve is slightly out of position, the TRS will indicate a temporary zone (T3 or T4). In this case the OD clutch will be controlled by the OD solenoid. Note that if the TRS indicates a temporary zone, this is a valid PRNDL code and will not set a DTC P0706(28). If the PRNDL code consistently indicates a temporary zone while the shift lever is in the "D" position, this would indicate some sort of mechanical problem in the shift linkage as opposed to an electrical TRS problem. Note: vehicle operation in the T3 temporary zone can set a DTC P1715(65).

3.2 FUNCTIONAL OPERATION

45/545RFE

The 45RFE/545RFE electronic transmission 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 Transmission Control Module (TCM) continuously checks for electrical problems, mechanical problems, and some hydraulic problems. When a problem is sensed, the TCM stores a diagnostic trouble code (DTC). Some of these codes cause the transmission to go into "limp-in" or "default" mode. The 45RFE/545RFE has three default modes:

(I) Immediate shutdown - The TCM de-energizes the transmission control relay. This causes the transmission to immediately default to third gear if shift lever is in the "D" position, or

2nd gear if it is in the "2" or "L" positions. Park, Neutral, and Reverse are still available.

(O) Orderly Shutdown - If the TCM recognizes a problem that does not require an immediate shutdown, the transmission will maintain the current gear and the transmission control relay will remain energized until de-energizing it will not overspeed the engine. When the vehicle speed reaches a reasonable level the TCM de-energizes the transmission control relay. This causes the transmission system to immediately default to third gear if shift lever is in the "D" position, or 2nd gear if it is in the "2" or "L" positions. Park, Neutral, and Reverse are still available.

(L) Logical Shutdown with Recovery - The TCM does not de-energize the Transmission Control Relay. Instead, the transmission will utilize 1st and 3rd gears while in "D", and will use 2nd while in "2" or "L". All transmission operation in this mode will be at a preset line pressure (open loop). The transmission will resume normal operation (recover) if the detected problem goes away. Three recoveries are permitted in a given key, after the fourth occurrence the operation described above will be maintained.

Once the DRBIII is in the "EATX" portion of the diagnostic program, it constantly monitors the TCM to see if the system is in limp-in mode. If the transmission is in limp-in mode, the DRBIII® will flash the red LED.

3.2.1 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 45/545RFE 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 using engine coolant temperature, battery/ambient temperature, and engine off time from the Body Control Module (BCM). These inputs are received from the communication bus periodically and are used to initialize the oil temperature at start up. Once the engine is started, the TCM updates the transmission oil temperature based on torque converter slip speed, vehicle, gear, and engine coolant temperature to determine an estimated oil temperature during vehicle operation. Vehicles using "calculated oil temperature" track oil temperature reasonably accurately 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.

3.2.2 Line Pressure Control – 45/545RFE

Proper control of the transmission line pressure is essential for proper operation. The 45RFE/545RFE normally uses closed loop line pressure control, where actual line pressure (reported by the line pressure sensor) is continuously monitored. The TCM determines the desired (target) line pressure, which is required, and adjusts the Pressure Control Solenoid (PCS) until the actual line pressure matches the desired line pressure value. In the event of a line pressure sensor failure DTC P0867(CB), the TCM changes to an open loop control at an essentially constant line pressure.

Proper diagnosis of line pressure systems is facilitated by the use of a special tool (T-fitting - Miller #8259) which allows the use of a mechanical pressure gauge to compare the line pressure sensor reading on the DRBIII® to the gauge pressure. Technicians should compare the mechanical gauge reading with the “actual” and “desired” line pressure reading on the DRBIII®. All three readings should closely match in pressure. Because the mechanical and actual line pressure may not match the desired at low engine speeds (due to low pump output RPM), line pressure should always be checked at 1500 - 2000 RPM.

Typical Line Pressure problems include:

- Mechanical and “actual” readings both less than desired
 - If the mechanical and “actual” readings do not increase significantly as engine speed is raised above 2000 RPM, the pressure control solenoid is usually at fault. The pressure control solenoid is usually accompanied by DTC’s P0867(C8) and P0868(C9). The PCS is located in the Transmission Solenoid/TRS assembly.
 - If the mechanical and “actual” readings vary with engine speed (above 2000 RPM), the fault is often a sticking main regulator valve. This valve is located in the transmission pump assembly.
- “Actual” reading on the DRBIII® differs from the Mechanical Pressure reading (higher or lower) by more than 69kPa (10 PSI). This is sometimes accompanied by a DTC P0869(CB). The fault is usually in the Line Pressure Sensor or the Line Pressure Sensor Wiring.
- All three readings match, but the “actual” reading exhibits momentary intermittent pressure increases to 1724 kPa (250 PSI). The line Pres-

sure Sensor is usually the problem. This will cause erratic shift quality (particularly a harsh 3-1 coast down shift), repair by replacing the Line Pressure Sensor.

3.2.3 DRIVE LEARN PROCEDURE – 45/545RFE

Procedure To Learn A Smooth 1st Neutral To Drive Shift:

Perform this procedure only if the complaint is for a delayed or harsh shift the first time the transmission is put into gear after the vehicle is allowed to set with the engine not running for at least 10 minutes. Use the following steps to have the TCM learn the 1st N-1 UD CVI.

NOTE: The transmission oil temperature must be between 80 - 110°F (27 - 43°C).

1. Start the engine only when the engine and ignition have been off for at least ten (10) minutes.
2. With the vehicle at a stop and the service brake applied, record the UD CVI while performing a Neutral to Drive shift. During the shift, the UD CVI will temporarily show a different value which is the 1st N-1 UD CVI. The 1st N-1 UD CFVI account for air entrapment in the UD clutch that may occur after the engine has been off for a period of time.
3. Repeat steps 1 and 2 until the recorded 1st N-1 UD CVI value stabilizes.

NOTE: It is important that this procedure be performed when the transmission temperature is between 80 - 110°F (27 - 43°C). If this procedure takes too long to complete fully for the allowed transmission oil temperature, the vehicle may be returned to the customer with an explanation that the shift will improve daily during normal vehicle usage. The TCM also learns at higher oil temperatures, but these values (line pressure correction values) are not available for viewing on the DRB III.

Procedure To Learn A Smooth Neutral To Drive Garage Shift:

Perform this procedure if the complaint is for a delayed or harsh shift when the transmission is put into gear after the vehicle has had its first shift. Use the following steps to have the TCM learn the N-1 UD CVI.

GENERAL INFORMATION

NOTE: The transmission oil temperature must be between 80 - 110°F (27 - 43°C) to learn the UD CVI. Additional learning occurs at temperatures as low as 0°F and as high as 200°F. This procedure may be performed at any temperature that experiences poor shift quality. Although the UD CVI may not change, shift quality should improve.

1. Start the vehicle engine and shift to drive.
2. Move the vehicle forward to a speed of at least 16 km/h (10 MPH) and come to a stop. This ensures no air is present in the UD hydraulic circuit.
3. Perform repeated N-1 shifts at a stop while pausing in Neutral for at least 2-3 seconds and monitor UD CVI volume until the value stabilizes. The value will change during the N-D shift. This is normal since the UD value is different for the N-1 shift than the normal value shown which is used for 4-3 coastdown and kickdowns. Perform repeated shifts in this temperature range until the UD CVI value stabilizes and the N-1 shifts become smooth.
4. This procedure may be performed at any temperature that experiences poor N-1 shift quality. Although the UD CVI may not change, shift quality should improve.

Procedure To Learn The 1st 2-3 Shift After A Restart Or Shift To Reverse:

Use the following steps to have the TCM learn the 1st 2-3 shift OD CVI.

NOTE: The transmission oil temperature must be above 80°F (27°C).

1. With the vehicle engine running, select reverse gear for over 2 seconds.
2. Shift the transmission to Drive and accelerate the vehicle from a stop at a steady 15 degree throttle opening and perform a 2-3 shift while noting the OD CVI. During the shift, a different value may appear on the screen, which is the 1st 2-3 OD CVI.
3. Repeat steps 1 and 2 until the 1st 2-3 upshift becomes smooth and the 1st 2-3 OD CVI stabilizes.

Procedure To Learn A Smooth 2-3 And 3-4 Upshift:

Use the following steps to have the TCM learn the OD and 4C CVI's.

NOTE: The transmission oil temperature must be above 110°F (43°C).

1. Accelerate the vehicle from a stop at a steady 15 degree throttle opening and perform multiple 1-2, 2-3, and 3-4 upshifts. The 2nd 2-3 shift following a restart or shift to reverse will be

shown during the shift as a value between the 1st 2-3 OD CVI and the normal OD CVI. Updates to the normal OD CVI will occur after the 2nd shift into 3rd gear, following a restart or shift to reverse.

2. Repeat step 1 until the 2-3 and 3-4 shifts become smooth and the OD and 4C CVI become stable.

Procedure To Learn A Smooth 4-3 Coastdown And Part Throttle 4-3 Kickdown:

Use the following steps to have the TCM learn the UD shift volume.

NOTE: The transmission oil temperature must be above 110°F (43°C).

1. At a vehicle speed between 64-97 km/h (40-60 MPH), perform repeated 4-3 kickdown shifts.
2. Repeat step 1 until the UD volume becomes somewhat stable and the shift becomes smooth.

Procedure To Learn A Smooth 1-2 Upshift And 3-2 Kickdown:

Use the following steps to have the TCM learn the 2C shift volume.

NOTE: The transmission oil temperature must be above 110°F (43°C).

1. With a vehicle speed below 48 km/h (30 MPH) and the transmission in 3rd gear, perform multiple 3-2 kickdowns.
2. Repeat step 1 until the 3-2 kickdowns become smooth and the 2C CVI becomes stable.

Procedure To Learn A Smooth Manual 2-1 Pulldown Shift As Well As A Neutral To Reverse Shift:

Use the following steps to have the TCM learn the LR volume.

NOTE: The transmission oil temperature must be above 110°F (43°C).

1. With the vehicle speed around 40-48 km/h (25-30 MPH) in Manual 2nd, perform manual pulldowns to Low or 1st gear at closed throttle.
2. Repeat step 1 until the LR CVI becomes stable and the manual 2-1 becomes smooth.

Procedure To Learn A Smooth Neutral To Reverse Shift:

Perform the following shifts.

NOTE: The transmission oil temperature must be above 110°F (43°C).

1. With the vehicle at a stop, perform Neutral to Reverse shifts until the shift is smooth. An unlearned Neutral to Reverse shift may be harsh or exhibit a double bump.

If any of the shifts are still not smooth after the clutch volume stabilizes, an internal transmission problem may be present.

Procedure To Learn A Smooth 4-5 Upshift for 545RFE:

Use the following steps to have the TCM learn the 2CA CVI.

NOTE: The transmission oil temperature must be above 110°F (43°C).

1. Accelerate the vehicle through 88 km/h (55mph) at a steady 10-15 degree throttle opening and perform multiple 4-5 upshifts.
2. Repeat step 1 until the 4-5 shift become smooth and the 2C(A) CVI become stable. There is a separate 2C volume used and learned for 4-5 shifts, 2C(A). It is independent of the 2C CVI learned on 3-2 kickdowns.

3.3 DIAGNOSTIC TROUBLE CODES

Diagnostic trouble codes (DTC's) are codes stored by the Transmission Control Module (TCM) that help us 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 that no PCM DTC's are present that could cause a transmission complaint.

If there is a communication bus problem, trouble codes will not be accessible until the problem is fixed. The DRBIII® will display an appropriate message. The following is a possible list of causes for a bus problem:

- open or short to ground/battery in PCI bus circuit.
- internal failure of any module or component on the bus

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.

If the TCM 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 in the TCM immediately as a 1 trip failure, it may take up to five minutes of accumulated trouble confirmation to set the DTC and illuminate the MIL. Three consecutive successful OBDII/EURO III trips or clearing the DTC's with a diagnostic tool (DRBIII® or equivalent) is required to extinguish the MIL. When the TCM requests that the PCM illuminate the MIL, the PCM sets a DTC (\$89) to alert the technician that there are DTC's in the TCM. This must also be erased 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 TCM 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 TCM, is a hard OBDII/EURO III code that has not matured to the full 5 minutes. This DTC can take up to five minutes of problem identification before illuminating the MIL.

3.3.3 INTERMITTENT CODE

A diagnostic trouble code that is not there every time the TCM checks the circuit or function is an "intermittent" code. Some intermittent codes are caused by wiring or connector problems. However intermittent Speed ratio codes are usually caused by intermittent hydraulic seal leakage in the clutch and/or accumulator circuits. Intermittent speed ratio codes can be set by intermittent speed sensor circuitry or by line noise being induced onto one or both of the speed sensor signal 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

The Starts Since Set counter counts the number of times the vehicle has started since the most recent DTC was set. The counter will count up to 255 starts. Note that this counter only applies to the last 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.

GENERAL INFORMATION

- If the number of starts is less than 3, the code is usually a hard code.
- If the number of starts 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 TCM 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 TCM.

3.3.6 QUICK LEARN

The Quick Learn function customizes adaptive parameters of the TCM to the transmission characteristics of a vehicle. This gives the customer improved “as received” shift quality compared to the initial parameters stored in the TCM.

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 maneuver. In most cases, if a 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. Cycle the transmission through all gears 2-3 times immediately before performing Quick Learn. For best results, Quick Learn should be run with the transmission sump temperature > 90°F.
- > If an unused TCM is installed on a vehicle with a HOT engine, Quick Learn will cause the TCM to report a cold calculated oil temperature. This requires monitoring the calculated oil temperature using the DRBIII®. If the temperature is below 16°C (60°F), the transmission must be run

at idle or driven in gear until it goes above 16°C (60°F). If the temperature is above 93°C (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 TCM
- 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.

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®.

To perform the Quick Learn procedure, the following conditions must be met.

NOTE: The oil temperature must be between 16°C (60°F) and 93°C (200°F). Above 32°C (90°F) for best results. Cycle the transmission through all gears 2-3 times immediately before performing Quick Learn.

- It is imperative that the vehicle oil level set to the correct level. Shift the transmission into OD with the engine running, this step will purge the air in the clutch circuits to prevent erroneous clutch volume values, which could cause poor initial shift quality.
- Shift the transmission to 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, after shifting to neutral the engine idle speed will ramp up to 1600rpm and the DRBIII® will prompt the operator to shift to OD. Do not shift to OD until the engine idle speed stabilizes at 1600rpm.
- The shift lever must stay in OD after the “Shift to Overdrive” prompt until the DRBIII® indicates the procedure is complete.

NOTE: The above conditions must be maintained during the procedure to keep the procedure from being aborted.

NOTE: After the Quick Learn Procedure is complete, the vehicle should be drive learned per the Drive Learn Procedure.

3.3.7 CLUTCH VOLUMES – 45/545RFE

The LR clutch volume is updated when doing a **manual** downshift into 1st gear with vehicle speed above 40 km/h (25 MPH) and throttle angle below 5°. The transmission temperature must be above 43°C (110°F). The clutch volume should be between 45 and 134.

NOTE: You must manually move the shift lever into the low position.

The 2C clutch volume is updated when doing a 3-2 shift with throttle angle between 10° and 54°. The transmission temperature must be above 43°C (110°F). The clutch volume should be between 25 and 85.

The 2CA clutch volume is updated when doing a 4th-4 prime shift with throttle angle between 10° and 54°. The transmission temperature must be above 43°C (110°F). The clutch volume should be between 25 and 85.

The OD clutch volume is updated when doing a 2-3 shift with throttle angle between 10° and 54°. The transmission temperature must be above 43°C (110°F). The clutch volume should be between 30 and 100.

The 4C clutch volume is updated when doing a 3-4 shift with throttle angle between 10° and 54°. The transmission temperature must be above 43°C (110°F). The clutch volume should be between 30 and 85.

The UD clutch volume is updated when doing a 4-3 shift with throttle angle between 10° and 54°. The transmission temperature must be above 43°C (110°F). The clutch volume should be between 30 and 100.

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 EATX 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.

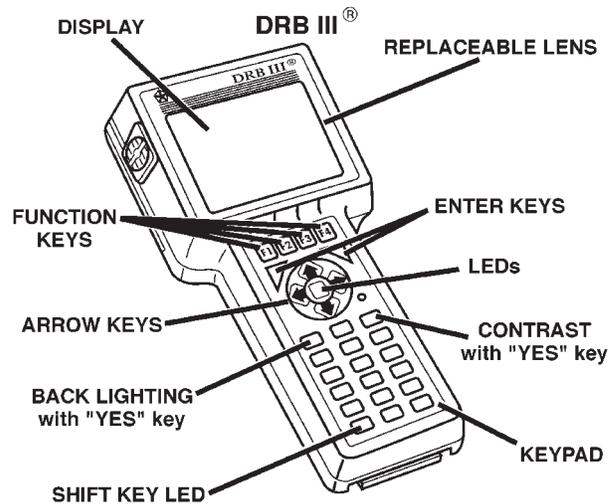
EATX DTC EVENT DATA can only be erased by:

1. Disconnecting the battery.
2. Performing a DRBIII® QUICK LEARN procedure.
3. Reprogramming the EATX controller.

Erasing Transmission DTC's does **not** clear the EATX DTC EVENT DATA.

3.4 USING THE DRBIII®

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



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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

GENERAL INFORMATION

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 ELECTRONIC TRANSMISSION ADAPTER KIT (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. The Simulators basic function 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 that 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 it's 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 it's 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/LE/RLE 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. It 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 were applicable. These procedures can be found in the service information. Following these procedures is very important of 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 TCM. 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 intended to be serviced in 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 below:

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.

GENERAL INFORMATION

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 the incorrect fluid 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 shifter is correctly adjusted. If the shifter is incorrectly adjusted, a number of complaints can result.

The TCM monitors the Shift Lever Position (SLP) Sensor continuously. If the linkage is incorrectly adjusted, the TCM 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 shift linkage 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 drivers description of the problem?

- 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 TCM.

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 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) – DRBIII® must use the latest release level.
- > Transmission Simulator (Miller #8333)
- > Line Pressure Adapter (Miller #8259)
- > Jumper wires
- > Test Light (minimum of 25 ohms of resistance)
- > Ohmmeter
- > Voltmeter
- > Pressure gauge 0-2068 kPa (0-300 PSI)

6.0 GLOSSARY OF TERMS

APPS	accelerator pedal position sensor
BCM	body control module
CKT	circuit
CVI	clutch volume index
DLC	data link connector

DRBIII®	diagnostic readout box	REV	reverse clutch
DTC	diagnostic trouble code	SSV	solenoid switch valve
EATX	electronic automatic transmission	SW	switch
EMCC	electronically modulated converter clutch	TCC	torque converter clutch
FCM	front control module (part of the IPM system)	TCM	transmission control module
FEMCC	full electronically modulated converter clutch	TCCM	transfer case control module
IOD	ignition off-draw	TP	throttle position
IRT	intelligent recovery timer	TRD	torque reduction
ISS	input speed sensor	TRS	transmission range sensor
LED	light emitting diode	TTS	transmission temperature sensor
LPS	line pressure sensor	UD	underdrive clutch
LR	low/reverse clutch	2C	2 nd clutch
MIC	mechanical instrument cluster	4C	4 th clutch
MIL	malfunction indicator lamp	2/4	2nd and 4th gear clutch or pressure switch
MS	multi select		
OBDII	on board diagnostics		
OD	overdrive clutch		
OSS	output speed sensor		
PCI	programmable controller interface (vehicle bus system)		
PCM	powertrain control module		
PCS	pressure control solenoid		
PEMCC	partial electronically modulated converter clutch		

6.2 DEFINITIONS

OBDII/EURO III 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 22 C (40°F) from initial start up. To count as a warm-up cycle, no DTC's may occur during the cycle.

7.0
DIAGNOSTIC INFORMATION AND
PROCEDURES

Symptom:

***NO RESPONSE FROM TRANSMISSION CONTROL MODULE (DIESEL ONLY)**

POSSIBLE CAUSES
NO RESPONSE FROM TRANSMISSION CONTROL MODULE FUSED IGNITION SWITCH 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. With the DRB, attempt to communicate with the Instrument Cluster. 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 45RFE/545RFE 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, check the Fused Ignition Switch 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 Fused Ignition Switch Output (Run/St) circuit for an open. Refer to the wiring diagrams location in the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All

***NO RESPONSE FROM TRANSMISSION CONTROL MODULE (DIESEL ONLY) — Continued**

TEST	ACTION	APPLICABILITY
3	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Remove the starter relay from the PDC. Using a 12-volt test light connected to ground, check 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?</p> <p>Yes → Go To 4</p> <p>No → Repair the Fused Ignition Switch Output (Start) circuit for an open. Refer to the wiring diagrams located in the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
4	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. 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?</p> <p>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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 5</p> <p>Note: Reinstall the original Starter Relay.</p>	All
5	<p>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?</p> <p>Yes → Go To 6</p> <p>No → Repair the Fused B(+) circuit for an open. Refer to the wiring diagrams located in the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

***NO RESPONSE FROM TRANSMISSION CONTROL MODULE (DIESEL ONLY) — Continued**

TEST	ACTION	APPLICABILITY
6	<p>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?</p> <p>Yes → Go To 7</p> <p>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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
7	<p>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. 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?</p> <p>Yes → Replace the Transmission Control Module in accordance with the service information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Repair the PCI Bus circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:**P0122-TPS/APPS LOW - DIESEL****When Monitored and Set Condition:****P0122-TPS/APPS LOW - DIESEL**

When Monitored: Continuously with the ignition on and engine running.

Set Condition: This DTC will set if the monitored APPS voltage drops below 0.078 volts for the period of 0.48 seconds.

POSSIBLE CAUSES

5-VOLT SUPPLY CIRCUIT OPEN
 APP SENSOR SIGNAL CIRCUIT OPEN
 5-VOLT SUPPLY CIRCUIT SHORT TO GROUND
 APP SENSOR SIGNAL CIRCUIT SHORT TO GROUND
 5-VOLT SUPPLY CIRCUIT SHORT TO THE SPEED SENSOR GROUND
 APP SENSOR SIGNAL CIRCUIT SHORT TO SPEED SENSOR GROUND
 ACCELERATOR PEDAL POSITION SENSOR
 TRANSMISSION CONTROL MODULE
 INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

P0122-TPS/APPS LOW - DIESEL — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII® in Transmission Sensors, read the TPS/ APPS voltage. Is the TPS/APPS voltage below 0.1 volts? Yes → Go To 3 No → Go To 12	All
3	Turn the ignition off to the lock position. Disconnect the APP Sensor harness connector. Measure the voltage of the 5-volt Supply circuit. Is the voltage below 4.5 volts? Yes → Go To 4 No → Go To 7	All
4	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the APP Sensor harness connector. Measure the resistance of the 5-volt Supply circuit between the TCM harness connector and the APP Sensor harness connector. Is the resistance above 5.0 ohms ? Yes → Repair the 5-volt Supply circuit for an open. Perform 45RFE/545RFE 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 APP Sensor harness connector. Measure the resistance between ground and the 5-volt Supply circuit. Is the resistance below 5.0 ohms ? Yes → Repair the 5-volt Supply circuit for a short to ground. Perform 45RFE/545RFE 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 APP Sensor harness connector. Measure the resistance between the 5-volt Supply circuit and the Speed Sensor Ground circuit at the APP Sensor harness connector. Is the resistance above 5.0 ohms? Yes → Go To 11 No → Repair the 5-volt Supply circuit for a short to the Speed Sensor Ground circuit. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0122-TPS/APPS LOW - DIESEL — Continued

TEST	ACTION	APPLICABILITY
7	<p>Turn the ignition off to the lock position. Disconnect the APP Sensor harness connector. Connect a jumper wire between the 5-volt Supply circuit and the Accelerator Pedal Position Sensor Signal circuit. Ignition on, engine not running. With the DRBIII® in Transmission Sensors, read the TPS/ APPS voltage. Is the TPS/APPS voltage above 4.5 volts?</p> <p>Yes → Replace the Accelerator Pedal Position Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 8</p>	All
8	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the APP Sensor harness connector. Measure the resistance of the Accelerator Pedal Position Sensor Signal circuit between the TCM harness connector and the APP Sensor harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the APP Sensor Signal circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 9</p>	All
9	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the APP Sensor harness connector. Measure the resistance between ground and the APP Sensor Signal circuit. Is the resistance below 5.0 ohms?</p> <p>Yes → Repair the APP Sensor Signal circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 10</p>	All
10	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connectors. Disconnect the APP Sensor harness connector. Measure the resistance of the Accelerator Pedal Position Sensor Signal between the APP Sensor Signal circuit and the Speed Sensor Ground circuit. Is the resistance below 5.0 ohms?</p> <p>Yes → Repair the APP Sensor Signal circuit for a short to the Speed Sensor Ground circuit. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 11</p>	All

P0122-TPS/APPS LOW - DIESEL — Continued

TEST	ACTION	APPLICABILITY
11	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
12	<p>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?</p> <p style="padding-left: 40px;">Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Test Complete.</p>	All

Symptom:
P0123-TPS/APPS HIGH - DIESEL

When Monitored and Set Condition:

P0123-TPS/APPS HIGH - DIESEL

When Monitored: Continuously with the ignition on and engine running.

Set Condition: This DTC will set if the monitored APPS voltage rises above 4.94 volts for the period of 0.48 seconds.

POSSIBLE CAUSES

- SPEED SENSOR GROUND CIRCUIT OPEN
- 5-VOLT SUPPLY CIRCUIT SHORT TO VOLTAGE
- APP SENSOR SIGNAL CIRCUIT SHORT TO VOLTAGE
- SPEED SENSOR GROUND CIRCUIT SHORT TO VOLTAGE
- ACCELERATOR PEDAL POSITION SENSOR
- TRANSMISSION CONTROL MODULE
- INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

TRANSMISSION - RFE

P0123-TPS/APPS HIGH - DIESEL — Continued

TEST	ACTION	APPLICABILITY
2	<p>Ignition on, engine not running. Press the accelerator pedal all the way down to wide open throttle. With the DRBIII® in Transmission Sensors, read the TPS/APPS voltage. Is the TPS/APPS voltage above 4.94 volts?</p> <p>Yes → Go To 3 No → Go To 11</p>	All
3	<p>Turn the ignition off to the lock position. Disconnect the APP Sensor harness connector. Ignition on, engine not running. With the DRBIII® in Transmission Sensors, read the TPS/APPS voltage. Is the voltage above 0.5 volts?</p> <p>Yes → Go To 4 No → Go To 5</p>	All
4	<p>Turn the ignition off to the lock position. Disconnect the APP Sensor harness connector. Disconnect the TCM harness connector. Remove the Transmission Control Relay. 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 APP Sensor Signal circuit. Is the voltage above 0.5 volt?</p> <p>Yes → Repair the APP Sensor Signal circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10</p>	All
5	<p>Turn the ignition off to the lock position. Disconnect the APP Sensor harness connector. Ignition on, engine not running. Measure the voltage of the 5-volt Supply circuit. Is the voltage above 5.5 volts?</p> <p>Yes → Go To 6 No → Go To 7</p>	All
6	<p>Turn the ignition off to the lock position. Disconnect the APP Sensor harness connector. Disconnect the TCM harness connector. Remove the Transmission Control Relay. 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 5-volt Supply circuit. Is the voltage above 0.5 volt?</p> <p>Yes → Repair the 5-volt Supply circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10</p>	All

P0123-TPS/APPS HIGH - DIESEL — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the APP Sensor harness connector. Measure the resistance of the Speed Sensor Ground circuit between the TCM harness connector and the APP Sensor harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Speed Sensor Ground circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the APP Sensor harness connector. Disconnect the TCM harness connector. Remove the Transmission Control Relay. 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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Replace the Accelerator Pedal Position Sensor per the Service Information Ignition on, engine not running. Press the accelerator pedal all the way down to wide open throttle. With the DRBIII® in Transmission Sensors, read the TPS/APPS voltage. Is the TPS/APPS voltage above 4.94 volts? Yes → Go To 10 No → Repair Complete. Perform 45RFE/545RFE 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. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0123-TPS/APPS HIGH - DIESEL — Continued

TEST	ACTION	APPLICABILITY
11	<p>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?</p> <p style="padding-left: 40px;">Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Test Complete.</p>	All

Symptom:**P0124-TPS/APPS INTERMITTENT - DIESEL****When Monitored and Set Condition:****P0124-TPS/APPS INTERMITTENT - DIESEL**

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

RELATED DTCS PRESENT
 WIRING AND CONNECTORS
 ACCELERATOR PEDAL POSITION SENSOR
 TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>With the DRBIII®, read Transmission DTCs.</p> <p>Are there any APPS/TPS High or Low DTCs present?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All

P0124-TPS/APPS INTERMITTENT - DIESEL — Continued

TEST	ACTION	APPLICABILITY
3	<p>Ignition on, engine not running. With the DRBIII®, under Transmission Sensors, monitor the APPS/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?</p> <p>Yes → Go To 4</p> <p>No → Replace the Accelerator Pedal Position Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
4	<p>Ignition on, engine not running. With the DRBIII®, under Transmission Sensors, monitor the APPS/TPS voltage in the following step. While checking for erratic voltage changes, perform a wiggle test by wiggling all the wiring and connectors pertaining to the APPS/TPS while slowly opening and closing the throttle. Did the APPS/TPS voltage change smooth and consistent?</p> <p>Yes → Go To 5</p> <p>No → Repair wiring and/or connectors as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
5	<p>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.</p> <p>Repair</p> <p>Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	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: This DTC is an informational code and does not necessarily indicate that a failure exists. It merely flags the fact that trans sump oil temperature reached 116° C or 240F. This temperature level can be reached when operating under heavy load in hot weather. This causes the transmission controller to use an "overheat" shift schedule, which changes the shift patterns in an attempt to control the temperature. Customers may notice a different feeling or response under these conditions. The Owner's Manual includes an explanation of this "Over Temperature Mode" for the customer's information. The DTC sets immediately when the Overheat shift schedule is activated with a Transmission Oil Temperature above 116° C or 240° F.

POSSIBLE CAUSES

- SEVERE OPERATION TRAILER TOW IN HOT WEATHER
- ENGINE COOLING SYSTEM
- OIL PUMP VOLUME CHECK
- TORQUE CONVERTOR FAILURE
- HIGH TEMPERATURE OPERATIONS ACTIVATED

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0218-HIGH TEMPERATURE OPERATION ACTIVATED — Continued

TEST	ACTION	APPLICABILITY
2	<p>Was the vehicle towing in hot weather when the DTC set?</p> <p>Yes → This is the reason the DTC set, advise customer additional transmission cooling may be necessary. Trailer weight may be exceeding vehicle specifications. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>Perform Engine Cooling System diagnostics per the Service Information. Is the Engine Cooling System functioning properly?</p> <p>Yes → Go To 4</p> <p>No → Repair the cause of the engine overheating. Refer to the Service Information for the proper repair procedure. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
4	<p>Perform the Oil Pump Volume Check per the Service Information. Did the Oil Pump Flow test pass?</p> <p>Yes → Go To 5</p> <p>No → Repair the cause of either a low, or no Transmission Oil Pump Flow. Refer to the Service Information for the proper repair procedure. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
5	<p>Inspect for clutch debris inside the pump, particularly in the cooler bypass circuit. NOTE: Converter failure, clutch debris inside the pump (particularly in the cooler bypass circuit) is an indication of converter failure. Is there clutch debris inside the pump, particularly in the cooler bypass circuit?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 6</p>	All
6	<p>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. If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Check for any Service Bulletin relating to this problem. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:**P0604-INTERNAL TCM****When Monitored and Set Condition:****P0604-INTERNAL TCM**

When Monitored: Continuously with the ignition on.

Set Condition: Whenever the Transmission Control Module (TCM) detects an internal controller problem.

POSSIBLE CAUSES

TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>Repair</p> <p>The Transmission Control Module is reporting internal errors and must be replaced. Refer to the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:

P0605-INTERNAL TCM

When Monitored and Set Condition:

P0605-INTERNAL TCM

When Monitored: Continuously with the ignition on

Set Condition: Whenever the Transmission Control Module (TCM) detects an internal controller problem.

POSSIBLE CAUSES

TRANSMISSION CONTROL MODULE

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 The Transmission Control Module is reporting internal errors and must be replaced. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
P0613-INTERNAL TCM

When Monitored and Set Condition:

P0613-INTERNAL TCM

When Monitored: Continuously with the ignition on.

Set Condition: When ever the Transmission Control Module (TCM) detects an internal controller problem.

POSSIBLE CAUSES

GROUND CIRCUIT OPEN
 TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	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 all four 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 on all four ground circuits? Yes → Go To 2 No → Repair the Ground circuit(s) as necessary. Check main ground connection to engine block and/or chassis. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	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 The Transmission Control Module is reporting internal errors and must be replaced. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE 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: 3 occurrences in one ignition start with a invalid PRNDL code, which lasts for more than 0.1 second.

POSSIBLE CAUSES

SHIFTER OUT OF ADJUSTMENT
TRS T1 SENSE CIRCUIT OPEN
TRS T2 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 T2 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 T2 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 SOLENOID/TRS ASSEMBLY
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all Engine DTC's prior to performing Transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle to ensure that all diagnostic monitors have run.</p> <p>NOTE: Verify flash level of Powertrain Controller. Some problems are corrected by software upgrades to the Transmission and Engine Systems.</p> <p>NOTE: Due to the integration of the Powertrain and Transmission control modules - if a controller flash is performed it is necessary to perform Quick Learn and the Drive Learn procedures. Failure to do so may result in shift quality complaints.</p> <p>NOTE: Check for applicable TSB's that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>With the DRBIII®, perform the Shift Lever Position Test.</p> <p>Select the test outcome from the following:</p> <p style="padding-left: 40px;">Test passes: Go To 3</p> <p style="padding-left: 40px;">Test fails with Error Code: Go To 4</p> <p style="padding-left: 40px;">Test fails without Error Code: Go To 23</p>	All
3	<p>The conditions necessary to set this DTC are not present at this time.</p> <p>With the DRBIII®, check the EATX DTC EVENT DATA to help identify the conditions in which the DTC was set.</p> <p>NOTE: If the Transmission Solenoid/TRS connector is disconnected while the ignition key is in the ON or OFF position, code P0706 will be set.</p> <p>NOTE: In this case, the EATX DTC Event Data may show engine speed as zero, all TRS pin states as OPEN, all pressure switches as OPEN or CLOSED (all switches in the same state), and/or line pressure as zero.</p> <p>NOTE: Ensure the Transmission Solenoid/TRS connector is properly reconnected.</p> <p>Using the schematics as a guide, inspect the wiring and connectors specific to this circuit.</p> <p>Wiggle the wires while checking for shorts and open circuits.</p> <p>Were there any problems found?</p> <p style="padding-left: 40px;">Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Test Complete.</p>	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
4	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a TCM - No Response condition. Install Transmission Simulator Miller tool #8333. 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 selector switch on the Transmission Simulator. The LED for the gear position in question must be illuminated on the Transmission Simulator prior to pressing "ENTER" on the DRBIII®. NOTE: When the DRBIII® requests the O/D off button be depressed, you must use the O/D OFF button in the vehicle or you will fail the Shift Lever Position Test with a Shift Lever Error Code 11. Did the Shift Lever Position test pass?</p> <p style="padding-left: 40px;">Yes → Go To 5</p> <p style="padding-left: 40px;">No → Go To 6</p> <p>NOTE: Make sure to disconnect the Transmission Simulator and reconnect all disconnected connectors before proceeding.</p>	All
5	<p>Remove the Transmission Valve Body assembly for inspection, per the Service Information. Is there significant metal debris on the manual valve code plate?</p> <p style="padding-left: 40px;">Yes → Repair internal transmission per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Replace the Transmission Solenoid Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>With the DRBIII®, observe the TRS sense circuits on the Input/Output screen. (C1 thru C5) Move the shift lever from P to L, pausing momentarily in each gear position. Watch for one of the circuits to not change state. Pick the one that did not change state.</p> <p style="padding-left: 40px;">TRS T1 sense (C4) Go To 7</p> <p style="padding-left: 40px;">TRS T2 sense (C5) Go To 10</p> <p style="padding-left: 40px;">TRS T3 sense (C3) Go To 13</p> <p style="padding-left: 40px;">TRS T41 sense (C1) Go To 16</p> <p style="padding-left: 40px;">TRS T42 sense (C2) Go To 19</p>	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly 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 Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the TRS T1 Sense circuit for an open. Perform 45RFE/545RFE 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/TRS Assembly harness connector. Note: Check connectors - Clean/repair as necessary. 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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Disconnect the TCM harness connector. Note: Check connectors - Clean/repair as necessary. 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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 22	All
10	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Disconnect the TCM harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the TRS T2 Sense circuit from the TCM harness connector to the Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the TRS T2 Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 11	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
11	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Disconnect the TCM harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the TRS T2 Sense circuit. Is the resistance below 5.0 ohms?</p> <p>Yes → Repair the TRS T2 Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 12</p>	All
12	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Disconnect the TCM harness connector. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. Measure the voltage of the TRS T2 Sense circuit. Is the voltage above 0.5 volt?</p> <p>Yes → Repair the TRS T2 Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 22</p>	All
13	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly 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 Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the TRS T3 Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 14</p>	All
14	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly 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 in the TCM harness connector. Is the resistance below 5.0 ohms?</p> <p>Yes → Repair the TRS T3 Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 15</p>	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
15	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Disconnect the TCM harness connector. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. Measure the voltage of the TRS T3 Sense circuit at the TCM harness connector. Is the voltage above 0.5 volt? Yes → Repair the TRS T3 Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 22	All
16	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly 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 harness connector to the Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the TRS T41 Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 17	All
17	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly 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. Is the resistance below 5.0 ohms? Yes → Repair the TRS T41 Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 18	All
18	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Disconnect the TCM harness connector. Note: Check connectors - Clean/repair as necessary. 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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 22	All

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
19	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly 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 Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the TRS T42 Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 20	All
20	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly 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. Is the resistance below 5.0 ohms? Yes → Repair the TRS T42 Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 21	All
21	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Disconnect the TCM harness connector. Note: Check connectors - Clean/repair as necessary. 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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 22	All
22	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. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All
23	If there are no possible causes remaining, view repair. Repair Adjust the shifter per the Service Information. Perform 45RFE/545RFE 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	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	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 45RFE/545RFE 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. NOTE: Failure to remove Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. 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 45RFE/545RFE 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. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0711-TRANSMISSION TEMPERATURE SENSOR PERFORMANCE — Continued

TEST	ACTION	APPLICABILITY
7	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	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	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>With the DRBIII®, check Transmission DTC's.</p> <p>Are there any Speed Sensor DTCs present?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All

P0712-TRANSMISSION TEMPERATURE SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
3	<p>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?</p> <p style="padding-left: 40px;">Yes → Go To 4</p> <p style="padding-left: 40px;">No → Go To 8</p>	All
4	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. 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?</p> <p style="padding-left: 40px;">Yes → Go To 5</p> <p style="padding-left: 40px;">No → Go To 6</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>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?</p> <p style="padding-left: 40px;">Yes → Repair the Transmission Temperature Sensor Signal circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 7</p>	All
7	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

P0712-TRANSMISSION TEMPERATURE SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
8	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	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	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>With the DRBIII®, Check the STARTS SINCE SET counter for P0713.</p> <p>NOTE: This counter only applies to the last DTC set.</p> <p>Is the STARTS SINCE SET counter 2 or less?</p> <p>Yes → Go To 3 No → Go To 8</p>	All

P0713-TRANSMISSION TEMPERATURE SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
3	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. 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 \pm 0.2 volts?</p> <p style="padding-left: 40px;">Yes → Go To 4</p> <p style="padding-left: 40px;">No → Go To 5</p>	All
4	<p>If there are no possible causes remaining, view repair.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
5	<p>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?</p> <p style="padding-left: 40px;">Yes → Repair the Transmission Temperature Sensor Signal circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 6</p>	All
6	<p>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?</p> <p style="padding-left: 40px;">Yes → Repair the Transmission Temperature Sensor Signal circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 7</p>	All

P0713-TRANSMISSION TEMPERATURE SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
7	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
8	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p style="padding-left: 40px;">Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Test Complete.</p>	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	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>With the DRBIII®, check Transmission DTC's.</p> <p>Are there any Speed Sensor and/or other Temperature Sensor DTCs present?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All

P0714-TRANSMISSION TEMPERATURE SENSOR INTERMITTENT — Continued

TEST	ACTION	APPLICABILITY
3	<p>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?</p> <p>Yes → Go To 4 No → Go To 7</p>	All
4	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. 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?</p> <p>Yes → Go To 5 No → Go To 6</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair Replace Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>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.</p> <p>Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
7	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.</p>	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. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES

- INPUT SPEED SENSOR SIGNAL CIRCUIT OPEN
- SPEED SENSOR GROUND CIRCUIT OPEN
- INPUT SPEED SENSOR SIGNAL CIRCUIT SHORT TO GROUND
- SPEED SENSOR GROUND CIRCUIT SHORT TO GROUND
- INPUT SPEED SENSOR SIGNAL CIRCUIT SHORT TO VOLTAGE
- SPEED SENSOR GROUND CIRCUIT SHORT TO VOLTAGE
- INPUT SPEED SENSOR
- TRANSMISSION CONTROL MODULE
- INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0715-INPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
2	Start the engine in park. With the DRBIII®, observe the Input Speed Sensor Reading. Is the Input Speed Sensor Reading below 400 RPM? Yes → Go To 3 No → Go To 12	All
3	Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install Transmission Simulator Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the Transmission Simulator, set the "Input/Output Speed" switch to "ON" and the rotary switch to the "3000/1000" position. With the DRBIII®, observe the Input and Output Speed Sensor readings. Does the input speed read 3000 RPM and the Output speed read 1000 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 45RFE/545RFE 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 45RFE/545RFE 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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0715-INPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
7	<p>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. Place 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?</p> <p>Yes → Repair the Input Speed Sensor Signal circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 8</p>	All
8	<p>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?</p> <p>Yes → Repair the Speed Sensor Ground circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 9</p>	All
9	<p>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 Speed Sensor Ground circuit. Is the resistance Below 5.0 ohms?</p> <p>Yes → Repair the Speed Sensor Ground circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 10</p>	All
10	<p>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. Place 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?</p> <p>Yes → Repair Speed Sensor Ground circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 11</p>	All

P0715-INPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
11	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
12	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p style="padding-left: 40px;">Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Test Complete.</p>	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. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES

- OUTPUT SPEED SENSOR SIGNAL CIRCUIT OPEN
- SPEED SENSOR GROUND CIRCUIT OPEN
- OUTPUT SPEED SENSOR SIGNAL CIRCUIT SHORT TO GROUND
- SPEED SENSOR GROUND 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	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0720-OUTPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
2	Turn the ignition off to the lock position. CAUTION: Properly support the vehicle and raise all drive wheels off the ground. Start the engine in park. Place the transmission gear selector in drive, release foot from brake. WARNING: BE SURE TO KEEP HANDS AND FEET CLEAR OF ROTATING WHEELS. With the DRBIII®, monitor the Output Speed Sensor RPM. Is the Output Speed Sensor RPM below 100 RPM? Yes → Go To 3 No → Go To 12	All
3	Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the Transmission Simulator, set the "Input/Output Speed" switch to "ON" and the rotary switch to the "3000/1000" position. With the DRBIII®, read the Input and Output Speed Sensor readings. Does the Input Speed read 3000 RPM and the Output Speed read 1000 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 Output Speed Sensor per the Service Information. Perform 45RFE/545RFE 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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All

P0720-OUTPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
6	<p>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?</p> <p style="padding-left: 40px;">Yes → Repair the Output Speed Sensor Signal circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 7</p>	All
7	<p>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. Place 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 Output Speed Sensor Signal circuit. Is the voltage above 0.5 volts?</p> <p style="padding-left: 40px;">Yes → Repair the Output Speed Sensor Signal circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 8</p>	All
8	<p>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?</p> <p style="padding-left: 40px;">Yes → Repair the Speed Sensor Ground circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 9</p>	All
9	<p>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 Speed Sensor Ground circuit. Is the resistance below 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the Speed Sensor Ground circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 10</p>	All

P0720-OUTPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
10	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. Place 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 Speed Sensor Ground circuit. Is the voltage above 0.5 volts? Yes → Repair the Speed Sensor Ground circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 11	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. Perform 45RFE/545RFE 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 wires while checking for shorts and open circuits. With the DRBIII®, check the EATX DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0725-ENGINE SPEED SENSOR CIRCUIT - DIESEL

When Monitored and Set Condition:

P0725-ENGINE SPEED SENSOR CIRCUIT - DIESEL

When Monitored: Continuously with engine running.

Set Condition: The DTC will set when the Transmission Control Module (TCM) senses a engine RPM less than 400 with the engine running for at least 2 seconds. RPM information is transferred over the communication bus from the ECM. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES

ENGINE SPEED SIGNAL CIRCUIT OPEN
 ENGINE SPEED SIGNAL CIRCUIT SHORTED GROUND
 ENGINE SPEED SIGNAL CIRCUIT SHORT TO VOLTAGE
 TRANSMISSION CONTROL MODULE
 ENGINE CONTROL MODULE
 INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, Check the STARTS SINCE SET counter. NOTE: This counter only applies to the last DTC set. Is the STARTS SINCE SET set at 0? Yes → Go To 2 No → Go To 7	All
2	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the ECM harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Engine Speed Signal circuit from the TCM harness connector to the ECM harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Engine Speed Signal Circuit circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All

P0725-ENGINE SPEED SENSOR CIRCUIT - DIESEL — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the ECM harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the Engine Speed Signal circuit. Is the resistance below 5.0 ohms? Yes → Repair the Engine Speed Signal circuit for a short to ground. Perform 45RFE/545RFE 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 ECM harness connector. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. Measure the voltage of the Engine Speed Signal circuit in the TCM harness connector. Is the voltage above 10.5 volts? Yes → Repair the Engine Speed Signal circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition switch to the lock position. Replace and Program the Transmission Control Module per the Service Information. Start the engine and allow the engine to idle for 6 minutes. Did the P0725 DTC return? Yes → Go To 6 No → Test complete. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All
6	Using the schematics as a guide, inspect the wiring and connectors. Pay particular attention to corroded terminals and all power and ground circuits. Repair as necessary. If there are no possible causes remaining, view repair. Repair Replace and program the Engine Control Module per the Service Information. After completion of Engine Verification test make sure to perform Transmission Verification Test. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0725-ENGINE SPEED SENSOR CIRCUIT - DIESEL — Continued

TEST	ACTION	APPLICABILITY
7	<p>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?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	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. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES

RELATED DTC'S PRESENT
INTERNAL TRANSMISSION
INTERMITTENT GEAR RATIO ERRORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

P0731-GEAR RATIO ERROR IN 1ST — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's If any of these DTC's are present, perform their respective tests first. Are DTC's P0944, P0715, P0720, P1794, P0867, P0932, P0868, or P0869 present also?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. If any of these DTCs are present, they will cause a Speed Ratio Error. Perform the test for P0944 first if it is present. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>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?</p> <p>Yes → Go To 4</p> <p>No → Go To 5</p>	All
4	<p>The conditions to set this DTC are not currently present. With the DRBIII®, check the EATX DTC EVENT DATA to help identify the conditions in which the DTC was set. IF the DTC Event Data shows fault P0731 was set in park or in park, reverse, or neutral, replace the PCM in NGC vehicles or TCM in EATX vehicles. IF the DTC Event Data shows fault P0731 was set with input RPM = zero, check the Input Speed Sensor and related wiring. IF the DTC Event Data shows fault P0731 was set with line pressure significantly below the desired line pressure, check oil level, primary oil filter and seal, sticking main regulator valve in pump. IF the DTC Event Data shows fault P0731 was set with UD pressure switch open, but line pressure matches desired line pressure, air check UD Clutch passage for leakage and if ok, replace Transmission Solenoid/TRS Assembly. Check the gearshift linkage adjustment. Intermittent Gear Ratio DTCs can be set by problems in the Input and Output Speed Sensor circuits and/or Speed Sensor Ground circuit. Remove the Starter Relay. Check the speed sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool # 8333. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Gear ratio DTC's 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. Were there any problems found.</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All

P0731-GEAR RATIO ERROR IN 1ST — Continued

TEST	ACTION	APPLICABILITY
5	<p>Repair the transmission as necessary. If there were any line pressure DTC's present along with this DTC, make sure to inspect the Transmission Oil Pump and Pressure Control Solenoid per the Service Information.</p> <p>If the DTC's P0876 and/or P0875 are also present, replace the Transmission Solenoid/TRS Assembly in addition to necessary internal repairs.</p> <p>If there are no possible causes remaining, view repair.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 40px;">Repair internal transmission per the Service Information. Inspect, cut UD piston seal, failed overrunning clutch, cut UD accumulator seal ring, broken UD accumulator piston, broken reaction shaft support seal ring or dribbler orifice, bleed orifice.</p> <p style="padding-left: 40px;">Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	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. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES

- RELATED DTC'S PRESENT
- RELATED PRESSURE SWITCH DTC'S PRESENT
- INTERNAL TRANSMISSION
- INTERMITTENT GEAR RATIO ERRORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0732-GEAR RATIO ERROR IN 2ND — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's If any of these DTC's are present, perform their respective tests first. Are DTC's P0944, P0715, P0720, P1794, P0867, P0932, P0868, and/ or P0869 present also?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. If any of these DTCs are present, they will cause a Speed Ratio Error. Perform the test for P0944 first if it is present. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>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 zero?</p> <p>Yes → Go To 4</p> <p>No → Go To 5</p>	All
4	<p>The conditions to set this DTC are not currently present. Check the gearshift linkage adjustment. Intermittent gear ratio DTCs can be set by problems in the Input and Output Speed Sensor circuits and/or Speed Sensor Ground circuit. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a TCM - No Response condition. Check the speed sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool # 8333. Gear ratio DTC's 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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All
5	<p>With the DRBIII®, check for other transmission DTC's Is a DTC P0845 2C Hydraulic Pressure Switch and/or P0846 2C Pressure Switch present also?</p> <p>Yes → Repair the Transmission or Solenoid/TRS assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 6</p>	All

P0732-GEAR RATIO ERROR IN 2ND — Continued

TEST	ACTION	APPLICABILITY
6	<p>Repair internal transmission as necessary. If any line pressure DTCs are present along with this DTC, make sure to inspect the Transmission Oil Pump and Pressure Control Solenoid per the Service Information.</p> <p>If DTC's P0846 and/or P0845 are also present, replace the Transmission Solenoid/TRS Assembly in addition to internal repairs.</p> <p>If there are no possible causes remaining, view repair.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Repair internal transmission per the Service Information.</p> <p style="padding-left: 80px;">Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	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. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES

PRESSURE SWITCH DTC'S PRESENT
 RELATED DTC'S PRESENT
 INTERNAL TRANSMISSION
 INTERMITTENT GEAR RATIO ERRORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

P0733-GEAR RATIO ERROR IN 3RD — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's If any of these DTC's are present, perform their respective tests first. Are the DTC's P0944, P0715, P0720, P1794, P0867, P0932, P0868, or P0869 present also?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom.. If any of these DTCs are present, they will cause a Speed Ratio Error. Perform the test for P0944 first if it is present. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>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 remains at zero?</p> <p>Yes → Go To 4</p> <p>No → Go To 5</p>	All
4	<p>The conditions to set this DTC are not currently present. Check the gearshift linkage adjustment. Intermittent gear ratio DTCs can be set by problems in the Input and Output Speed Sensor circuits and/or Speed Sensor Ground circuit. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Check the speed sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool # 8333. Gear ratio DTC's 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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found.</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All
5	<p>With the DRBIII®, check for other transmission DTC's Are the DTCs P0870 OD Hydraulic Pressure Switch and/or P0871 OD Pressure Switch present also?</p> <p>Yes → Repair the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 6</p>	All

P0733-GEAR RATIO ERROR IN 3RD — Continued

TEST	ACTION	APPLICABILITY
6	<p>Repair or replace the transmission as necessary. If the transmission is to be repaired, and there were any line pressure DTC's present along with this DTC, make sure to inspect the Transmission Oil Pump and Pressure Control Solenoid per the Service Information. NOTE: If DTC's P0871 and/or P0870 are also present, replace the Transmission Solenoid/TRS Assembly in addition to necessary internal repairs. If there are no possible causes remaining, view repair.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Repair internal transmission problem per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	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. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES

- RELATED DTC'S PRESENT
- RELATED PRESSURE SWITCH DTC'S PRESENT
- INTERNAL TRANSMISSION

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0734-GEAR RATIO ERROR IN 4TH — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's If any of these DTC's are present, perform their respective tests first. Are the DTC's P0944, P0715, P0720, P1794, P0867, P0932, P0868 or P0869 present also?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. If any of these DTCs are present, they will cause a Speed Ratio Error. Perform the test for P0944 first if it is present. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>With the DRBIII®, check for other transmission DTC's Are the DTCs P0987 4C Hydraulic Pressure Switch and/or P0988 4C Pressure Switch present also?</p> <p>Yes → Repair the Transmission or Solenoid/TRS assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 4</p>	All
4	<p>Repair or replace the transmission as necessary per the Service Information. If the transmission is to be repaired, and there were any line pressure DTC's present along with this DTC, make sure to inspect the Transmission Oil Pump and Pressure Control Solenoid per the Service Information. If DTC's P0988 and/or P0987 are also present, replace the Transmission Solenoid/TRS Assembly in addition to necessary internal repairs. If there are no possible causes remaining, view repair.</p> <p>Repair Repair internal transmission problem per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:

P0735-GEAR RATIO ERROR 4TH PRIME

When Monitored and Set Condition:

P0735-GEAR RATIO ERROR 4TH PRIME

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. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES

RELATED DTC'S PRESENT
 INTERNAL TRANSMISSION
 INTERMITTENT GEAR RATIO ERRORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

P0735-GEAR RATIO ERROR 4TH PRIME — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's. If any of these DTC's are present, perform their respective tests first. Are the DTC's P0944, P0715, P0720, P1794, P0867, P0932, P0868 or P0869 present also?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. If any of these DTCs are present, they will cause a Speed Ratio Error. Perform the test for P0944 first if it is present. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>With the DRBIII®, perform the 2nd Gear Clutch Test. Follow the instructions on the DRBIII® for the test. With the DRBIII®, perform the 3rd Gear Clutch Test. Follow the instructions on the DRBIII® for the test. NOTE: You must test the 2nd and 3rd clutches to verify 4th Prime operation. Increase the throttle angle, TPS Degree, to 30° for no more than a few seconds for each Gear tested. CAUTION: Do not overheat the transmission. NOTE: No DTC's will be set while using the DRBIII® to perform a clutch test. Did both clutch tests pass, input speed remain at zero?</p> <p>Yes → Go To 4</p> <p>No → Go To 5</p>	All
4	<p>The conditions to set this DTC are not currently present. Check the gearshift linkage adjustment. Intermittent gear ratio DTCs can be set by problems in the Input and Output Speed Sensor circuits and/or Speed Sensor Ground circuit. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Check the speed sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool # 8333. Gear ratio DTC's 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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Repair internal transmission problem. If any Line Pressure DTC's are present along with this DTC, make sure to inspect the Transmission Oil Pump and the Pressure Control Solenoid per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	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. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES

RELATED DTC'S PRESENT
INTERNAL TRANSMISSION
INTERMITTENT GEAR RATIO ERRORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0736-GEAR RATIO ERROR IN REVERSE — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's. If any of these DTC's are present, perform their respective tests first. Are the DTC's P0944, P0715, P0720, P1794, P0867, P0932, P0868 or P0869 present also?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. If any of these DTCs are present, they will cause a Speed Ratio Error. Perform the test for P0944 first if it is present. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>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 zero?</p> <p>Yes → Go To 4</p> <p>No → Go To 5</p>	All
4	<p>The conditions to set this DTC are not currently present. Check the shifter adjustment. Intermittent gear ratio DTCs can be set by problems in the Input and Output Speed Sensor circuits and/or Speed Sensor Ground circuit. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a TCM - No Response condition. Check the speed sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool # 8333. Gear ratio DTC's 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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Repair internal transmission problem. If there are any Line Pressure DTC's present along with this DTC, make sure to inspect the Transmission Oil Pump and Pressure Control Solenoid per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:

P0740-TCC OUT OF RANGE

When Monitored and Set Condition:

P0740-TCC OUT OF RANGE

When Monitored: During Electronically Modulated Converter Clutch (EMCC) Operation.

Set Condition: Transmission must be in EMCC, with input speed > than 1750 RPM. TCC-L/R Solenoid achieves the maximum duty cycle and can not pull engine speed within 60 RPM of input speed. Also when the transmission is in FEMCC and the engine slips TCC > than 100 RPM for 10 seconds. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES

RELATED DTC P0750 PRESENT
 INTERNAL TRANSMISSION
 TRANSMISSION SOLENOID/TRS ASSEMBLY
 INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

P0740-TCC OUT OF RANGE — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, read transmission DTC's. Is the DTC P0750 present?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>With the DRBIII®, Read and RECORD ALL Transmission DTC's. After recording DTC's, erase DTC's. Drive the vehicle until the transmission temperature is at least 43°C or 110°F. Perform the following steps 3 times. Drive the vehicle at 80 km/h or 50 MPH. Allow 4th gear to engage for at least 10 seconds. Close the Throttle. Tip back into the throttle until the TPS angle is between 25 and 29 degrees. NOTE: If the throttle angle goes over 30 degrees, you must close the throttle and try again. Did the TCC engage (Engine speed approximately equal to input speed) during any of the attempts?</p> <p>Yes → Go To 4</p> <p>No → Go To 5</p>	All
4	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All
5	<p>With the DRBIII®, check for other transmission DTC's. Are the DTCs P1775 and P0841 present also?</p> <p>Yes → Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 6</p>	All
6	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Repair internal transmission per the Service Information. Inspect the Primary Oil Pump and replace if necessary. If no problems are found in the Oil Pump, replace the Transmission Solenoid/TRS Assembly. Replace the Torque Converter in either case. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	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. It will also be tested immediately after a gear ratio or pressure switch error is detected.

Set Condition: After three consecutive solenoid continuity tests failures. After 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
- LR SOLENOID CONTROL CIRCUIT OPEN
- LR SOLENOID CONTROL CIRCUIT SHORT TO GROUND
- LR SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
- TRANSMISSION SOLENOID/TRS ASSEMBLY
- TRANSMISSION CONTROL MODULE
- INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0750-LR SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's. Are there any Transmission Control Relay related DTC's P0890, P0891, or P0888 present?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>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?</p> <p>Yes → Go To 4</p> <p>No → Go To 11</p>	All
4	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. Monitor the LR Solenoid LED on the Transmission Simulator. With the DRBIII®, actuate the LR Solenoid. Did the LR Solenoid LED on the Transmission Simulator blink on and off?</p> <p>Yes → Go To 5</p> <p>No → Go To 6</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>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 LR Solenoid Control circuit from the TCM harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the LR Solenoid Control circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 7</p>	All

P0750-LR SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	<p>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 LR Solenoid Control circuit. Is the resistance below 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the LR Solenoid Control circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 8</p>	All
8	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/TRS 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 LR Solenoid Control circuit. Is the voltage above 0.5 volt?</p> <p style="padding-left: 40px;">Yes → Repair the LR Solenoid Control circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 9</p>	All
9	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS 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 in the Transmission Solenoid/TRS 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?</p> <p style="padding-left: 40px;">Yes → Go To 10</p> <p style="padding-left: 40px;">No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
10	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

P0750-LR SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All

Symptom:

P0755-2C SOLENOID CIRCUIT

When Monitored and Set Condition:

P0755-2C SOLENOID CIRCUIT

When Monitored: Initially at power-up, then every 10 seconds thereafter. It will also be tested immediately after a gear ratio or pressure switch error is detected.

Set Condition: After three consecutive solenoid continuity tests failures. After 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
- 2C SOLENOID CONTROL CIRCUIT OPEN
- 2C SOLENOID CONTROL CIRCUIT SHORT TO GROUND
- 2C SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
- TRANSMISSION SOLENOID/TRS ASSEMBLY
- TRANSMISSION CONTROL MODULE
- INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0755-2C SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other Transmission DTC's. Are there any Transmission Control Relay related DTC's P0890, P0891 or P0888 present?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>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 for P0755 set at 0?</p> <p>Yes → Go To 4</p> <p>No → Go To 11</p>	All
4	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. Monitor the 2C Solenoid LED on the Transmission Simulator. With the DRBIII®, actuate the 2C Solenoid. Did the 2C Solenoid LED on the Transmission Simulator blink on and off?</p> <p>Yes → Go To 5</p> <p>No → Go To 6</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Replace Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>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 2C Solenoid Control circuit from the TCM harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the 2C Solenoid Control circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 7</p>	All

P0755-2C SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	<p>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 2C Solenoid Control circuit. Is the resistance below 5.0 ohms?</p> <p>Yes → Repair the 2C Solenoid Control circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 8</p>	All
8	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/TRS 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 2C Solenoid Control circuit. Is the voltage above 0.5 volt?</p> <p>Yes → Repair the 2C Solenoid Control circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 9</p>	All
9	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS 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 in the Transmission Solenoid/TRS 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?</p> <p>Yes → Go To 10</p> <p>No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
10	<p>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.</p> <p>Repair</p> <p>Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

P0755-2C SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	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. It will also be tested immediately after a gear ratio or pressure switch error is detected.

Set Condition: After three consecutive solenoid continuity tests failures. After 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
- OD SOLENOID CONTROL CIRCUIT OPEN
- OD SOLENOID CONTROL CIRCUIT SHORT TO GROUND
- OD SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
- TRANSMISSION SOLENOID/TRS ASSEMBLY
- TRANSMISSION CONTROL MODULE
- INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0760-OD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's. Are there any Transmission Control Relay related DTC's P0890, P0891 or P0888 present.</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>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?</p> <p>Yes → Go To 4</p> <p>No → Go To 11</p>	All
4	<p>Turn the ignition off to the lock position. Remove the Starter Relay from the PDC. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. Monitor the OD Solenoid LED on the Transmission Simulator. With the DRBIII®, actuate the OD Solenoid. Did the OD Solenoid LED on the Transmission Simulator blink on and off?</p> <p>Yes → Go To 5</p> <p>No → Go To 6</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair Replace Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>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 OD Solenoid Control circuit from the TCM harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the OD Solenoid Control circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 7</p>	All

P0760-OD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	<p>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 OD Solenoid Control circuit. Is the resistance below 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the OD Solenoid Control circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 8</p>	All
8	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Solenoid/TRS 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?</p> <p style="padding-left: 40px;">Yes → Repair the OD Solenoid Control circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 9</p>	All
9	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Remove the Transmission Control Relay. 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 in the Solenoid/TRS 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?</p> <p style="padding-left: 40px;">Yes → Go To 10</p> <p style="padding-left: 40px;">No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
10	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

P0760-OD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	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. It will also be tested immediately after a gear ratio or pressure switch error is detected.

Set Condition: After three consecutive solenoid continuity tests failures. After 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
- UD SOLENOID CONTROL CIRCUIT OPEN
- UD SOLENOID CONTROL CIRCUIT SHORT TO GROUND
- UD SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
- TRANSMISSION SOLENOID/TRS ASSEMBLY
- TRANSMISSION CONTROL MODULE
- INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0765-UD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's. Are there any Transmission Control Relay related DTCs P0890, P0891 or P0888 present?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>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 for P0765 set at 0?</p> <p>Yes → Go To 4</p> <p>No → Go To 11</p>	All
4	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. 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?</p> <p>Yes → Go To 5</p> <p>No → Go To 6</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair Replace Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>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 UD Solenoid Control circuit between the TCM harness connector and the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the UD Solenoid Control circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 7</p>	All

P0765-UD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/TRS 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?</p> <p>Yes → Repair the UD Solenoid Control circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 8</p>	All
8	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/TRS 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 UD Solenoid Control circuit. Is the voltage above 0.5 volt?</p> <p>Yes → Repair the UD Solenoid Control circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 9</p>	All
9	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS 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 in the Transmission Solenoid/TRS 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?</p> <p>Yes → Go To 10</p> <p>No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
10	<p>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.</p> <p>Repair</p> <p>Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

P0765-UD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All

Symptom:

P0770-4C SOLENOID CIRCUIT

When Monitored and Set Condition:

P0770-4C SOLENOID CIRCUIT

When Monitored: Initially at power-up, then every 10 seconds thereafter. It will also be tested immediately after a gear ratio or pressure switch error is detected.

Set Condition: After three consecutive solenoid continuity tests failures. After 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
- 4C SOLENOID CONTROL CIRCUIT OPEN
- 4C SOLENOID CONTROL CIRCUIT SHORT TO GROUND
- 4C SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
- TRANSMISSION SOLENOID/TRS ASSEMBLY
- TRANSMISSION CONTROL MODULE
- INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0770-4C SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's. Are there any Transmission Control Relay related DTC's P0890, P0891 or P0888 present?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>With the DRBIII®, Check the STARTS SINCE SET counter for P0770. NOTE: This counter only applies to the last DTC set. Is the STARTS SINCE SET counter for P0770 set at 0?</p> <p>Yes → Go To 4</p> <p>No → Go To 11</p>	All
4	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. Monitor the 4C Solenoid LED on the Transmission Simulator, Miller tool #8333. With the DRBIII®, actuate the 4C Solenoid. Did the 4C Solenoid LED on the Transmission Simulator blink on and off?</p> <p>Yes → Go To 5</p> <p>No → Go To 6</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair. Replace Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>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 4C Solenoid Control circuit from the TCM harness connector to the Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the 4C Solenoid Control circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 7</p>	All

P0770-4C SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	<p>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 4C Solenoid Control circuit. Is the resistance below 5.0 ohms?</p> <p>Yes → Repair the 4C Solenoid Control circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 8</p>	All
8	<p>Turn the ignition off to the lock position. Disconnect the Transmission Control Module harness connector. Disconnect the Transmission Solenoid/TRS 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 4C Solenoid Control circuit. Is the voltage above 0.5 volt?</p> <p>Yes → Repair the 4C Solenoid Control circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 9</p>	All
9	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Remove the Transmission Control Relay. 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 in the Solenoid/TRS 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?</p> <p>Yes → Go To 10</p> <p>No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
10	<p>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.</p> <p>Repair</p> <p>Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

P0770-4C SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	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 code 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 P0944 PRESENT
 RELATED RELAY DTC'S 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
 TRANSMISSION CONTROL MODULE
 INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

P0841-LR PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other Transmission DTC's. Are there any Transmission Control Relay related DTC's P0890, P0891, or P0888 present?</p> <p>Yes → Refer to symptom list and perform test for the related Transmission Control Relay DTC (s). Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>With the DRBIII®, check for other Transmission DTC's. Is DTC P0944 present in addition to the DTC that you are diagnosing?</p> <p>Yes → Refer to symptom list and perform test for P0944. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 4</p>	All
4	<p>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?</p> <p>Yes → Go To 5</p> <p>No → Go To 12</p>	All
5	<p>Turn the ignition off to the lock position. Remove the Starter Relay from the PDC. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the Transmission Simulator, turn the Pressure Switch selector switch to LR. With the DRBIII®, monitor the LR Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. Did the state of the UD Pressure Switch change while pressing the Pressure Switch Test button?</p> <p>Yes → Go To 6</p> <p>No → Go To 7</p>	All
6	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

P0841-LR 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 /TRS 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 Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the L/R Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE 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/TRS 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 45RFE/545RFE 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/TRS 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 in the TCM harness connector. Is the voltage above 0.5 volt? Yes → Repair the L/R Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All

P0841-LR PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
10	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Remove the Transmission Control Relay. Connect a jumper wire between the Fused B+ circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit in the Transmission Solenoid/TRS 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?</p> <p style="padding-left: 40px;">Yes → Go To 11</p> <p style="padding-left: 40px;">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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
11	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
12	<p>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. Check for a Primary Oil Filter improperly installed. A dislodged Reverse Carrier Snap Ring will typically set this DTC on heavy throttle acceleration from a dead stop. With the DRBIII®, check the EATX DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p style="padding-left: 40px;">Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Test Complete.</p>	All

Symptom:**P0845-2C HYDRAULIC PRESSURE TEST FAILURE****When Monitored and Set Condition:****P0845-2C 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 above 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

RELATED LINE PRESSURE DTC'S PRESENT
TRANSMISSION SOLENOID/TRS ASSEMBLY
2C PRESSURE SWITCH SENSE CIRCUIT OPEN
5-VOLT SUPPLY CIRCUIT OPEN
POOR LINE PRESSURE SENSOR CONNECTION
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
2C PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
5-VOLT SUPPLY CIRCUIT SHORT TO GROUND
2C PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
EXCESSIVE DEBRIS IN OIL PAN
LINE PRESSURE SENSOR
INTERNAL TRANSMISSION
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

P0845-2C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>With the DRBIII®, check for other transmission DTC's</p> <p>Is there any Loss of Prime, and/or Line Pressure Sensor DTCs present?</p> <p style="padding-left: 40px;">Yes → Refer to Symptom List for the related symptom(s). Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 3</p>	All
3	<p>With the DRBIII®, check for other transmission DTC's</p> <p>Is the DTC P0732 and/or P0846 present also?</p> <p style="padding-left: 40px;">Yes → Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 4</p>	All
4	<p>With the DRBIII, Check the STARTS SINCE SET counter for P0845.</p> <p>NOTE: This counter only applies to the last DTC set.</p> <p>Is the STARTS SINCE SET counter 2 or less?</p> <p style="padding-left: 40px;">Yes → Go To 5</p> <p style="padding-left: 40px;">No → Go To 18</p>	All

P0845-2C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
5	<p>Start the engine. Warm the transmission to 82° C or 180° F. Firmly apply the brakes. With the DRBIII®, monitor the Line Pressure during the following step. Move the shift lever to each gear position and record the line pressure reading. Allow the pressure to stabilize for at least 5 seconds in each range. Did the line pressure remain at a steady value between 585 and 655 Kpa or 85 or 95 PSI?</p> <p style="padding-left: 40px;">Yes → Go To 6</p> <p style="padding-left: 40px;">No → Go To 10</p>	All
6	<p>Ignition on, engine not running. With the DRBIII®, monitor the Line Pressure during the following step. Firmly push the Transmission Line Pressure Sensor connector towards the Transmission. Did the Line Pressure change to about 207 kPa or 30 PSI when the connector was pushed?</p> <p style="padding-left: 40px;">Yes → Disconnect and properly reconnect the Line Pressure Sensor connector. Inspect terminals and repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 7</p>	All
7	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a TCM - No Response condition. Install the Transmission Simulator Miller tool# 8333. With the Transmission Simulator select the "OFF" position on the "Input/Output Speed" switch. NOTE: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the DRBIII®, monitor the Line Pressure during the following step. Using the Transmission Simulator, set the rotary knob to each of the 3 line pressure positions. NOTE: All three DRBIII® Line Pressure readings should be steady and ± 14 kPa or 2.0 PSI of the reading specified on the Transmission Simulator. Did the Line Pressure match the specified readings and remain steady in all three positions?</p> <p style="padding-left: 40px;">Yes → Replace the Line Pressure Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 8</p>	All

P0845-2C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Line Pressure Sensor harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the 5-volt Supply circuit from the Line Pressure Sensor harness connector to the TCM harness connector. Is the resistance above 5.0 ohms? Yes → Repair the 5-volt Supply circuit for an open. Perform 45RFE/545RFE 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 Line Pressure Sensor harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the 5-volt Supply circuit. Is the resistance below 5.0 ohms? Yes → Repair the 5-volt Supply circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 17	All
10	Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool # 8333. With the Transmission Simulator, turn the Pressure Switch selector to 2C. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the DRBIII®, monitor the 2C Pressure Switch state during the following step. While pressing and holding the Pressure Switch test button, wiggle the wiring harness and connectors pertaining to the 2C Pressure Switch. Did the 2C Pressure Switch state change to closed and remain closed while wiggling the wires? Yes → Go To 11 No → Go To 13	All
11	Remove and inspect the Transmission Oil Pan per the Service Information. Does the Transmission Oil Pan contain excessive debris or contamination? Yes → Repair the cause of the excessive debris in the Transmission Oil Pan. Refer to the Service Information for the proper procedures. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 12	All

P0845-2C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
12	<p>If there are no possible causes remaining, view repair.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Repair Internal Transmission as necessary. Disassemble and inspect the Valve Body and repair or replace as necessary. If no problems are found in the Valve Body, replace the Transmission Solenoid/TRS Assembly.</p> <p style="padding-left: 80px;">Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
13	<p>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 2C Pressure Switch Sense circuit from the TCM harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the 2C Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 14</p>	All
14	<p>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 2C Pressure Switch Sense circuit. Is the resistance below 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the 2C Pressure Switch circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 15</p>	All
15	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/TRS 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 2C Pressure Switch Sense circuit in the TCM harness connector. Is the voltage above 0.5 volt?</p> <p style="padding-left: 40px;">Yes → Repair the 2C Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 16</p>	All

P0845-2C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
16	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Remove the Transmission Control Relay. 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 in the Transmission Solenoid/TRS 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?</p> <p>Yes → Go To 17</p> <p>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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
17	<p>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.</p> <p>Repair</p> <p>Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
18	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All

Symptom:

P0846-2C PRESSURE SWITCH SENSE CIRCUIT

When Monitored and Set Condition:

P0846-2C PRESSURE SWITCH SENSE CIRCUIT

When Monitored: Whenever the engine is running.

Set Condition: The appropriate code 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
 2C PRESSURE SWITCH SENSE CIRCUIT OPEN
 TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
 2C PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
 2C PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
 2C PRESSURE SWITCH
 TRANSMISSION CONTROL MODULE
 INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0846-2C PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's. Are there any Transmission Control Relay related DTC's P0890, P0891, or P0888 present?</p> <p>Yes → Refer to symptom list and perform test for Transmission Control Relay related DTCs. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>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 P0846, 2 or less?</p> <p>Yes → Go To 4</p> <p>No → Go To 11</p>	All
4	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a TCM - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the Transmission Simulator, turn the Pressure Switch selector switch to 2C. With the DRBIII®, monitor the 2C Pressure Switch while pressing the Pressure Switch test button on the Transmission Simulator. Did the state of the 2C Pressure Switch change while pressing the Pressure Switch Test button?</p> <p>Yes → Go To 5</p> <p>No → Go To 6</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>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 2C Pressure Switch Sense circuit from the TCM harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the 2C Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 7</p>	All

P0846-2C PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	<p>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 2C Pressure Switch Sense circuit. Is the resistance below 5.0 ohms?</p> <p>Yes → Repair the 2C Pressure Switch Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 8</p>	All
8	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/TRS 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 2C Pressure Switch Sense circuit. Is the voltage above 0.5 volt?</p> <p>Yes → Repair the 2C Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 9</p>	All
9	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS 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 in the Solenoid/TRS 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?</p> <p>Yes → Go To 10</p> <p>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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
10	<p>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.</p> <p>Repair</p> <p>Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

P0846-2C PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	<p>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. Check for a Primary Oil Filter improperly installed. A dislodged Reverse Carrier Snap Ring will typically set this DTC on heavy throttle acceleration from a dead stop. With the DRBIII®, check the EATX DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All

Symptom:**P0868-LINE PRESSURE LOW****When Monitored and Set Condition:****P0868-LINE PRESSURE LOW**

When Monitored: Continuously while driving in a forward gear.

Set Condition: The TCM continuously monitors transducer Line Pressure Output and compares it to Desired Line Pressure. If transducer Line Pressure Output is more than 10 PSI below Desired Line Pressure, the DTC will set in approximately 2.1 seconds.

POSSIBLE CAUSES

CHECK FOR RELATED DTC'S

5 VOLT SUPPLY CIRCUIT OPEN

LINE PRESSURE SENSOR CONNECTION

5 VOLT SUPPLY CIRCUIT SHORT TO GROUND

5 VOLT SUPPLY CIRCUIT SHORT TO VOLTAGE

PRESSURE CONTROL SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE

INTERNAL TRANSMISSION

LINE PRESSURE SENSOR

PLUGGED FILTER

TRANSMISSION CONTROL MODULE

INTERMITTENT WIRING AND CONNECTORS

P0868-LINE PRESSURE LOW — Continued

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>With the DRBIII®, check for other transmission DTC's</p> <p>Is the DTC P0932 present also?</p> <p style="padding-left: 40px;">Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 3</p>	All
3	<p>With the DRBIII®, check the STARTS SINCE SET counter for P0868.</p> <p>NOTE: This counter only applies to the last DTC set.</p> <p>Is the START SINCE SET COUNTER 2 or less?</p> <p style="padding-left: 40px;">Yes → Go To 4</p> <p style="padding-left: 40px;">No → Go To 14</p>	All
4	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, monitor the Line Pressure, firmly push the Line Pressure Sensor harness connector towards the Transmission.</p> <p>Did the Line Pressure change to about 207 kPa or 30 PSI when the connector was pushed?</p> <p style="padding-left: 40px;">Yes → Disconnect and properly reconnect the Line Pressure Sensor connector. Inspect terminals and repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 5</p>	All

P0868-LINE PRESSURE LOW — Continued

TEST	ACTION	APPLICABILITY
5	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator Miller tool# 8333. With the Transmission Simulator select the "OFF" position on the "Input/Output Speed" switch. NOTE: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the DRBIII®, monitor the Line Pressure during the following step. Using the Transmission Simulator, set the rotary knob to each of the 3 line pressure positions. NOTE: All three DRBIII® Line Pressure readings should be steady and ± 2.0 PSI of the reading specified on the Transmission Simulator. Did the Line Pressure remain steady in all three positions?</p> <p style="padding-left: 40px;">Yes → Go To 6</p> <p style="padding-left: 40px;">No → Go To 9</p>	All
6	<p>Turn the ignition off to the lock position. Install the Line Pressure Adaptor, Miller tool# 8259, and the Pressure Gage, Miller tool# C-3293, 0 to 2000 kPa or 0 to 300 PSI. Start the engine in park. With the DRBIII® monitor the Line Pressure. Monitor the reading on the Pressure Gage Miller tool# C-3293. Compare the Line Pressure readings between the DRBIII® and the Pressure Gage. Is the Line Pressure Gauge reading within 34 kPa or 5 PSI of the DRBIII® reading?</p> <p style="padding-left: 40px;">Yes → Go To 7</p> <p style="padding-left: 40px;">No → Replace the Line Pressure Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
7	<p>Remove and inspect the Transmission Oil Pan for excessive debris per the Service Information. Remove and inspect the Primary Oil Filter per the Service Information. NOTE: Make sure the Primary Transmission Oil Filter and/or O-ring is not cracked or split. Does the Oil Pan contain excessive debris and/or is the Primary Oil Filter cracked or plugged?</p> <p style="padding-left: 40px;">Yes → Repair the plugged, cracked, or split Primary Transmission Oil Filter and/or O-ring. If the Primary Transmission Oil Filter is plugged refer to the Service Information for the proper Hydraulic repair procedure. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 8</p>	All
8	<p>If there are no possible causes remaining, view repair.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Repair internal transmission problem per the Service Information. Inspect the oil pump per the Service Information and replace if necessary. If no problem is found, replace the Transmission Solenoid/TRS assembly. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

P0868-LINE PRESSURE LOW — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Line Pressure Sensor harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the 5-volt Supply circuit from the Line Pressure Sensor harness connector to the TCM harness connector. Is the resistance above 5.0 ohms? Yes → Repair the 5-volt Supply circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Line Pressure Sensor harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the 5-volt Supply circuit. Is the resistance Below 5.0 ohms? Yes → Repair the 5-volt Supply circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 11	All
11	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Remove the Transmission Control Relay. Place 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. Note: Check connectors - Clean/repair as necessary. Measure the voltage of the 5-volt Supply circuit in the TCM harness connector. Is the voltage above 5.5 volts? Yes → Repair the 5-volt Supply circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 12	All
12	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/TRS harness connector. Remove the Transmission Control Relay from the PDC. 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 Pressure Control Solenoid control circuit in the TCM harness connector. Is the voltage above 0.5 volts? Yes → Repair the Pressure Control Solenoid Control circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 13	All

P0868-LINE PRESSURE LOW — Continued

TEST	ACTION	APPLICABILITY
13	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
14	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p style="padding-left: 40px;">Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Test Complete.</p>	All

Symptom:**P0869-LINE PRESSURE HIGH****When Monitored and Set Condition:****P0869-LINE PRESSURE HIGH**

When Monitored: Continuously while driving in a forward gear.

Set Condition: The PCM continuously monitors Actual Line Pressure. If the Actual Line Pressure reading is greater than the highest Desired Line Pressure ever used in the current gear, while the Pressure Control Solenoid duty cycle is at or near its maximum value (which should result in minimum line pressure), this code will set.

POSSIBLE CAUSES

CHECK FOR RELATED DTC'S

5-VOLT SUPPLY CIRCUIT OPEN

POOR LINE PRESSURE SENSOR CONNECTION

PRESSURE CONTROL SOLENOID CONTROL CIRCUIT OPEN

5-VOLT SUPPLY CIRCUIT SHORT TO GROUND

PRESSURE CONTROL SOLENOID CONTROL CIRCUIT SHORT TO GROUND

INTERNAL TRANSMISSION - LINE PRESSURE HIGH

LINE PRESSURE SENSOR

TRANSMISSION CONTROL MODULE

INTERMITTENT WIRING AND CONNECTORS

P0869-LINE PRESSURE HIGH — Continued

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>With the DRBIII®, check for other Transmission DTC's</p> <p>Is the DTC P0932 present also?</p> <p style="padding-left: 40px;">Yes → Refer to symptom list for problems related to P0932. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 3</p>	All
3	<p>The transmission temperature must be at least 180° F or 82° C for the results of this test to be valid.</p> <p>With the DRBIII®, check the STARTS SINCE SET counter for P0869.</p> <p>Is the STARTS SINCE SET COUNTER 2 or less?</p> <p style="padding-left: 40px;">Yes → Go To 4</p> <p style="padding-left: 40px;">No → Go To 13</p>	All
4	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, monitor the Transmission Line Pressure.</p> <p>Firmly push the Line Pressure Sensor harness connector inward towards the Transmission.</p> <p>Did the Line Pressure change to about 207 kPa or 30 PSI when the sensor connector was pushed?</p> <p style="padding-left: 40px;">Yes → Disconnect and properly reconnect the Line Pressure Sensor connector. Inspect terminals and repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 5</p>	All

P0869-LINE PRESSURE HIGH — Continued

TEST	ACTION	APPLICABILITY
5	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a TCM - No Response condition. Install the Transmission Simulator Miller tool# 8333. With the Transmission Simulator select the "OFF" position on the "Input/Output Speed" switch. NOTE: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the DRBIII®, monitor the Line Pressure during the following step. Using the Transmission Simulator, set the rotary knob to each of the 3 line pressure positions. NOTE: All three DRBIII® Line Pressure readings should be steady and ± 2.0 PSI of the reading specified on the Transmission Simulator. Did the Line Pressure remain steady in all three positions?</p> <p style="padding-left: 40px;">Yes → Go To 6</p> <p style="padding-left: 40px;">No → Go To 8</p>	All
6	<p>Turn the ignition off to the lock position. Install the Line Pressure Adaptor, Miller tool# 8259, and the Pressure Gauge, Miller tool# C-3293, 0 to 2000 kPa or 0 to 300 PSI. Start the engine in park. With the DRBIII®, monitor the Line Pressure. Monitor the reading on the Pressure Gauge, Miller tool# C-3293. Compare the Line Pressure reading between the DRBIII® and the Pressure Gauge. Is the Pressure Gauge reading within 34 kPa or 5 PSI of the DRBIII® reading?</p> <p style="padding-left: 40px;">Yes → Go To 7</p> <p style="padding-left: 40px;">No → Replace the Line Pressure Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
7	<p>If there are no possible causes remaining, view repair.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Repair internal transmission per the Service Information. Inspect the Transmission Oil Pump per the Service Information and replace if necessary. If no problem is found, replace the Transmission Solenoid/TRS Assembly - stuck Pressure Control Solenoid. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
8	<p>Turn the ignition off to the lock position. Disconnect the Transmission Control Module harness connector. Disconnect the Line Pressure Sensor harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the 5-volt Supply circuit from the Line Pressure Sensor harness connector to the Transmission Control Module harness connector. Is the resistance above 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the 5-volt Supply circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 9</p>	All

P0869-LINE PRESSURE HIGH — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Line Pressure Sensor harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the 5-volt Supply circuit. Is the resistance below 5.0 ohms? Yes → Repair the 5-volt Supply circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Turn the ignition off to the lock position. Disconnect the Transmission Control Module harness connector. Disconnect the Transmission Solenoid /TRS harness connector Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Pressure Control Solenoid Control circuit from the Transmission Control Module harness connector to the Solenoid/TRS harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Pressure Control Solenoid Control circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 11	All
11	Turn the ignition off to the lock position. Disconnect the Transmission Control Module harness connector. Disconnect the Transmission Solenoid/TRS harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the Pressure Control Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the Pressure Control Solenoid Control circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 12	All
12	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 Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0869-LINE PRESSURE HIGH — Continued

TEST	ACTION	APPLICABILITY
13	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	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 above 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

RELATED LINE PRESSURE DTC'S PRESENT
5-VOLT SUPPLY CIRCUIT OPEN
OD PRESSURE SWITCH SENSE CIRCUIT OPEN
POOR LINE PRESSURE SENSOR CONNECTION
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
5-VOLT SUPPLY CIRCUIT SHORT TO GROUND
OD PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
OD PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
EXCESSIVE DEBRIS IN OIL PAN
LINE PRESSURE SENSOR
TRANSMISSION SOLENOID/TRS ASSEMBLY
INTERNAL TRANSMISSION
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>With the DRBIII®, check for other Transmission DTC's.</p> <p>Are there any Line Pressure related DTC's P0867, P0932, P0868, P0869, or P0944 present?</p> <p style="padding-left: 40px;">Yes → Refer to symptom list and perform appropriate test. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 3</p>	All
3	<p>With the DRBIII®, check for other Transmission DTC's.</p> <p>Is the DTC P0733 and/or P0871 present also?</p> <p style="padding-left: 40px;">Yes → Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 4</p>	All
4	<p>With the DRBIII®, Check the STARTS SINCE SET counter for P0870.</p> <p>NOTE: This counter only applies to the last DTC set.</p> <p>Is the STARTS SINCE SET counter 2 or less?</p> <p style="padding-left: 40px;">Yes → Go To 5</p> <p style="padding-left: 40px;">No → Go To 18</p>	All

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
5	<p>Start engine. Warm transmission to 82° C or 180 ° F. Firmly apply brakes. With the DRBIII®, monitor the Transmission Line Pressure. Move the shift lever to each gear position and record the Line Pressure reading. Allow the pressure to stabilize for at least 5 seconds in each range. Did the Line Pressure remain at a steady value between 585 and 655 kPa or 85 and 95 PSI?</p> <p>Yes → Go To 6 No → Go To 10</p>	All
6	<p>Ignition on, engine not running. With the DRBIII®, monitor the Line Pressure while firmly pushing the Line Pressure Sensor connector towards the Transmission. Did the Line Pressure change to about 207 kPa or 30 PSI when the connector was pushed?</p> <p>Yes → Disconnect and properly reconnect the Line Pressure Sensor harness connector. Inspect terminals and repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 7</p>	All
7	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove Starter Relay can cause a TCM - No Response condition. Install the Transmission Simulator, Miller tool #8333. With the Transmission Simulator select the "OFF" position on the "Input/Output Speed" switch. Ignition on, engine not running. With the DRBIII®, monitor the Line Pressure during the following step. Using the Transmission Simulator, turn the selector switch to each of the 3 Line Pressure positions. NOTE: All three DRBIII® Line Pressure readings should be steady and ± 2.0 PSI of the reading specified on the Transmission Simulator. Did the Line Pressure remain steady in all 3 positions?</p> <p>Yes → Replace the Line Pressure Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 8</p>	All
8	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Line Pressure Sensor harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the 5-volt Supply circuit from the Line Pressure Sensor harness connector to the TCM harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the 5-volt supply circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 9</p>	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 Line Pressure Sensor harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the 5-volt Supply circuit. Is the resistance below 5.0 ohms? Yes → Repair the 5-volt Supply circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 17	All
10	Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a TCM - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the DRBIII®, monitor the OD Pressure Switch state during the following steps. With the Transmission Simulator Miller tool# 8333, place the selector switch on OD. While pressing the Pressure Switch test button, wiggle the wiring harness and connectors pertaining to the OD Pressure Switch. Did the OD pressure switch state change to closed and remain closed while wiggling the wires? Yes → Go To 11 No → Go To 13	All
11	Remove and inspect the Transmission Oil Pan per the Service Information. Does the Transmission Oil Pan contain excessive debris or contamination? Yes → Repair the cause of the excessive debris in the Transmission Oil Pan. Refer to the Service Information for the proper procedures. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 12	All
12	If there are no possible causes remaining, view repair. Repair Repair Internal Transmission as necessary. Disassemble and inspect the Valve Body and repair or replace as necessary. If no problems are found in the Valve Body, replace the Transmission Solenoid/TRS Assembly. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
13	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 OD Pressure Switch Sense circuit from the TCM harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the OD Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 14	All
14	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 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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 15	All
15	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/TRS 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 in the TCM harness connector. Is the voltage above 0.5 volt? Yes → Repair the OD Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 16	All

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
16	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Remove the Transmission Control Relay. 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 at the Transmission Solenoid/TRS 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?</p> <p>Yes → Go To 17</p> <p>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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
17	<p>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.</p> <p>Repair</p> <p>Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
18	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	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 code 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
 TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
 OD PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
 OD PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
 OD PRESSURE SWITCH
 TRANSMISSION CONTROL MODULE
 INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0871-OD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's. Are there any Transmission Control Relay related DTC's, P0890, P0891, or P0888 present?</p> <p>Yes → Refer to symptom list and perform test for Transmission Control Relay related DTCs. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>Ignition on, engine not running. 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?</p> <p>Yes → Go To 4</p> <p>No → Go To 11</p>	All
4	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a TCM - No Response condition. Install Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the Transmission Simulator, turn the Pressure Switch selector switch to OD. With the DRBIII®, monitor the OD Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. Did the state of the OD Pressure Switch change while pressing the Pressure Switch Test button?</p> <p>Yes → Go To 5</p> <p>No → Go To 6</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

P0871-OD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
6	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS 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 Relay output circuit in the Transmission Solenoid/TRS 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?</p> <p style="padding-left: 40px;">Yes → Go To 7</p> <p style="padding-left: 40px;">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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
7	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/TRS 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 OD Pressure Switch Sense circuit at the TCM harness connector. Is the voltage above 0.5 volts?</p> <p style="padding-left: 40px;">Yes → Repair the OD Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 8</p>	All
8	<p>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 OD Pressure Switch Sense circuit from the TCM harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the OD Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 9</p>	All

P0871-OD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
9	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 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 45RFE/545RFE 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 Perform 45RFE/545RFE 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 wires while checking for shorts and open circuits. Check for a Primary Oil Filter not installed correctly and for a dislodged Reverse Carrier Snap Ring which will typically set this DTC on heavy throttle acceleration from a dead stop. With the DRBIII®, check the EATX DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:**P0875-UD HYDRAULIC PRESSURE TEST FAILURE**

When Monitored and Set Condition:**P0875-UD 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 above 1000 RPM, the TCM momentarily turns on element pressure to the clutch circuits do not have pressure to identify the correct pressure switch closes. If the pressure switch does not close two times, the DTC sets.

POSSIBLE CAUSES

LINE PRESSURE DTC'S PRESENT
SPEED RATIO AND/OR PRESSURE SWITCH DTC'S PRESENT
POOR LINE PRESSURE SENSOR CONNECTION
5-VOLT SUPPLY CIRCUIT OPEN
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
UD PRESSURE SWITCH SENSE CIRCUIT OPEN
5-VOLT SUPPLY CIRCUIT SHORT TO GROUND
UD PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
UD PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
EXCESSIVE DEBRIS IN OIL PAN
LINE PRESSURE SENSOR
INTERNAL TRANSMISSION
TRANSMISSION SOLENOID/TRS ASSEMBLY
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

P0875-UD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>With the DRBIII®, check for other Transmission DTC's</p> <p>Are there any line pressure related DTC's, P0867, P0932, P0868, P0869, or P0944 present?</p> <p style="padding-left: 40px;">Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 3</p>	All
3	<p>With the DRBIII®, check for other transmission DTC's</p> <p>Are the DTC's P0731, P0732, P0733 and/or P0876 present?</p> <p style="padding-left: 40px;">Yes → Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 4</p>	All
4	<p>With the DRBIII®, Check the STARTS SINCE SET counter for P0875.</p> <p>NOTE: This counter only applies to the last DTC set.</p> <p>Is the STARTS SINCE SET counter 2 or less?</p> <p style="padding-left: 40px;">Yes → Go To 5</p> <p style="padding-left: 40px;">No → Go To 18</p>	All

P0875-UD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
5	<p>Start engine. Warm the transmission to 82° C or 180° F. Firmly apply brakes. With the DRBIII®, monitor the Line Pressure in the following step. Move the shift lever to each gear position and record the Line Pressure reading. Allow the pressure to stabilize for at least 5 seconds in each range. Did the Line Pressure remain at a steady value between 585 and 655 kPa or 85 and 95 PSI?</p> <p>Yes → Go To 6 No → Go To 10</p>	All
6	<p>Ignition on, engine not running. With the DRBIII®, monitor the Line Pressure for the following step. Firmly push the Line Pressure Sensor connector inward towards the Transmission. Did the Line Pressure change to about 207 kPa or 30 PSI when the connector was pushed?</p> <p>Yes → Disconnect and properly reconnect the Line Pressure Sensor harness connector. Inspect terminals and repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 7</p>	All
7	<p>Turn the ignition off to the lock position. Remove the Starter Relay from the PDC. NOTE: Failure to remove the Starter Relay can cause a TCM - No Response condition. Install the Transmission Simulator Miller tool #8333. With the Transmission Simulator select the "OFF" position on the "Input/Output Speed" switch. NOTE: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the DRBIII®, monitor the Line Pressure in the following step. With the Transmission Simulator, set the rotary knob to each of the 3 line pressure positions. NOTE: All three DRBIII® Line Pressure readings should be steady and ± 2.0 PSI of the reading specified on the Transmission Simulator. Did the Line Pressure remain steady in all three positions?</p> <p>Yes → Replace the Line Pressure Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 8</p>	All
8	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Line Pressure Sensor harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the 5-volt Supply circuit from the Line Pressure Sensor harness connector to the TCM harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the 5-volt Supply circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 9</p>	All

P0875-UD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Line Pressure Sensor harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the 5-volt Supply circuit. Is the resistance Below 5.0 ohms? Yes → Repair the 5-volt Supply circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 17	All
10	Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a TCM - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the DRBIII®, monitor the UD Pressure Switch state. With the Transmission Simulator, turn the selector switch on UD. While pressing and holding the Pressure Switch test button, wiggle the wiring harness and connectors pertaining to the UD Pressure Switch. Did the UD Pressure Switch state change to closed and remain closed while wiggling the wires? Yes → Go To 11 No → Go To 13	All
11	Remove and inspect Transmission Oil Pan per the Service Information. Does it contain excessive debris or contamination? Yes → Repair the cause of the excessive debris in the Transmission Oil Pan. Refer to the Service Information for the proper procedures. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 12	All
12	If there are no possible causes remaining, view repair. Repair Repair Internal Transmission as necessary. Disassemble and inspect the Valve Body and repair or replace as necessary. If no problems are found in the Valve Body, replace the Transmission Solenoid/TRS Assembly. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All

P0875-UD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
13	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 UD Pressure Switch Sense circuit from the TCM harness connector to the Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the UD Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 14	All
14	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 UD Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the UD Pressure Switch Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 15	All
15	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/TRS 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 UD Pressure Switch Sense circuit in the TCM harness connector. Is the voltage above 0.5 volt? Yes → Repair the UD Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 16	All

P0875-UD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
16	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS 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 in the Transmission Solenoid/TRS 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?</p> <p style="padding-left: 40px;">Yes → Go To 17</p> <p style="padding-left: 40px;">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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
17	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
18	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p style="padding-left: 40px;">Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Test Complete.</p>	All

Symptom:

P0876-UD PRESSURE SWITCH SENSE CIRCUIT

When Monitored and Set Condition:

P0876-UD PRESSURE SWITCH SENSE CIRCUIT

When Monitored: Whenever the engine is running.

Set Condition: This DTC is set if the UD pressure switch is in the wrong state for the current gear. For example, this code would be set if the UD pressure switch remained off while the transmission was in second gear.

POSSIBLE CAUSES

RELAY DTC'S PRESENT
 TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
 UD PRESSURE SWITCH SENSE CIRCUIT OPEN
 UD PRESSURE SWITCH CIRCUIT SHORT TO GROUND
 UD PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
 UD PRESSURE SWITCH
 TRANSMISSION CONTROL MODULE
 INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

P0876-UD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's. Are there any Transmission Control Relay related DTCs P0890, P0891, and/or P0888 present?</p> <p>Yes → Refer to symptom list and perform test for Transmission Control Relay related DTC's. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>Ignition on, engine not running. With the DRBIII®, Check the STARTS SINCE SET counter for P0876. NOTE: This counter only applies to the last DTC set. Is the STARTS SINCE SET counter 2 or less?</p> <p>Yes → Go To 4</p> <p>No → Go To 11</p>	All
4	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a TCM - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the Transmission Simulator, turn the Pressure Switch selector switch to UD. With the DRBIII®, monitor the UD Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. Did the state of the UD Pressure Switch change while pressing the Pressure Switch Test button?</p> <p>Yes → Go To 5</p> <p>No → Go To 6</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>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 UD Pressure Switch Sense circuit from the TCM harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the UD Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 7</p>	All

P0876-UD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	<p>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 UD Pressure Switch Sense circuit. Is the resistance below 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the UD Pressure Switch Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 8</p>	All
8	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/TRS 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 UD Pressure Switch Sense circuit. Is the voltage above 0.5 volt?</p> <p style="padding-left: 40px;">Yes → Repair the UD Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 9</p>	All
9	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Remove the Transmission Control Relay. Note: Check connectors - Clean/repair as necessary. Connect a jumper wire between Transmission Control Relay circuit and Fused B(+). Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit in the Solenoid/TRS 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?</p> <p style="padding-left: 40px;">Yes → Go To 10</p> <p style="padding-left: 40px;">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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
10	<p>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.</p> <p style="padding-left: 40px;">Repair. Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

P0876-UD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	<p>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. Check for a Primary Oil Filter not installed correctly and a dislodged Reverse Carrier Snap Ring which will typically set this DTC on heavy throttle acceleration from a dead stop. With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	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, with no PRNDL DTCs, and a output speed above 800 RPM, approximately 32Km/h or 20 MPH.

POSSIBLE CAUSES

POWER UP AT SPEED

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>This DTC is set when the TCM is initialized while the vehicle is moving down the road in a valid forward gear.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors.</p> <p>NOTE: Check all of the Fused B(+), Fused Ignition Switch Output, and ground circuits to the TCM for an intermittent open or short to ground.</p> <p>Wiggle the wires while checking for shorts and open circuits.</p> <p>With the DRBIII®, check the EATX EVENT DATA to help identify the conditions in which the DTC was set.</p> <p>If there are no possible causes remaining, view repair.</p> <p>Repair Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	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 (pins 16,17 and 36) circuits at the Transmission Control Module (TCM) 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 SHORTED 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	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0888-RELAY OUTPUT ALWAYS OFF — Continued

TEST	ACTION	APPLICABILITY
2	<p>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 to 0?</p> <p>Yes → Go To 3</p> <p>No → Go To 11</p>	All
3	<p>Turn the ignition off to the lock position. Remove the Transmission Control Relay from the PDC. 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?</p> <p>Yes → Go To 4</p> <p>No → Repair the Fused B(+) circuit for an open. If the fuse is open make sure to check for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
4	<p>Turn the ignition off to the lock position. Disconnect the Transmission Control Relay from the PDC. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the Transmission Control Relay ground circuit in the Transmission Control Relay connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the Transmission Control Relay Ground circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 5</p>	All
5	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Remove the Transmission Control Relay from the PDC. 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 all three 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 on all three circuits?</p> <p>Yes → Go To 6</p> <p>No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	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 from the PDC. 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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Remove the Transmission Control Relay from the PDC. 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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Remove the Transmission Control Relay from the PDC. 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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	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. Measure the voltage of the Transmission Control Relay Output circuit in the TCM harness connector. Is the voltage above 10.0 volts? Yes → Replace the Transmission Control Relay. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All

P0888-RELAY OUTPUT ALWAYS OFF — Continued

TEST	ACTION	APPLICABILITY
10	<p>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.</p> <p>Repair</p> <p>Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
11	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All

Symptom:
P0890-SWITCHED BATTERY

When Monitored and Set Condition:

P0890-SWITCHED BATTERY

When Monitored: Ignition key is turned from "off" position to "run" position and/or ignition key is turned from "crank" position to "run" position.

Set Condition: This code is set if the Transmission Control Module (TCM) senses voltage on any of the pressure switch inputs prior to the TCM energizing the relay.

POSSIBLE CAUSES

PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
 TRANSMISSION CONTROL MODULE
 INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>With the DRBIII®, Check the STARTS SINCE SET counter for P0890.</p> <p>NOTE: This counter only applies to the last DTC set.</p> <p>Is the "Starts Since Set" counter equal to zero?</p> <p>Yes → Go To 3</p> <p>No → Go To 5</p>	All

P0890-SWITCHED BATTERY — Continued

TEST	ACTION	APPLICABILITY
3	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/TRS 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 2C, 4C, LR, OD, and UD Pressure Switch Sense circuits in the TCM harness connector. Is the voltage above 0.5 volt on any of the sense circuits?</p> <p style="padding-left: 40px;">Yes → Repair the Pressure Switch Sense circuit in question for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 4</p>	All
4	<p>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.</p> <p style="padding-left: 40px;">Repair Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
5	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p style="padding-left: 40px;">Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Test Complete.</p>	All

Symptom:

P0891-TRANSMISSION RELAY ALWAYS ON

When Monitored and Set Condition:

P0891-TRANSMISSION RELAY ALWAYS ON

When Monitored: When ignition key is turned from "off" position to "run" position and/or ignition key is turned from "crank" position to "run" position.

Set Condition: This code is set if the Transmission Control Module (TCM) senses greater than 3 volts at the Trans Control Relay Output terminal(s) of the TCM prior to the TCM energizing the relay.

POSSIBLE CAUSES

- TRANSMISSION CONTROL RELAY CONTROL CIRCUIT SHORT TO VOLTAGE
- TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT SHORT TO VOLTAGE
- TRANSMISSION CONTROL RELAY STUCK CLOSED
- TRANSMISSION CONTROL MODULE
- INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
<p>1</p>	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	<p>All</p>

P0891-TRANSMISSION RELAY ALWAYS ON — Continued

TEST	ACTION	APPLICABILITY
2	<p>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 equal to 0?</p> <p style="padding-left: 40px;">Yes → Go To 3</p> <p style="padding-left: 40px;">No → Go To 7</p>	All
3	<p>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. Ignition on, engine not running. Measure the voltage at the Transmission Control Relay Control circuit in the Transmission Control Relay connector. Is the voltage above 0.5 volts?</p> <p style="padding-left: 40px;">Yes → Repair the Transmission Control Relay Control circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 4</p>	All
4	<p>Turn the ignition off to the lock position. Remove the Transmission Control Relay. Ignition on, engine not running. Measure the voltage at the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Is the voltage above 0.5 volts?</p> <p style="padding-left: 40px;">Yes → Repair the Transmission Control Relay Output circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 5</p>	All
5	<p>Turn the ignition off to the lock position. Remove the Transmission Control Relay from the PDC. Note: Check connectors - Clean/repair as necessary. Measure the resistance between the Fused B+ circuit and the Transmission Control Relay Output Circuit, Pins 30 and 87, of the Transmission Control Relay. Is the resistance above 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Go To 6</p> <p style="padding-left: 40px;">No → Replace the Transmission Control Relay. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

P0891-TRANSMISSION RELAY ALWAYS ON — Continued

TEST	ACTION	APPLICABILITY
7	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All

Symptom:

P0932-LINE PRESSURE SENSOR CIRCUIT FAULT

When Monitored and Set Condition:

P0932-LINE PRESSURE SENSOR CIRCUIT FAULT

When Monitored: Continuously while driving in a forward gear.

Set Condition: The PCM continuously monitors Actual Line Pressure and compares it to Desired Line Pressure. If the Actual Line Pressure reading is more than 172.4 kPa (25 psi) higher than the Desired Line Pressure, but is less than the highest Line Pressure ever used in the current gear, this code will set.

POSSIBLE CAUSES
RELATED DTC'S PRESENT POOR CONNECTION OR WIRING INTERNAL TRANSMISSION TRANSMISSION CONTROL MODULE INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0932-LINE PRESSURE SENSOR CIRCUIT FAULT — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's. Are there any other line pressure related DTC's P0934, P0935, P0868, or P0869 present?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. If the DTC P0934 and/or P0935 are present, perform these tests first. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>CAUTION: Apply Parking Brake Start the engine. CAUTION: Firmly apply the brakes. With the DRBIII®, monitor the Line Pressure, Desired Line Pressure and the TPS Degree. While firmly applying the brakes place shifter in the R position. Then slowly press the accelerator pedal to a TPS degree of 15. Compare the Line Pressure reading to the Desired Line Pressure reading on the DRBIII®. Does the Line Pressure and Desired Line Pressure stay within ± 34 kPa or 5 PSI?</p> <p>No → Go To 4</p> <p>Yes → Go To 8</p>	All
4	<p>With the DRBIII®, monitor the Line Pressure Sensor voltage while wiggling the wiring harness and connectors pertaining to the Line Pressure Sensor and the Transmission Solenoid/TRS Assembly. Did the voltage remain steady while wiggling the wiring harness and connectors?</p> <p>Yes → Go To 5</p> <p>No → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
5	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install Transmission Simulator Miller tool #8333. With the Transmission Simulator select the "OFF" position on the "Input/Output Speed" switch. Ignition on, engine not running. With the DRBIII®, monitor the Line Pressure during the following step. Using the Transmission Simulator, turn the selector switch to each of the 3 Line Pressure positions. NOTE: All three DRBIII® Line Pressure readings should be steady and ± 2.0 PSI of the reading specified on the Transmission Simulator. Does the Line Pressure fluctuate up and down more than 69 kPa or 10 PSI at any of the positions?</p> <p>Yes → Go To 6</p> <p>No → Go To 7</p>	All

P0932-LINE PRESSURE SENSOR CIRCUIT FAULT — Continued

TEST	ACTION	APPLICABILITY
6	<p>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.</p> <p>Repair</p> <p>Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
7	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Repair internal transmission per the Service Information. inspect the Oil Pump and replace if necessary per Service Information. If no problem is found, replace the Transmission Solenoid/TRS Assembly for a stuck Pressure Control Solenoid. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
8	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Where there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All

Symptom:**P0934-LINE PRESSURE SENSOR LOW****When Monitored and Set Condition:****P0934-LINE PRESSURE SENSOR LOW**

When Monitored: Continuously with engine running and Output Speed greater than 390 RPM.

Set Condition: This DTC will set when the Line Pressure Sensor output is less than 0.35 volts for 1.4 seconds.

POSSIBLE CAUSES

5-VOLT SUPPLY CIRCUIT OPEN
 5-VOLT SUPPLY CIRCUIT SHORT TO GROUND
 LINE PRESSURE SENSOR SIGNAL CIRCUIT SHORT TO GROUND
 LINE PRESSURE SENSOR
 TRANSMISSION CONTROL MODULE
 INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

P0934-LINE PRESSURE SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
2	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? Yes → Go To 3 No → Go To 9	All
3	Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator Miller tool #8333. Ignition on, engine not running. With the DRBIII®, monitor the Line Pressure. Using the Transmission Simulator, set the rotary switch to each of the 3 line pressure positions. Note: The readings should be within ± 2.0 PSI on the DRBIII® of the pressure reading specified on Transmission Simulator. Does the Line Pressure on the DRBIII® match the pressures on the Transmission Simulator? Yes → Go To 4 No → Go To 5	All
4	If there are no possible causes remaining, view repair. Repair Replace the Line Pressure Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Line Pressure Sensor connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the 5-volt Supply circuit from the Line Pressure Sensor harness connector to the TCM harness connector. Is the resistance above 5.0 ohms? Yes → Repair the 5-volt Supply circuit for an open. Perform 45RFE/545RFE 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 Line Pressure Sensor harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the 5-volt Supply circuit. Is the resistance below 5.0 ohms? Yes → Repair the 5-volt Supply circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0934-LINE PRESSURE SENSOR LOW — Continued

TEST	ACTION	APPLICABILITY
7	Turn ignition switch to the lock position. Disconnect the TCM harness connector. Disconnect the Line Pressure Sensor connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between the Line Pressure Sensor Signal circuit and ground. Is the resistance Below 5.0 ohms? Yes → Repair the Line Pressure Sensor Signal circuit for a short to ground. Perform 45RFE/545RFE 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 Perform 45RFE/545RFE 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 wires while checking for shorts and open circuits. With the DRBIII®, check the EATX DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:

P0935-LINE PRESSURE SENSOR HIGH

When Monitored and Set Condition:

P0935-LINE PRESSURE SENSOR HIGH

When Monitored: Continuously with engine running, Output Speed greater than 390 RPM and Desired Line Pressure less than 200.

Set Condition: This DTC will set if is Line Pressure Sensor Output is greater than 4.75 volts for 1.4 seconds.

POSSIBLE CAUSES

LINE PRESSURE SENSOR GROUND CIRCUIT OPEN
 LINE PRESSURE SENSOR SIGNAL CIRCUIT OPEN
 LINE PRESSURE SENSOR SIGNAL CIRCUIT SHORT TO VOLTAGE
 LINE PRESSURE SENSOR
 TRANSMISSION CONTROL MODULE
 INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

P0935-LINE PRESSURE SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
2	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? Yes → Go To 3 No → Go To 9	All
3	Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. Ignition on, engine not running. With the DRBIII®, monitor the Line Pressure. Using the Transmission Simulator, set the rotary switch to each of the 3 line pressure positions. Note: The readings should be within ± 2.0 PSI on the DRBIII® of the pressure reading specified on Transmission Simulator. Does the Line Pressure on the DRBIII® match the pressures on the Transmission Simulator? Yes → Go To 4 No → Go To 5	All
4	If there are no possible causes remaining, view repair. Repair Replace the Line Pressure Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Line Pressure Sensor connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Ground circuit from the Line Pressure Sensor harness connector to the TCM harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Ground circuit for an open. Perform 45RFE/545RFE 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 Line Pressure Sensor harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Line Pressure Sensor Signal circuit from the Line Pressure Sensor harness connector to the TCM harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Line Pressure Sensor Signal circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0935-LINE PRESSURE SENSOR HIGH — Continued

TEST	ACTION	APPLICABILITY
7	<p>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 Relay connector. Turn ignition on. Measure the voltage of the Line Pressure Sensor Signal circuit. Is the voltage above 5.5 volts?</p> <p style="padding-left: 40px;">Yes → Repair the Line Pressure Sensor Signal circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 8</p>	All
8	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
9	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p style="padding-left: 40px;">Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Test Complete.</p>	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 TCM to see if pump prime exists. The DTC sets if no pressure switch(s) respond.

POSSIBLE CAUSES
INVALID PRNDL CODE TRANSMISSION OIL FILTER TRANSMISSION OIL PUMP INTERMITTENT OPERATION

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P0944-LOSS OF PRIME — Continued

TEST	ACTION	APPLICABILITY
2	<p>Start the engine. The transmission must be at operating temperature prior to checking pressure. A cold transmission will give higher readings. Firmly apply the brakes and place the gear selector in reverse. With the DRBIII®, monitor the Transmission Line Pressure. Is the Line Pressure below 1034 kpa (150 PSI) or is it fluctuating more than +/- 69 kpa (10 PSI).</p> <p>No → Go To 3 Yes → Go To 4</p>	All
3	<p>The conditions necessary to set this DTC are not present at this time. Verify with the customer if a delayed engagement and/or an intermittent "No Drive" condition has occurred. If the customers answer is "No" erase the DTC and return the vehicle to the customer. Make sure to check for any TSBs or controller flash updates that may apply. With the DRBIII®, check the EATX DTC EVENT DATA to help identify the conditions in which the DTC was set. Has the customer experienced any delayed engagement and/or "No Drive" conditions?</p> <p>Yes → Repair internal transmission problem as necessary. Replace the Transmission Oil Pump if inspection reveals no signs of internal seal leakage. Refer to the Service Information for the proper repair procedure. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All
4	<p>Using the DRBIII®, perform a Shift Lever Position test. Follow the instructions on the DRBIII®. Did the Shift Lever Position Test pass?</p> <p>Yes → Go To 5 No → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
5	<p>Remove and inspect the Transmission Oil Pan per the Service Information. Remove and inspect the Primary Oil Filter per the Service Information. Inspect the oil filter O-ring for damage and proper installation. Does the Oil Pan contain excessive debris and/or is the Oil Filter plugged or O-ring damaged?</p> <p>Yes → Repair the cause of the plugged transmission oil filter or excessive debris, Seal installed onto filter neck instead of into pump bore, seal not fully seated against pump housing, filter neck not engaged into pump. See Service information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 6</p>	All

P0944-LOSS OF PRIME — Continued

TEST	ACTION	APPLICABILITY
6	If there are no possible causes remaining, view repair. Repair Repair or replace the Transmission Oil Pump as necessary. Refer to the Service Information for the proper repair procedure. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0987-4C HYDRAULIC PRESSURE TEST FAILURE

When Monitored and Set Condition:

P0987-4C 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 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

LINE PRESSURE DTC'S PRESENT
POOR LINE PRESSURE SENSOR CONNECTION
4C PRESSURE SWITCH SENSE CIRCUIT OPEN
5-VOLT SUPPLY CIRCUIT OPEN
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
4C PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
5-VOLT SUPPLY CIRCUIT SHORT TO GROUND
4C PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
EXCESSIVE DEBRIS IN OIL PAN
LINE PRESSURE SENSOR
TRANSMISSION SOLENOID/TRS ASSEMBLY
INTERNAL TRANSMISSION
TRANSMISSION CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

P0987-4C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>With the DRBIII®, check for other transmission DTC's</p> <p>Are there any Line Pressure related DTC's P0867, P0932, P0868, P0869, or P0944 present?</p> <p style="padding-left: 40px;">Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 3</p>	All
3	<p>With the DRBIII®, check for other transmission DTC's</p> <p>Is the DTC P0734 and/or P0988 present also?</p> <p style="padding-left: 40px;">Yes → Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 4</p>	All
4	<p>With the DRBIII®, Check the STARTS SINCE SET counter for P0987.</p> <p>NOTE: This counter only applies to the last DTC set.</p> <p>Is the STARTS SINCE SET counter 2 or less?</p> <p style="padding-left: 40px;">Yes → Go To 5</p> <p style="padding-left: 40px;">No → Go To 18</p>	All

P0987-4C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
5	<p>Start the engine. Warm the transmission to 82° C or 180° F. With the DRBIII®, monitor the Transmission Line Pressure. CAUTION: Firmly apply the brakes. With the brakes firmly applied, move the shift lever to each gear position and record the Transmission Line Pressure for each position. Allow the pressure to stabilize for at least 5 seconds in each range. Did the line pressure remain at a steady value between 586 and 655 Kpa or 85 and 95 PSI?</p> <p style="padding-left: 40px;">Yes → Go To 6</p> <p style="padding-left: 40px;">No → Go To 10</p>	All
6	<p>Ignition on, engine not running. With the DRBIII® in Sensors, monitor the Actual Line Pressure. While monitoring the Line Pressure, firmly push the Line Pressure Sensor harness connector towards the transmission. Did the Line Pressure change to about 207 kPa or 30 PSI when the harness connector was pushed?</p> <p style="padding-left: 40px;">Yes → Disconnect and properly reconnect the Line Pressure Sensor connector. Inspect terminals and repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 7</p>	All
7	<p>Turn the ignition off to the lock position. Remove the Starter Relay from the PDC. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. With the Transmission Simulator on the Input/Output Speed switch select the OFF position. NOTE: All three DRBIII® Line Pressure readings should be steady and ± 2.0 PSI of the reading specified on the Transmission Simulator. Ignition on, engine not running. With the DRBIII®, monitor the Line Pressure during the following step. Using the Transmission Simulator, turn the selector switch to each of the 3 Line Pressure positions. Did the Line Pressure remain steady in all three positions?</p> <p style="padding-left: 40px;">Yes → Replace the Line Pressure Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 8</p>	All

P0987-4C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Line Pressure Sensor harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the 5-volt Supply circuit from the Line Pressure Sensor harness connector to the TCM harness connector. Is the resistance above 5.0 ohms? Yes → Repair the 5-volt Supply circuit for an open. Perform 45RFE/545RFE 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 Line Pressure Sensor harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the 5-volt Supply circuit. Is the resistance below 5.0 ohms? Yes → Repair 5-volt supply circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 17	All
10	Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. On the Transmission Simulator, place the Pressure Switch selector switch to 4C. With the DRBIII®, monitor the 4C Pressure Switch state during the following step. Press the Pressure Switch Test button on the Transmission Simulator while wiggling the wiring pertaining to the 4C Pressure Switch. Did the 4C Pressure Switch state change to closed and remain closed while wiggling the wires? Yes → Go To 11 No → Go To 13	All
11	Remove and inspect Transmission Oil Pan per Service Information. Does the Transmission Oil Pan contain excessive debris or contamination? Yes → Repair the cause of the excessive debris in the Transmission Oil Pan. Refer to the Service Information for the proper procedures. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 12	All

P0987-4C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
12	<p>If there are no possible causes remaining, view repair.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Repair Internal Transmission as necessary. Disassemble and inspect the Valve Body and repair or replace as necessary. If no problems are found in the Valve Body, replace the Transmission Solenoid/TRS Assembly.</p> <p style="padding-left: 80px;">Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
13	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid /TRS harness connector Note: Check connectors - Clean/repair as necessary. Measure the resistance of the 4C Pressure Switch Sense circuit between the TCM harness connector to the Solenoid/TRS harness connector. Is the resistance above 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the 4C Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 14</p>	All
14	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid/TRS harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the 4C Pressure Switch Sense circuit. Is the resistance below 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the 4C Pressure Switch Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 15</p>	All
15	<p>Turn the ignition off to the lock position. Disconnect the Transmission Control Module harness connector. Disconnect the Transmission Solenoid/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 4C Pressure Switch Sense circuit in the TCM harness connector. Is the voltage above 0.5 volt?</p> <p style="padding-left: 40px;">Yes → Repair the 4C Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 16</p>	All

P0987-4C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
16	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS harness connector. Remove the Transmission Control Relay. 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 in the Solenoid/TRS 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?</p> <p>Yes → Go To 17</p> <p>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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
17	<p>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.</p> <p>Repair</p> <p>Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
18	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All

Symptom:

P0988-4C PRESSURE SWITCH SENSE CIRCUIT

When Monitored and Set Condition:

P0988-4C PRESSURE SWITCH SENSE CIRCUIT

When Monitored: Whenever the engine is running.

Set Condition: This DTC is set if the 4C pressure switch is in the wrong state for the current gear. For example, this code would be set if the 4C pressure switch came on while the transmission was in second gear.

POSSIBLE CAUSES

RELATED RELAY DTC'S PRESENT
 4C PRESSURE SWITCH SENSE CIRCUIT OPEN
 TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
 4C PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
 4C PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
 4C PRESSURE SWITCH
 TRANSMISSION CONTROL MODULE
 INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

P0988-4C PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other transmission DTC's. Are there any Transmission Control Relay related DTC's P0890, P0891, or P0888 present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	Ignition on, engine not running. 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 P0988, 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. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the Transmission Simulator turn the Pressure Switch selector switch to 4C. With the DRBIII®, monitor the 4C Pressure Switch state while pressing the Pressure Switch Test button. Did the state of the 4C 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/TRS Assembly per the Service Information. Perform 45RFE/545RFE 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 of the 4C Pressure Switch Sense circuit from the TCM harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the 4C Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P0988-4C PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	<p>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 4C Pressure Switch Sense circuit. Is the resistance below 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the 4C Pressure Switch Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 8</p>	All
8	<p>Turn the ignition off to the lock position. Disconnect the Transmission Control Module harness connector. Disconnect the Transmission Solenoid/TRS 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 4C Pressure Switch Sense circuit in the TCM harness connector. Is the voltage above 0.5 volt?</p> <p style="padding-left: 40px;">Yes → Repair the 4C Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 9</p>	All
9	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS 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 in the Transmission Solenoid/TRS 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?</p> <p style="padding-left: 40px;">Yes → Go To 10</p> <p style="padding-left: 40px;">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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
10	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

P0988-4C PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	<p>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. Check for a Primary Oil filter installed incorrectly. A dislodged Reverse Carrier Snap Ring will typically set this DTC on heavy throttle acceleration from a dead stop. With the DRBIII®, check the EATX DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	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 is disconnected from battery power (Fused B+) and/or ground. It will also be set during a DRBIII® Battery Disconnect procedure and/or a Quick Learn procedure.

POSSIBLE CAUSES

- BATTERY WAS DISCONNECTED
- DRBIII® BATTERY DISCONNECT PERFORMED
- QUICK LEARN WAS PERFORMED
- TCM WAS REPLACED OR DISCONNECTED
- INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>This DTC is an informational DTC only.</p> <p>This DTC is set due to a momentary loss of the Fused B+ and/or ground to the TCM.</p> <p>Continue to view the possible causes for this DTC.</p> <p>Continue Go To 3</p>	All

P1684-BATTERY WAS DISCONNECTED — Continued

TEST	ACTION	APPLICABILITY
3	<p>Has the battery recently been disconnected, lost its charge, or been replaced?</p> <p>Yes → This is the cause of the DTC. Erase the DTC and return the vehicle to the customer. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 4</p>	All
4	<p>Has a DRBIII® Battery Disconnect procedure been performed?</p> <p>Yes → This is the cause of the DTC. Erase the DTC and return the vehicle to the customer. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 5</p>	All
5	<p>Has a QUICK LEARN been performed with the DRBIII®?</p> <p>Yes → This is the cause of the DTC. Erase the DTC and return the vehicle to the customer. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 6</p>	All
6	<p>Has the TCM been replaced or disconnected?</p> <p>Yes → Replacing or disconnecting the TCM will set this DTC. Erase the DTC and return the vehicle to the customer. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 7</p>	All
7	<p>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. Pay particular attention to the Fused B+ and all ground circuits. With the DRBIII®, check the EATX DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	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: Some after market equipment will also set this DTC. example: remote starters and communication equipment.

POSSIBLE CAUSES

OTHER BUS PROBLEMS PRESENT
 PCI BUS CIRCUIT OPEN
 TRANSMISSION CONTROL MODULE
 INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>With the DRBIII®, Check the STARTS SINCE SET counter.</p> <p>NOTE: This counter only applies to the last DTC set.</p> <p>Is the STARTS SINCE SET counter equal to zero?</p> <p>Yes → Go To 3 No → Go To 6</p>	All

P1694-BUS COMMUNICATION WITH ENGINE MODULE — Continued

TEST	ACTION	APPLICABILITY
3	<p>With the DRBIII®, attempt to communicate with other modules on the vehicle, check 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?</p> <p>Yes → Refer to the Communication Category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 4</p>	All
4	<p>Turn the ignition off to the lock position. Disconnect the PCM harness connectors. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the PCI Bus circuit from the PCM harness connector to the Data Link Connector. NOTE: CAREFULLY PROBE THE DLC. DAMAGE TO THE DLC TERMINALS WILL RESULT IN POOR TERMINAL TO PIN CONNECTION. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the open PCI Bus circuit between the PCM and the Data Link Connector. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 5</p>	All
5	<p>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.</p> <p>Repair</p> <p>Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Note: Some after market equipment will set this DTC. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All

Symptom:

P1715-RESTRICTED PORT IN T3 RANGE

When Monitored and Set Condition:

P1715-RESTRICTED PORT IN T3 RANGE

When Monitored: Whenever the PRNDL code indicates Temp3.

Set Condition: This code sets whenever the conditions for a code P1776 (47) are satisfied with the shifter in the temp3 zone. This causes a restricted port.

POSSIBLE CAUSES

RELATED TRANSMISSION DTC'S PRESENT

CUSTOMER DRIVING HABITS

MISADJUSTED SHIFTER

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>With the DRBIII®, check for other transmission DTC's</p> <p>Are any of the following DTC's P0731, P0732, P0733, P0734, P1736 or P0715 present?</p> <p style="padding-left: 40px;">Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 3</p>	All

P1715-RESTRICTED PORT IN T3 RANGE — Continued

TEST	ACTION	APPLICABILITY
3	<p>Check Shifter adjustment per the Service Information. Adjust if necessary. Did the shifter need to be adjusted?</p> <p>Yes → Adjust the shift linkage per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 4</p>	All
4	<p>This DTC can be set if the customer rests his or her hand on the shift lever while they are driving. The transmission can be put in the T3 position if just enough forward pressure is exerted on the shift lever. When this occurs, the feed port to the clutch is restricted, the transmission will declare neutral, and this DTC will be set. The customer should be informed not to rest his or her hand on the shifter while driving. This DTC can also be set by simply bumping the shift lever toward neutral while accelerating. If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>This DTC can be set by putting too much forward pressure on the shift lever while it is in the OD position. Make sure the customer is informed. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:

P1736-GEAR RATIO ERROR IN 2ND PRIME

When Monitored and Set Condition:

P1736-GEAR RATIO ERROR IN 2ND PRIME

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. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES

RELATED DTC'S PRESENT
 INTERNAL TRANSMISSION
 INTERMITTENT GEAR RATIO ERRORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P1736-GEAR RATIO ERROR IN 2ND PRIME — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's Are any of the DTC's P0944, P0715, P0720, P1794, P0867, P0932, P0868, or P0869 also present?</p> <p>Yes → If any of these DTCs are present, they will cause a speed ratio error. Refer to appropriate symptom in the Transmission category. Perform the test for P0944 first if it is present. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>With the DRBIII®, perform the 2nd prime 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 zero?</p> <p>Yes → Go To 4</p> <p>No → Go To 5</p>	All
4	<p>The conditions to set this DTC are not currently present. Check the gearshift linkage adjustment. Intermittent gear ratio DTCs can be set by problems in the Input and Output Speed Sensor circuits and/or Speed Sensor Ground circuit. Check the Speed Sensor wiring and connectors for good connection, then perform a wiggle test using the Transmission Simulator, Miller tool # 8333. Gear ratio DTC's 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 DTC EVENT DATA to help identify the conditions in which the DTC was set. If there are no possible causes remaining, view repair.</p> <p>Repair Repair as necessary. Refer to the Service information for the proper internal repair procedure. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair Repair transmission as necessary. If there were any line pressure DTC's present along with this DTC, make sure to inspect the pump and Pressure Control Solenoid per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	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. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES

RELATED DTC P0841 PRESENT
 LR PRESSURE SWITCH SENSE CIRCUIT OPEN
 TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
 LR PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
 LR PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
 INTERNAL TRANSMISSION
 TRANSMISSION CONTROL MODULE
 INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's Is the DTC P0841 present also?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>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 P1775 at 2 or less?</p> <p>Yes → Go To 4</p> <p>No → Go To 11</p>	All
4	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the Transmission Simulator, turn the Pressure Switch selector switch to LR. With the DRBIII®, monitor the LR Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. Did the state of the UD Pressure Switch change while pressing the Pressure Switch Test button?</p> <p>Yes → Go To 5</p> <p>No → Go To 6</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>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/TRS Assembly. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>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 LR Pressure Switch Sense circuit from the TCM harness connector to the Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the LR Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 7</p>	All

P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION —
Continued

TEST	ACTION	APPLICABILITY
7	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 LR Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the LR Pressure Switch Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	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 LR Pressure Switch Sense circuit in the TCM harness connector. Is the voltage above 0.5 volts? Yes → Repair the LR Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS 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 in the Solenoid/TRS 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 or high resistance. If the fuse is open make sure to check for a short to ground. Perform 45RFE/545RFE 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 Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All

P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION — Continued

TEST	ACTION	APPLICABILITY
11	<p>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. This DTC can also be set by the Solenoid Switch Valve intermittently sticking in it's bore under extreme temperature conditions. With the DRBIII®, check the EATX DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	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 transmission senses the L/R Pressure Switch closing while performing PEMCC or FEMCC. This DTC will set after two unsuccessful attempts to perform PEMCC or FEMCC and can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES

RELATED DTC P0841 PRESENT
 LR PRESSURE SWITCH SENSE CIRCUIT OPEN
 TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
 LR PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
 LR PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
 INTERNAL TRANSMISSION
 TRANSMISSION CONTROL MODULE
 INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's Is the DTC P0841 present also?</p> <p>Yes → Refer to symptom list and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>Perform a visual inspection of all connectors, wiring, and cooler connections before proceeding. Repair as necessary. 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?</p> <p>Yes → Go To 4</p> <p>No → Go To 11</p>	All
4	<p>Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the Transmission Simulator, turn the Pressure Switch selector switch to LR. With the DRBIII®, monitor the LR Pressure Switch state while pressing the Pressure Switch Test button on the Transmission Simulator. Did the state of the LR Pressure Switch change while pressing the Pressure Switch Test button?</p> <p>Yes → Go To 5</p> <p>No → Go To 6</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Per the Service Information repair internal transmission as necessary. Inspect the Solenoid Switch Valve and repair or replace as necessary. If no problems are found with the Solenoid Switch Valve then replace the Solenoid/TRS Assembly. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>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 LR Pressure Switch Sense circuit from the TCM harness connector to the Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the LR Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 7</p>	All

P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION —
Continued

TEST	ACTION	APPLICABILITY
7	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 LR Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the LR Pressure Switch Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	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 Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Measure the voltage of the L/R Pressure Switch Sense circuit in the TCM harness connector. Is the voltage above 0.5 volt? Yes → Repair the LR Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS 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 in the Transmission Solenoid/TRS 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 or high resistance. If the fuse is open make sure to check for a short to ground. Perform 45RFE/545RFE 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 Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All

P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION — Continued

TEST	ACTION	APPLICABILITY
11	<p>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. This DTC can also be set by the Solenoid Switch Valve intermittently sticking in it's bore under extreme temperature conditions. With the DRBIII®, check the EATX DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	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 a associated speed ratio DTC is stored within 1.3 seconds after a shift.

POSSIBLE CAUSES

FAULT AFTER SHIFT

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>This DTC is set along with a speed ratio DTC.</p> <p>Check 1 trip failures if there are no speed ratio DTC's that are current.</p> <p>If there are no possible causes remaining, view repair.</p> <p style="text-align: center;">Repair</p> <p style="text-align: center;">This DTC is set if an associated speed ratio DTC is stored within 1.3 seconds after a shift. Refer to the Transmission category and perform the appropriate speed ratio symptom.</p> <p style="text-align: center;">Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:**P1793-TRD LINK COMMUNICATION ERROR****When Monitored and Set Condition:****P1793-TRD LINK COMMUNICATION ERROR**

When Monitored: During torque managed shifts with Throttle angle above 54 degrees. This system is also tested whenever the vehicle is stopped and the engine speed is below 1000 RPM.

Set Condition: This code is set when the Transmission Control Module sends two subsequent Torque Reduction messages (pulses the TRD ckt to ground) to the Powertrain Control Module via the TRD link circuit and the TCM 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 CIRCUIT SHORT TO GROUND

TORQUE MANAGEMENT REQUEST SENSE CIRCUIT SHORTED TO VOLTAGE

POWERTRAIN CONTROL MODULE

TRANSMISSION CONTROL MODULE

INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

P1793-TRD LINK COMMUNICATION ERROR — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's Are any of the DTCs P1694, P0731, P0732, P0733, P0734, and/or P1736 present also?</p> <p>Yes → If any of these DTCs are present, disregard the P1793 DTC. Refer to the Transmission category and perform the appropriate symptom.. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>With the DRBIII®, Check the STARTS SINCE SET counter for P1793. NOTE: This counter only applies to the last DTC set. Is the STARTS SINCE SET set at 0?</p> <p>Yes → Go To 4</p> <p>No → Go To 9</p>	All
4	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the PCM 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?</p> <p>Yes → Repair the Torque Management Request Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 5</p>	All
5	<p>Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the PCM 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?</p> <p>Yes → Repair the Torque Management Request Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 6</p>	All

P1793-TRD LINK COMMUNICATION ERROR — Continued

TEST	ACTION	APPLICABILITY
6	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. Measure the voltage of the Torque Management Request Sense circuit in the TCM harness connector. Is the voltage above 10.5 volts? Yes → Repair the Torque Management Request Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition switch to the lock position. Disconnect the TCM harness connector. Note: Check connectors - Clean/repair as necessary. Turn the ignition on. 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 Perform 45RFE/545RFE 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. After completion of the Powertrain Verification test make sure to perform Transmission Verification Test 1. Perform POWERTRAIN VERIFICATION TEST VER - 2.	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 wires while checking for shorts and open circuits. With the DRBIII®, check the EATX DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE 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 gear ratio is monitored continuously while the Transmission is in gear.

Set Condition: After a TCM reset in neutral and a ratio of input to output, of 1 to 2. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES

- SPEED SENSOR GROUND CIRCUIT OPEN
- SPEED SENSOR GROUND CIRCUIT SHORT TO GROUND
- SPEED SENSOR GROUND CIRCUIT SHORT TO VOLTAGE
- TRANSMISSION CONTROL MODULE
- INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Engine Running. Shift lever in park.</p> <p>With the DRBIII®, read the Transmission Input and Output Speed Sensor RPM.</p> <p>Is the Output Speed Sensor reading twice the Input Speed Sensor reading?</p> <p style="text-align: center;">Yes → Go To 3 No → Go To 8</p>	All

P1794-SPEED SENSOR GROUND ERROR — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Remove the Starter Relay. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. With the Transmission Simulator, set the Input/Output Speed selector switch to the 3000/1000 position. Turn the Input/Output Speed switch to ON. With the DRBIII®, monitor the Input and Output Speed Sensor RPM. Does the Input Speed read 3000 RPM and the Output Speed read 1000 RPM, ± 50 RPM? Yes → Go To 8 No → Go To 4	All
4	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Input and Output Speed Sensor harness connector. Disconnect the Transmission Solenoid/TRS Assembly 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 Transmission Solenoid/TRS Assembly, Input and Output Speed Sensor harness connectors. Is the resistance above 5.0 ohms on any of the above measurements? Yes → Repair the Speed Sensor Ground circuit for an open. Perform 45RFE/545RFE 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/TRS Assembly harness connector. Disconnect the Input and Output Speed Sensor harness connectors. Note: Check connectors - Clean/repair as necessary. Measure the resistance between the Input Sensor Ground circuit and ground. Is the resistance below 5.0 ohms? Yes → Repair the Speed Sensor Ground circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the Input and Output Speed Sensor harness connectors. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running. Measure the voltage of the Speed Sensor Ground circuit. Is the voltage above 0.5 volt? Yes → Repair the Speed Sensor Ground circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All

P1794-SPEED SENSOR GROUND ERROR — Continued

TEST	ACTION	APPLICABILITY
7	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
8	<p>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 DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p style="padding-left: 40px;">Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Test Complete.</p>	All

Symptom:

P2700-INADEQUATE ELEMENT VOLUME LR

When Monitored and Set Condition:

P2700-INADEQUATE ELEMENT VOLUME LR

When Monitored: Whenever the engine is running. The LR Clutch Volume is updated during a 3-1 or 2-1 manual downshift with a throttle angle below 5°. Transmission temperature must be at least 43° C or 110° F.

Set Condition: When the LR Clutch Volume falls below 16.

POSSIBLE CAUSES

INTERNAL TRANSMISSION
TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>With the DRBIII®, erase DTC's</p> <p>NOTE: The TRANS TEMP DEG must be at least 43°C or 110°F before performing the following steps.</p> <p>Drive the vehicle and perform at least ten 3-1 manual downshifts at closed throttle from speeds of about 32 km/h or 20 MPH.</p> <p>With the DRBIII®, read the LR CL VOL INDEX.</p> <p>Is the LR CL VOL INDEX below 20?</p> <p>Yes → Go To 3</p> <p>No → Go To 4</p>	All

P2700-INADEQUATE ELEMENT VOLUME LR — Continued

TEST	ACTION	APPLICABILITY
3	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Repair internal transmission as necessary. Refer to the Service Information for the proper repair procedure for components related to the LR clutch. A broken or weak return spring or a dislocated snap ring could cause this problem.</p> <p>Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
4	<p>NOTE: The TRANS TEMP DEG must be at least 43° C or 110° F before performing the following steps.</p> <p>Perform eight learnable starts. A learnable start is defined as follows: Start engine. From a standstill, accelerate lightly to 80 km/h or 50 MPH, then brake lightly to a stop. Turn off engine.</p> <p>With the DRBIII®, record the CL VOL INDEX (CVI) for all clutches.</p> <p>With the DRBIII®, perform a BATTERY DISCONNECT.</p> <p>With the DRBIII®, read the CVI's and compare them to the readings recorded before the BATTERY DISCONNECT.</p> <p>Are any of the CVI's less than 5 or different than before the BATTERY DISCONNECT?</p> <p>Yes → Go To 5</p> <p>No → Test Complete.</p>	All
5	<p>Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits.</p> <p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN</p> <p>Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:

P2701-INADEQUATE ELEMENT VOLUME 2C

When Monitored and Set Condition:

P2701-INADEQUATE ELEMENT VOLUME 2C

When Monitored: Whenever the engine is running. The 2C Clutch Volume is updated during a 3-2 kickdown with a throttle angle between 10° and 54°. Transmission temperature must be at least 43° C or 110° F.

Set Condition: When the 2C Clutch Volume falls below 5.

POSSIBLE CAUSES

INTERNAL TRANSMISSION
TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P2701-INADEQUATE ELEMENT VOLUME 2C — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, erase DTC's Drive the vehicle at about 80 km/h or 50 MPH, then depress the OD off button. This will put the vehicle into third gear. NOTE: The TRANS TEMP DEG must be at least 43° C or 110° F before performing the following steps. Perform at least ten 3-2 kickdowns by depressing the throttle between 10 and 54 TPS DEGREES at speeds of about 80 km/h or 50 MPH. With the DRBIII®, read the 2C CL VOL INDEX. Is the 2C CL VOL INDEX below 10?</p> <p style="padding-left: 40px;">Yes → Go To 3 No → Go To 4</p>	All
3	<p>If there are no possible causes remaining, view repair.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Repair internal transmission as necessary. Refer to the Service Information for the proper repair procedure for components related to the 2C clutch. A broken or weak return spring or a dislocated snap ring could cause this problem. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
4	<p>NOTE: The TRANS TEMP DEG must be at least 43° C or 110° F before performing the following steps. Perform eight learnable starts. A learnable start is defined as follows: Start engine. From a standstill, accelerate lightly to 80 km/h or 50 MPH, then brake lightly to a stop. Turn off engine. With the DRBIII®, record the CL VOL INDEX (CVI) for all clutches With the DRBIII®, perform a BATTERY DISCONNECT. With the DRBIII®, read the CVI's and compare them to the readings recorded before the BATTERY DISCONNECT. Are any of the CVI's less than 5 or different than before the BATTERY DISCONNECT?</p> <p style="padding-left: 40px;">Yes → Go To 5 No → Test Complete.</p>	All
5	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:

P2702-INADEQUATE ELEMENT VOLUME OD

When Monitored and Set Condition:

P2702-INADEQUATE ELEMENT VOLUME OD

When Monitored: Whenever the engine is running. The OD Clutch Volume is updated during a 2-3 upshift with a throttle angle between 10° and 54°. Transmission temperature must be at least 43° C or 110° F.

Set Condition: When the OD Clutch Volume falls below 5.

POSSIBLE CAUSES

INTERNAL TRANSMISSION
TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>With the DRBIII®, erase DTC's</p> <p>NOTE: The TRANS TEMP DEG must be at least 43° C or 110° F before performing the following steps.</p> <p>Drive the vehicle and perform at least ten 2-3 upshifts with the throttle between 10 and 54 TPS DEGREES.</p> <p>With the DRBIII®, read the OD CL VOL INDEX.</p> <p>Is the OD CL VOL INDEX below 10?</p> <p>Yes → Go To 3</p> <p>No → Go To 4</p>	All

P2702-INADEQUATE ELEMENT VOLUME OD — Continued

TEST	ACTION	APPLICABILITY
3	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Repair internal transmission as necessary. Refer to the Service Information for the proper repair procedure for components related to the OD clutch. A broken or weak return spring or a dislocated snap ring could cause this problem.</p> <p>Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
4	<p>NOTE: The TRANS TEMP DEG must be at least 43° C or 110° F before performing the following steps.</p> <p>Perform eight learnable starts. A learnable start is defined as follows: Start engine. From a standstill, accelerate lightly to 80 km/h or 50 MPH, then brake lightly to a stop. Turn off engine.</p> <p>With the DRBIII®, record the CL VOL INDEX (CVI) for all clutches.</p> <p>With the DRBIII®, perform a BATTERY DISCONNECT.</p> <p>With the DRBIII®, read the CVI's and compare them to the readings recorded before the BATTERY DISCONNECT.</p> <p>Are any of the CVI's less than 5 or different than before the BATTERY DISCONNECT?</p> <p>Yes → Go To 5</p> <p>No → Test Complete.</p>	All
5	<p>Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits.</p> <p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN</p> <p>Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:**P2703- INADEQUATE ELEMENT VOLUME UD****When Monitored and Set Condition:****P2703- INADEQUATE ELEMENT VOLUME UD**

When Monitored: Whenever the engine is running. The UD Clutch Volume is updated during a 4-3 kickdown with a throttle angle between 10° and 54°. Transmission temperature must be at least 43° C or 110° F.

Set Condition: When the UD Clutch Volume falls below 11.

POSSIBLE CAUSES

INTERNAL TRANSMISSION

TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>With the DRBIII®, erase DTC's</p> <p>NOTE: The TRANS TEMP DEG must be at least 43° C or 110° F before performing the following steps.</p> <p>Drive the vehicle and perform at least ten 4-3 kickdowns by depressing the throttle between 30 and 54 TPS DEGREES at speeds about 80 km/h or 50 MPH.</p> <p>With the DRBIII®, read the UD CL VOL INDEX.</p> <p>Is the UD CL VOL INDEX below 10?</p> <p>Yes → Go To 3</p> <p>No → Go To 4</p>	All

P2703- INADEQUATE ELEMENT VOLUME UD — Continued

TEST	ACTION	APPLICABILITY
3	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Repair internal transmission as necessary. Refer to the Service Information for the proper repair procedure for components related to the UD clutch. A broken or weak return spring or a dislocated snap ring could cause this problem.</p> <p>Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
4	<p>NOTE: The TRANS TEMP DEG must be at least 43° C or 110° F before performing the following steps.</p> <p>Perform eight learnable starts. A learnable start is defined as follows: Start engine. From a standstill, accelerate lightly to 80 km/h or 50 MPH, then brake lightly to a stop. Turn off engine.</p> <p>With the DRBIII®, record CL VOL INDEX (CVI) for all clutches.</p> <p>With the DRBIII®, perform a BATTERY DISCONNECT.</p> <p>With the DRBIII®, read the CVI's and compare them to the readings recorded before the BATTERY DISCONNECT.</p> <p>Are any of the CVI's less than 5 or different than before the BATTERY DISCONNECT?</p> <p>Yes → Go To 5</p> <p>No → Test Complete.</p>	All
5	<p>Using the schematics as a guide, inspect the wiring and connectors. Repair as necessary. Pay particular attention to all power and ground circuits.</p> <p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN</p> <p>Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:

P2704-INADEQUATE ELEMENT VOLUME 4C

When Monitored and Set Condition:

P2704-INADEQUATE ELEMENT VOLUME 4C

When Monitored: Whenever the engine is running. The 4C Clutch Volume is updated during a 3-4 upshift with a throttle angle between 10° and 54°. Transmission temperature must be at least 43° C or 110° F.

Set Condition: When the 4C Clutch Volume falls below 5.

POSSIBLE CAUSES
INTERNAL TRANSMISSION
TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVI's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

P2704-INADEQUATE ELEMENT VOLUME 4C — Continued

TEST	ACTION	APPLICABILITY
2	<p>NOTE: Check the Transmission Fluid Level. If the Transmission Fluid is low, repair any Transmission Fluid leak as necessary and adjust the Transmission Fluid Level per the Service Information.</p> <p>With the DRBIII®, record the 4C CL VOL INDEX. With the DRBIII®, erase DTC's. Perform at least 10 3-4 upshifts with the throttle between 10 and 54 degrees. The Transmission Temperature must be at least 43°C or 110 °F. With the DRBIII®, read the 4C CL VOL INDEX. Is the current 4C CL VOL INDEX below 10?</p> <p style="padding-left: 40px;">Yes → Go To 3 No → Go To 4</p>	All
3	<p>If there are no possible causes remaining, view repair.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Repair the transmission as necessary. Refer to the Service Information for proper repair procedures for components related to the 4th clutch. A broken or weak return spring or a dislocated snap ring could cause this problem. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
4	<p>Perform eight learnable starts. A learnable start is defined as follows: Start engine. From a standstill, accelerate lightly to 50 MPH, then brake lightly to a stop. Turn off engine.</p> <p>With the DRBIII®, record the CL VOL INDEX (CVI) for all clutches. With the DRBIII®, perform a BATTERY DISCONNECT. With the DRBIII®, read the CVI's and compare them to the reading recorded before the BATTERY DISCONNECT. Are any of the CVI's less than 5 or different than before the BATTERY DISCONNECT?</p> <p style="padding-left: 40px;">Yes → Go To 5 No → Test Complete.</p>	All
5	<p>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.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Replace the Transmission Control Module per the Service Information. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:
P2706-MS SOLENOID CIRCUIT

When Monitored and Set Condition:

P2706-MS SOLENOID CIRCUIT

When Monitored: Initially at power-up, then every 10 seconds thereafter. It will also be tested immediately after a gear ratio or pressure switch error is detected.

Set Condition: After three consecutive solenoid continuity tests failures. After one failure if a test is run in response to a gear ratio or pressure switch error.

POSSIBLE CAUSES

RELATED RELAY DTC'S PRESENT

MS SOLENOID CONTROL CIRCUIT OPEN

TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN

MS SOLENOID CONTROL CIRCUIT SHORT TO GROUND

MS SOLENOID CIRCUIT SHORT TO VOLTAGE

MS SOLENOID

TRANSMISSION CONTROL MODULE

INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>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.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures.</p> <p>NOTE: Diagnose 1 Trip Failures as a fully matured DTC.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal.</p> <p>For Gear Ratio DTC's, check and record all CVT's.</p> <p>Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for applicable TSB's related to the problem.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

P2706-MS SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	<p>With the DRBIII®, check for other transmission DTC's. Are there any Transmission Control Relay related DTCs P0890, P0891, and/or P0888 present?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>With the DRBIII®, Check the STARTS SINCE SET counter for P2706. NOTE: This counter only applies to the last DTC set. Is the STARTS SINCE SET counter set at 0?</p> <p>Yes → Go To 4</p> <p>No → Go To 11</p>	All
4	<p>Turn the ignition off to the lock position. Remove the Starter Relay from the PDC. NOTE: Failure to remove the Starter Relay can cause a Transmission - No Response condition. Install the Transmission Simulator, Miller tool #8333. Note: Check connectors - Clean/repair as necessary. Ignition on, engine not running.. With the DRBIII®, actuate the MS Solenoid. Monitor the MS Solenoid LED on the Transmission Simulator. Did the LED on the Transmission Simulator blink on and off?</p> <p>Yes → Go To 5</p> <p>No → Go To 6</p>	All
5	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Replace Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>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 MS Solenoid Control circuit between the TCM harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the MS Solenoid Control circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 7</p>	All

P2706-MS SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	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 MS Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the MS Solenoid Control circuit for a short to ground. Perform 45RFE/545RFE 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/TRS Assembly harness connector. Remove the Transmission Control Relay from the PDC. 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 MS Solenoid Control circuit in the TCM harness connector. Is the voltage above 0.5 volt? Yes → Repair the MS Solenoid Control circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All
9	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Transmission Control Relay Output circuit in the Solenoid/TRS 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 45RFE/545RFE 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 Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All

P2706-MS SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	<p>The conditions necessary to set this DTC are not present at this time. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Wiggle the wires while checking for shorts or open circuits. Check for any applicable TSB's that may apply. With the DRBIII®, check the EATX DTC EVENT DATA to help identify the conditions in which the DTC was set. Were there any problems found?</p> <p>Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All

Symptom:

***BACKUP LAMPS COME ON WHILE SHIFTER IS NOT IN REVERSE POSITION**

POSSIBLE CAUSES	
BACKUP SUPPLY CIRCUIT SHORT TO VOLTAGE	
TRANSMISSION RANGE SENSOR	

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. Firmly apply brakes. Place the Shift Lever in the position which causes the Backup Lamps to come on at the wrong time. Do the Backup Lamps come while the shifter is not in Reverse? Yes → Go To 2 No → Test Complete.	All
2	Ignition on, engine not running. Place the shift lever in a position that causes the Backup Lamps to come on when they should not. Disconnect the Transmission Solenoid /TRS Assembly harness connector. NOTE: This will cause a DTC to be stored in the TCM. They must be erased before returning the vehicle to the customer. Did the Backup Lamps go out when the connector was disconnected? Yes → Go To 3 No → Go To 4	All
3	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/TRS Assembly per the Service Information. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.	All
4	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Ignition on, engine not running. Measure the voltage of the Backup Light Supply circuit in the Solenoid/TRS harness connector. Is the voltage above 0.5 volt? Yes → Repair the Backup Lights Supply circuit for a short to voltage. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST. No → Test Complete.	All

Symptom:

***BACKUP LAMPS INOPERATIVE**

POSSIBLE CAUSES
BACK UP LAMP GROUND CIRCUIT OPEN BACKUP LAMP FEED CIRCUIT OPEN FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN BACKUP LAMP FEED CIRCUIT SHORT TO GROUND OPEN BACKUP LAMP BULB(S) TRANSMISSION RANGE SENSOR

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. Place foot firmly on brake pedal. Place the shift lever in the reverse position. Do either of the Backup Lamps work? Yes → Test Complete. No → Go To 2	All
2	Turn the ignition off to the lock position. Install Transmission Simulator Miller tool #8333. Ignition on, engine not running. Press the Reverse Light Test button on the Transmission Simulator while observing the Backup Lamps. Do either of the Backup Lamps come on? Yes → Go To 3 No → Go To 4	All
3	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/TRS Assembly per the Service Information Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.	All
4	Remove both Backup Lamp bulbs. Measure the resistance of both Backup Lamp bulbs. Is the resistance above 5.0 ohms for either Backup Lamp bulbs? Yes → Replace the Backup Lamp bulb or bulbs per the Service Information. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST. No → Go To 5	All

***BACKUP LAMPS INOPERATIVE — Continued**

TEST	ACTION	APPLICABILITY
5	Remove the Backup Lamp bulb. Using a 12-volt test light connected to 12-volts, check the Backup Lamp ground circuit. Does the light illuminate brightly? Yes → Go To 6 No → Repair the Back up Lamp ground circuit for an open. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.	All
6	Turn the ignition off to the lock position. Remove the Backup Lamp bulb. Disconnect the Transmission Solenoid /TRS Assembly harness connector. Measure the resistance of the Backup Lamp Feed circuit from the Backup lamp Socket to the Solenoid/TRS harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Backup Lamp Supply circuit for an open. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST. No → Go To 7	All
7	Turn the ignition off to the lock position. Remove the Backup Lamp bulbs. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Measure the resistance between the Backup Lamp Feed circuit and ground. Is the resistance below 5.0 ohms? Yes → Repair the Backup Lamp Feed circuit for a short to ground. Check the Fused Ignition Switch Output (RUN) fuse and replace if necessary. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid /TRS Assembly harness connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Fused Ignition Switch 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 → Test Complete. No → Repair the Fused Ignition Switch Output circuit for an open. If the fuse is open make sure to check or a short to ground. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.	All

Symptom:

***BUMP FELT SHORTLY AFTER STOP WITH NO DTC'S PRESENT**

POSSIBLE CAUSES

STICKING SLIP JOINT

TEST	ACTION	APPLICABILITY
1	<p>This condition is normally caused by a stick and slip condition between the prop shaft slip joint and the transfer case output shaft. If there are no possible causes remaining, view repair.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 80px;">Check for TSB's relating to this condition. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.</p>	All

Symptom:***BUMP FELT WHILE COASTING IN NEUTRAL WITH NO DTC'S PRESENT**

TEST	ACTION	APPLICABILITY
1	Check for a TCM flash update or TSB to address this issue. Perform the drive learn procedure for the LR clutch element. NOTE: Some bump while coasting in neutral is normal. Perform the above procedures to reduce excessive bump in neutral. Repair Test Complete.	All

Symptom:

***CHECKING PARK/NEUTRAL SWITCH OPERATION**

POSSIBLE CAUSES
PARK/NEUTRAL POSITION SWITCH SENSE CIRCUIT OPEN
PARK/NEUTRAL POSITION SWITCH SENSE CIRCUIT SHORT TO GROUND
POWERTRAIN CONTROL MODULE
INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, monitor the P/N Position Switch Input status. Move the gear selector through all gear positions, Park to 1st and back to Park. Did the DRB display P/N and D/R in the correct gear positions? Yes → Go To 2 No → Go To 3	All
2	The condition is 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. Were there any problems found? Yes → Repair as necessary. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST. No → Test Complete.	All
3	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Disconnect the PNP Switch harness connector. Check connectors - Clean/repair as necessary Measure the resistance of the PNP Switch Sense circuit between the PCM harness connector and the PNP Switch harness connector. Is the resistance below 5.0 ohms? Yes → Go To 4 No → Repair the Park/Neutral Position Switch Sense circuit for an open. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.	All

***CHECKING PARK/NEUTRAL SWITCH OPERATION — Continued**

TEST	ACTION	APPLICABILITY
4	Ignition on, engine not running. Disconnect the PCM harness connector. Disconnect the PNP Switch harness connector. Check connectors - Clean/repair as necessary Measure the resistance between the PNP Switch Sense Circuit and ground. Is the resistance below 5.0 ohms? Yes → Repair the Park/Neutral Position Switch Sense circuit for a short to ground. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST. No → Go To 5	All
5	If there are no possible causes remaining, view repair. Repair Replace and program the Powertrain Control Module per the Service Information. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.	All

Symptom:

***POOR SHIFT QUALITY**

POSSIBLE CAUSES

POOR SHIFT QUALITY

TEST	ACTION	APPLICABILITY
1	<p>NOTE: A under or over filled Transmission Fluid Level can cause many shift quality problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the Service Information.</p> <p>If the transmission shifts early when cold, this is a normal condition. The controller software is designed to protect the transmission from high torque and/or high RPM shifts during cold operation.</p> <p>Check and repair all engine DTC's prior to any Transmission diagnostics. A inconsistent TPS/APPS operation can cause an abnormal or erratic shift pattern. With the DRBIII®, monitor the TPS/APPS voltage for a smooth voltage change while slowly opening and closing the throttle. If the voltage change is not smooth, replace the sensor.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Perform the Shift Lever Position Test. If the test does not pass, refer to the test, P0706 Check Shifter Signal, in the transmission category.</p> <p>NOTE: Verify the flash level of the transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>If a controller software update was performed, make sure to perform the Drive Learn Procedure. A abnormal or erratic shift pattern may transpire if the Drive Learn Procedure is not performed.</p> <p>NOTE: Check for any applicable TSB's that may apply.</p> <p>Where there any problems found?</p> <p>Yes → Repair as necessary. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.</p> <p>No → Test Complete.</p>	All

Symptom:***TRANSMISSION NOISY WITH NO DTC'S PRESENT****POSSIBLE CAUSES**

INCORRECT FLUID LEVEL

VERIFY NOISY TRANSMISSION

INTERNAL TRANSMISSION PROBLEM - NOISY WHILE DRIVING

INTERNAL TRANSMISSION PROBLEM - NOISY WHILE STANDING STILL

TEST	ACTION	APPLICABILITY
1	<p>Check and adjust the oil level per the service information before continuing. Place vehicle on hoist.</p> <p>Run vehicle on hoist under conditions necessary to duplicate the noise. Using Chassis Ears or other suitable device, verify that the noise is coming from the transmission.</p> <p>Is the noise coming from the transmission?</p> <p>Yes → Go To 2</p> <p>No → Refer to the Service Information for the proper repair procedure. Check for any TSBs that may apply. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.</p>	All
2	<p>Check the Transmission Fluid level per the Service Information.</p> <p>NOTE: The transmission must be hot when checking oil level. When the temperature is below 10° Celsius 50° Fahrenheit it is possible that no oil will show on the dipstick, even though the transmission has an adequate fill level when warm.</p> <p>Is the fluid level OK?</p> <p>Yes → Go To 3</p> <p>No → Adjust fluid level. Repair cause of incorrect fluid level. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.</p>	All
3	<p>With the shift lever in neutral, raise the engine speed and listen to the noise.</p> <p>Note: Make sure the radio is 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, THE RADIO MUST BE TURNED OFF.</p> <p>Does the noise get louder or change pitch while the engine speed is changing?</p> <p>Yes → Go To 4</p> <p>No → Go To 5</p>	All
4	<p>If there are no possible causes remaining, view repair.</p> <p>Repair</p> <p>Repair internal transmission as necessary per the Service Information. Pay particular attention to the bearings in front half of transmission and for any signs of wear. If no problems are found, replace the primary oil pump.</p> <p>Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.</p>	All

***TRANSMISSION NOISY WITH NO DTC'S PRESENT — Continued**

TEST	ACTION	APPLICABILITY
5	<p>If there are no possible causes remaining, view repair.</p> <p style="padding-left: 40px;">Repair</p> <p style="padding-left: 40px;">Repair internal transmission as necessary per the Service Information. Inspect all of the transmission components for signs of wear. Pay particular attention to bearings, pinion gears, etc. Repair or replace as necessary.</p> <p style="padding-left: 40px;">Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.</p>	All

Symptom:***TRANSMISSION SHIFTS EARLY WITH NO DTC'S****POSSIBLE CAUSES**

COLD TRANSMISSION

BUS PROBLEMS

INTERMITTENT WIRING AND CONNECTORS

TEST	ACTION	APPLICABILITY
1	<p>If the transmission shifts too early when the transmission is cold, this is a normal condition. Did the problem occur when the transmission temperature was cold?</p> <p>Yes → The software is designed to protect the transmission from high torque and/or high RPM shifts during cold operation. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.</p> <p>No → Go To 2</p>	All
2	<p>Using the DRBIII®, attempt communication with other Modules on the bus, check for signs of a bus problem such as bus related DTC's and/or communication problems. Although it takes two occurrences of a missed TRD link message to set the fault code, 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, it must be repaired first. Do any of the other modules show signs of a bus problem?</p> <p>Yes → Refer to the appropriate category for the bus problem. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.</p> <p>No → Go To 3</p>	All
3	<p>Using the schematics as a guide, inspect the wiring and connectors specific to the Torque Management Request Sense circuit. Wiggle the wires while checking for shorted and open circuits. Were there any problems found?</p> <p>Yes → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors and repair as necessary. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.</p> <p>No → Test Complete.</p>	All

Symptom:

***TRANSMISSION SHIFTS ROUGH AFTER TCM REPLACEMENT OR REFLASH**

POSSIBLE CAUSES

TRANSMISSION SHIFTS ROUGH AFTER TCM REPLACEMENT OR REFLASH

TEST	ACTION	APPLICABILITY
1	Perform this procedure if the transmission shifts rough after TCM was replaced or Reflashed. Does the transmission shift rough after a TCM replacement or Reflash? Yes → Perform Quick Learn and the Drive Learn Procedure Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST. No → Test Complete.	All

Symptom:***TRANSMISSION SIMULATOR 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 Control Relay being open, such as Limp-in, and/or the Simulator is not installed correctly on the vehicle. Note: Check the simulator ground cable connection. Repair these symptoms before having the Transmission Simulator, Miller tool #8333, repaired. Continue Test Complete.	All

Symptom:

***VEHICLE IS SLUGGISH WITH NO DTC'S PRESENT**

POSSIBLE CAUSES
ENGINE VISCOUS FAN COLD TRANSMISSION BUS PROBLEMS

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Engine viscous fan sticking can cause this complaint. Check the engine viscous fan for proper operation per the Service Information. Does the engine fan operate correctly?</p> <p style="padding-left: 40px;">Yes → Go To 2</p> <p style="padding-left: 40px;">No → Repair the engine viscous fan per the Service Information. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.</p>	All
2	<p>If the transmission shifts too early when the transmission is cold, this is a normal condition. Did the problem occur when the transmission temperature was cold?</p> <p style="padding-left: 40px;">Yes → The software is designed to protect the transmission from high torque and/or high RPM shifts during cold operation. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.</p> <p style="padding-left: 40px;">No → Go To 3</p>	All
3	<p>With the DRBIII®, attempt to communicate with other Modules, check for signs of a bus problem such as bus related DTC's and/or communication problems. Although it takes two occurrences of a missed TRD link message to set a DTC, 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. Are there any bus related DTCs or signs of a bus problem in any of the modules?</p> <p style="padding-left: 40px;">Yes → Refer to the appropriate category for the bus problem. Perform TRANSMISSION NO TROUBLE CODE VERIFICATION TEST.</p> <p style="padding-left: 40px;">No → Test Complete.</p>	All

Verification Tests

45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1	APPLICABILITY
<p>1. Connect the DRBIII® to the Data Link Connector.</p> <p>2. Reconnect any disconnected components.</p> <p>3. With the DRBIII®, erase DTC's.</p> <p>4. With the DRBIII®, display Transmission Temperature. Start and run the engine until the Transmission Temperature is HOT above 43° Celsius 110° Fahrenheit.</p> <p>5. Check the Transmission fluid and adjust if necessary. Refer to the Service Information for the Fluid Fill procedure.</p> <p>6. NOTE: If the TCM has been replaced or if the transmission has been repaired or replaced it is necessary to perform the DRBIII® Quick Learn Procedure.</p> <p>7. Road test the vehicle. With the DRBIII®, monitor TPS. Make fifteen to twenty 1-2, 2-3, and 3-4 upshifts and (4 - 4 Prime for 545RFE only).</p> <p>8. Perform these shifts from a standing start to 97 Km/h 60 MPH with a constant throttle opening of 20 to 25 degrees.</p> <p>9. Below 40 Km/h 25 MPH, make five to eight wide open throttle kickdowns to 1st gear. Allow at least 5 seconds each in 2nd and 3rd gear between each kickdown.</p> <p>10. Check for DTC's during the road test.</p> <p>11. 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.</p> <p>12. Perform the Battery Disconnect with the DRBIII®, this will clear the EATX EVENT DATA. Were any Trouble Codes set during the road test?</p> <p style="padding-left: 40px;">Yes → Refer to the Symptom List for the appropriate diagnostic tests.</p> <p style="padding-left: 40px;">No → Repair is complete.</p>	<p>All</p>

VERIFICATION TESTS

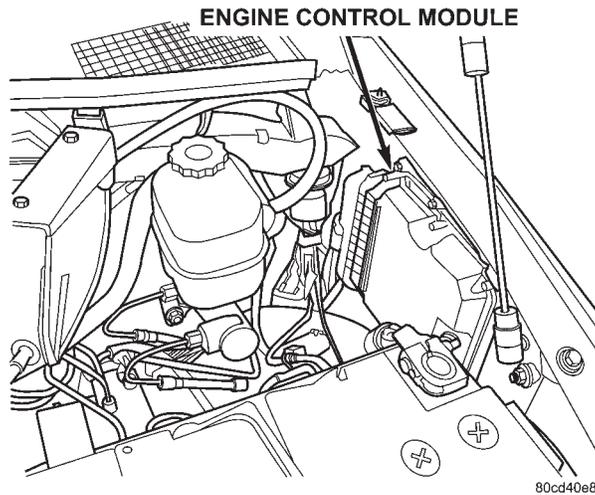
Verification Tests — Continued

POWERTRAIN VERIFICATION TEST VER - 2	APPLICABILITY
<p>1. Inspect the vehicle to ensure that all engine components are properly installed and connected. Reassemble and reconnect components as necessary.</p> <p>2. If this verification procedure is being performed after a NO TROUBLE CODE repair, perform steps 3 and 4.</p> <p>3. Check to see if the initial symptom still exists. If there are no trouble codes or the symptom no longer exists, the repair was successful and testing is complete.</p> <p>4. If the initial or another symptom exists, the repair is not complete. Check all technical service bulletins or flash updates and return to Symptoms if necessary.</p> <p>5. If this verification procedure is being performed after a DTC repair, perform steps 6 through 13.</p> <p>6. Connect the DRBIII® to the data link connector. Using the DRBIII® erase any diagnostic trouble codes and reset all values.</p> <p>7. If the PCM was not replaced, skip steps 8 through 10 and continue with the verification.</p> <p>8. If the PCM was replaced the correct VIN and mileage must be programmed or a DTC will set in the ABS and Air Bag modules. In addition, if the vehicle is equipped with Sentry Key Immobilizer System (SKIS), Secret Key data must be updated to enable start.</p> <p>9. For ABS and Air Bag systems: Enter correct VIN and Mileage in PCM. Erase codes in ABS and Air Bag modules.</p> <p>10. For SKIM theft alarm: Connect DRBIII® to data link conn. Go to Theft Alarm, SKIM, Misc. and place SKIM in secured access mode, by using the appropriate PIN code for this vehicle. Select Update the Secret Key data. Data will be transferred from SKIM to PCM</p> <p>11. Road test the vehicle. If the test is for an A/C DTC, ensure it is operating during the following test.</p> <p>12. Drive the vehicle for at least 5 minutes at or around 64 Km/h (40 mph). Ensure the transmission shifts through all gears. At some point stop the vehicle and turn off the engine for at least 10 seconds.</p> <p>13. With the DRBIII®, read DTCs. Are there any DTC(s) present?</p> <p>Yes → Check for any related Technical Service Bulletins and/or refer to the appropriate Symptom list (Diagnostic Procedure).</p> <p>No → Repair is complete.</p>	<p>All</p>

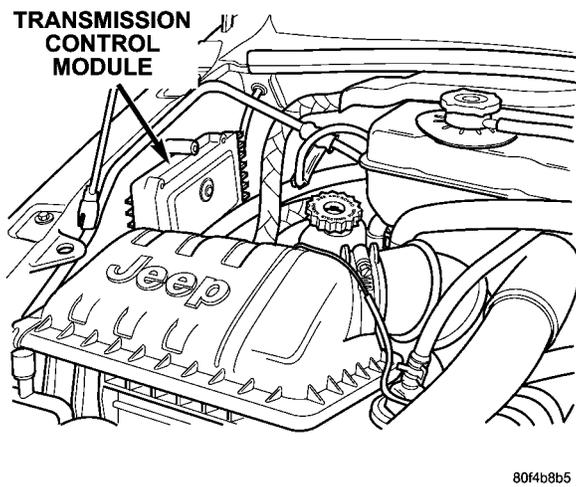
TRANSMISSION NO TROUBLE CODE VERIFICATION TEST	APPLICABILITY
<p>1. Inspect the vehicle to ensure that all engine and transmission components are properly installed and connected. Assemble and connect components as necessary.</p> <p>2. Check if the initial symptom still exists, this may require a road test. If the symptom still exists, return to the symptom list and perform the appropriate symptom. Make sure to check for any Technical Service Bulletins that may apply.</p> <p>3. With the DRBIII®, erase any erroneous DTCs that may have been set due to a test procedure. Does the symptom still exist?</p> <p>Yes → Repair is not complete, refer to appropriate symptom.</p> <p>No → Repair is complete.</p>	<p>All</p>

8.0 COMPONENT LOCATIONS

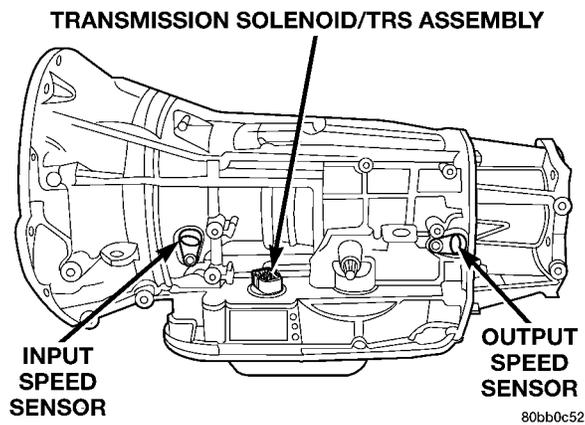
8.1 ENGINE CONTROL MODULE LOCATIONS



8.2 TRANSMISSION CONTROL MODULE LOCATIONS

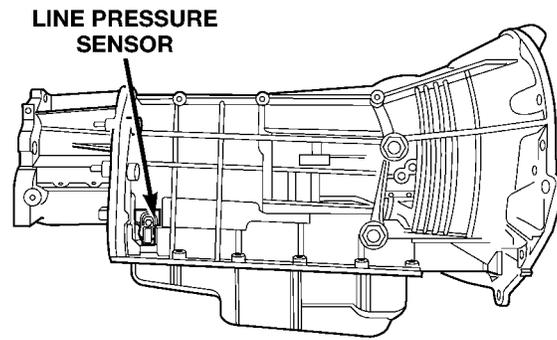


8.3 TRANSMISSION COMPONENT LOCATIONS



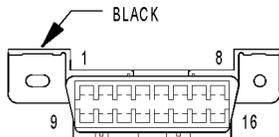
COMPONENT LOCATIONS

8.4 TRANSMISSION LINE PRESSURE SENSOR



80bb0c51

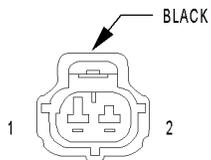
9.0 CONNECTOR PINOUTS



**DATA
LINK
CONNECTOR**

DATA LINK CONNECTOR - BLACK 16 WAY

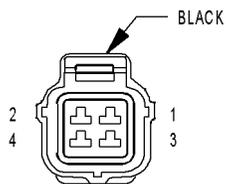
CAV	CIRCUIT	FUNCTION
1	-	-
2	D25 20WT/VT	PCI BUS
3	-	-
4	Z11 20BK/LG	GROUND
5	Z11 20BK/LG	GROUND
6	-	-
7	D21 20WT/GY (DIESEL)	SCI TRANSMIT (ECM)
7	D21 20WT/GY (GAS)	SCI TRANSMIT (PCM)
8	-	-
9	D16 20WT/OR	SCI RECEIVE (TCM)
10	-	-
11	-	-
12	D20 20WT/LG (DIESEL)	SCI RECEIVE (ECM)
12	D20 20WT/LG (GAS)	SCI RECEIVE (PCM)
13	-	-
14	-	-
15	D15 20BR/WT	SCI TRANSMIT (TCM)
16	A333 20WT/RD	FUSED B(+)



**INPUT
SPEED
SENSOR
(A/T)**

INPUT SPEED SENSOR (A/T) - BLACK 2 WAY

CAV	CIRCUIT	FUNCTION
1	T52 20DG/WT	INPUT SPEED SENSOR SIGNAL
2	T13 20DG/VT	SPEED SENSOR GROUND

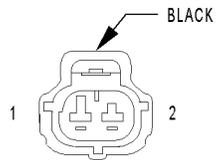


**LINE
PRESSURE
SENSOR
(2.8L 45RFE)**

LINE PRESSURE SENSOR (2.8L 45RFE) - BLACK 4 WAY

CAV	CIRCUIT	FUNCTION
1	Z133 20BK/LG	GROUND
2	T39 20BR/YL	5 VOLT SUPPLY
3	T38 20YL/BR	LINE PRESSURE SENSOR SIGNAL
4	-	-

CONNECTOR PINOUTS

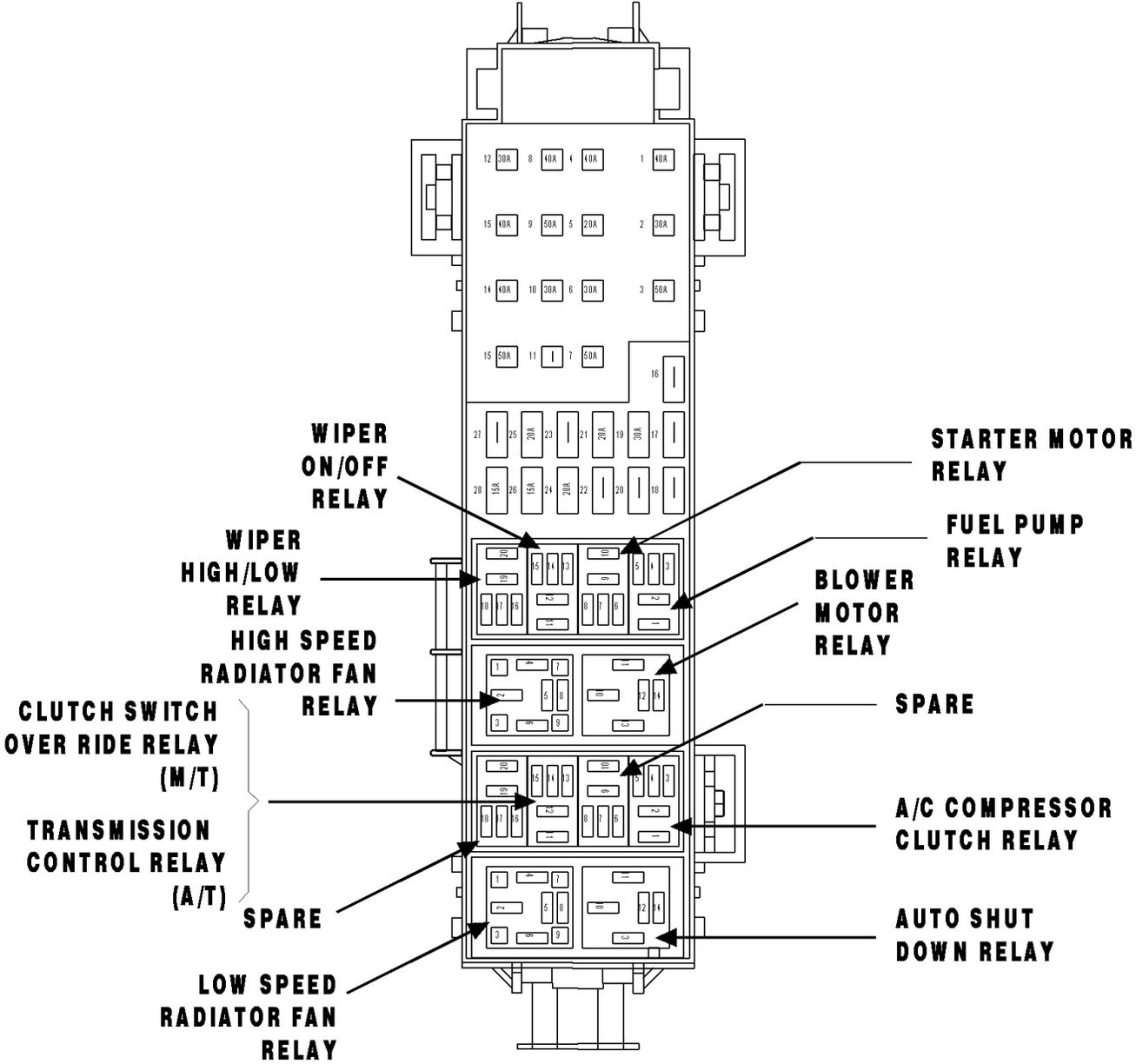


**OUTPUT
SPEED
SENSOR
(A/T)**

OUTPUT SPEED SENSOR (A/T) - BLACK 2 WAY

CAV	CIRCUIT	FUNCTION
1	T14 20DG/BR	OUTPUT SPEED SENSOR SIGNAL
2	T13 20DG/VT	SPEED SENSOR GROUND

**POWER DISTRIBUTION CENTER
GAS**



CONNECTOR PINOUTS

CONNECTOR PINOUTS

FUSES (GAS)

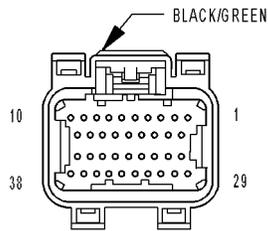
FUSE NO.	AMPS	FUSED CIRCUIT	FUNCTION
1	40A	INTERNAL	FUSED B(+)
2	30A	INTERNAL	FUSED B(+)
3	50A	A912 10RD	FUSED B(+)
4	40A	A107 12TN/RD (ABS)	FUSED B(+)
5	20A	INTERNAL	FUSED B(+)
6	30A	INTERNAL	FUSED B(+)
7	50A	A911 10RD	FUSED B(+)
8	40A	A916 12RD	FUSED B(+)
9	50A	A901 10RD	FUSED B(+)
10	30A	A100 14RD/VT	FUSED B(+)
11	-	-	-
12	30A	A904 14RD	FUSED B(+)
13	40A	A139 12RD/YL	FUSED B(+)
14	40A	A1 12RD	FUSED B(+)
15	50A	A12 10RD/BR	FUSED B(+)
16	-	-	-
17	-	-	-
18	-	-	-
19	30A	A906 12RD	FUSED B(+)
20	-	-	-
21	20A	INTERNAL	FUSED B(+)
22	-	-	-
23	-	-	-
24	20A	A209 18RD	FUSED B(+)
25	20A	A200 12RD/DG (ABS)	FUSED B(+)
26	15A	F142 16PK/GY	FUSED ASD RELAY OUTPUT
27	-	-	-
28	15A	INTERNAL	FUSED IGNITION SWITCH OUTPUT (START)

TRANSMISSION CONTROL RELAY (A/T)

CAV	CIRCUIT	FUNCTION
30	INTERNAL	FUSED B(+)
30	A903 16RD (DIESEL)	FUSED B(+)
85	Z932 20BK	GROUND
86	T515 20YL/DB	TRANSMISSION CONTROL RELAY CONTROL
87	T16 16YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
87A	-	-

CONNECTOR PINOUTS

POWERTRAIN CONTROL MODULE C4 (3.7L A/T) - BLACK/GREEN 38 WAY



**POWERTRAIN
CONTROL
MODULE C4
(3.7L A/T)**

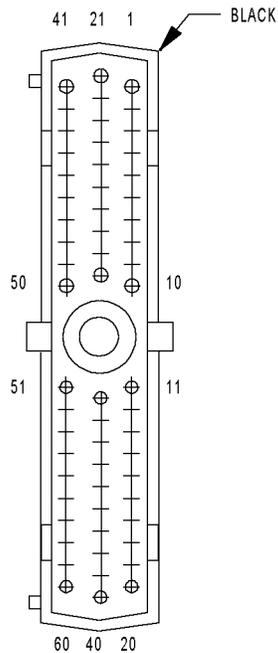
CAV	CIRCUIT	FUNCTION
1	T60 18YL/GY	OD SOLENOID CONTROL
2	T59 18YL/LB	UD SOLENOID CONTROL
3	-	-
4	-	-
5	-	-
6	T19 18YL/DB	2-4 SOLENOID CONTROL
7	-	-
8	-	-
9	-	-
10	T20 18DG/WT	L/R SOLENOID CONTROL
11	T140 20YL/GY	MS SOLENOID CONTROL
12	Z903 16BK	GROUND
13	Z903 16BK	GROUND
14	-	-
15	T1 20DG/LB	TRS T1 SENSE
16	T3 20DG/DB	TRS T3 SENSE
17	T6 20DG	TOW/HAUL OVERDRIVE OFF SWITCH SENSE
18	T515 20YL/DB	TRANSMISSION CONTROL RELAY CONTROL
19	T16 16YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
20	-	-
21	-	-
22	T9 20DG/TN	OD PRESSURE SWITCH SENSE
23	-	-
24	-	-
25	-	-
26	-	-
27	T41 20YL/DB	TRS T41 SENSE (P/N)
28	T16 16YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
29	T50 20YL/TN	L/R PRESSURE SWITCH SENSE
30	T47 20YL/DG	2-4 PRESSURE SWITCH SENSE
31	T38 20YL/BR	LINE PRESSURE SENSOR SIGNAL
32	T14 20DG/BR	OUTPUT SPEED SENSOR SIGNAL
33	T52 20DG/WT	INPUT SPEED SENSOR SIGNAL
34	T13 20DG/VT	SPEED SENSOR GROUND
35	T54 20DG/OR	TRANSMISSION TEMPERATURE SENSOR SIGNAL
36	-	-
37	T42 20DG/YL	TRS T42 SENSE
38	-	-

CONNECTOR PINOUTS

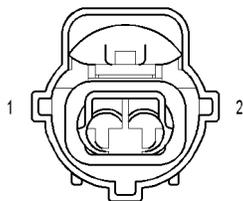
CONNECTOR PINOUTS

TRANSMISSION CONTROL MODULE (2.8L) - BLACK 60 WAY

CAV	CIRCUIT	FUNCTION
1	T1 20DG/LB	TRS T1 SENSE
2	T4 20DG/LB	TRS T2 SENSE
3	T3 20DG/DB	TRS T3 SENSE
4	-	-
5	-	-
6	K244 20BR/WT	ENGINE RPM SIGNAL
7	D21 20WT/GY	SCI TRANSMIT (ECM)
8	F26 20PK/OR	FUSED IGNITION SWITCH OUTPUT (START)
9	T9 20DG/TN	OD PRESSURE SWITCH SENSE
10	T10 20DG/LG	TORQUE MANAGEMENT REQUEST SENSE
11	F1 20PK/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)
12	K23 20BR/WT	ACCELERATOR PEDAL POSITION SENSOR SIGNAL 1
13	T13 20DG/VT	SPEED SENSOR GROUND
14	T14 20DG/BR	OUTPUT SPEED SENSOR SIGNAL
15	T515 20YL/DB	TRANSMISSION CONTROL RELAY CONTROL
16	T16 16YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
17	T16 16YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
18	T118 20DG	PRESSURE CONTROL SOLENOID CONTROL
19	T219 20YL/LG	2C SOLENOID CONTROL
20	T20 18DG/WT	L/R SOLENOID CONTROL
21	-	-
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
29	T29 20YL/WT	UD PRESSURE SWITCH SENSE
30	T38 20YL/BR	LINE PRESSURE SENSOR SIGNAL
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-
36	T16 16YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
37	Z133 16BK/LG	GROUND
38	T39 20BR/YL	5 VOLT SUPPLY
39	Z133 16BK/LG	GROUND
40	T140 20YL/GY	MS SOLENOID CONTROL
41	T41 20YL/DB	TRS T41 SENSE (P/N)
42	T42 20DG/YL	TRS T42 SENSE
43	D25 20WT/VT	PCI BUS
44	-	-
45	-	-
46	D16 20WT/OR	SCI RECEIVE (ECM)
47	T147 20DG/YL	2C PRESSURE SWITCH SENSE
48	T48 20BR/YL	4C PRESSURE SWITCH SENSE
49	T6 20DG	TOW/HAUL OVERDRIVE OFF SWITCH SENSE
50	T50 20YL/TN	L/R PRESSURE SWITCH SENSE
51	K167 20BR/YL	ACCELERATOR PEDAL POSITION SENSOR GROUND 1
52	T52 20DG/WT	INPUT SPEED SENSOR SIGNAL
53	Z133 16BK/LG	GROUND
54	T54 20DG/OR	TRANSMISSION TEMPERATURE SENSOR SIGNAL
55	T59 18YL/LB	UD SOLENOID CONTROL
56	A903 16RD	FUSED B(+)
57	Z133 16BK/LG	GROUND
58	-	-
59	T159 20YL/DG	4C SOLENOID CONTROL
60	T60 18YL/GY	OD SOLENOID CONTROL

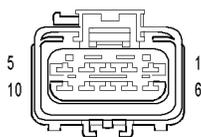


**TRANSMISSION
CONTROL
MODULE
(2.8L)**



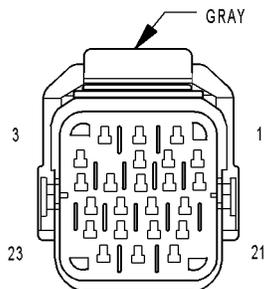
TRANSMISSION RANGE SENSOR (42RLE)

TRANSMISSION RANGE SENSOR (42RLE) - 10 WAY		
CAV	CIRCUIT	FUNCTION
1	C115 20DB	FUSED IGNITION SWITCH OUTPUT (RUN)
2	-	-
3	T13 20DG/VT	SPEED SENSOR GROUND
4	T54 20DG/OR	TRANSMISSION TEMPERATURE SENSOR SIGNAL
5	-	-
6	L10 20WT/GY	BACK-UP LAMP FEED
7	T1 20DG/LB	TRS T1 SENSE
8	T3 20DG/DB	TRS T3 SENSE
9	T42 20DG/YL	TRS T42 SENSE
10	T41 20YL/DB	TRS T41 SENSE (P/N)



TRANSMISSION SOLENOID/PRESSURE SWITCH ASSEMBLY (42RLE)

TRANSMISSION SOLENOID/PRESSURE SWITCH ASSEMBLY (42RLE) - 10 WAY		
CAV	CIRCUIT	FUNCTION
1	T60 18YL/GY	OD SOLENOID CONTROL
2	T59 18YL/LB	UD SOLENOID CONTROL
3	T16 16YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
4	T19 18YL/DB	2-4 SOLENOID CONTROL
5	T47 20YL/DG	2-4 PRESSURE SWITCH SENSE
6	T9 20DG/TN	OD PRESSURE SWITCH SENSE
7	T20 18DG/WT	L/R SOLENOID CONTROL
8	-	-
9	-	-
10	T50 20YL/TN	L/R PRESSURE SWITCH SENSE



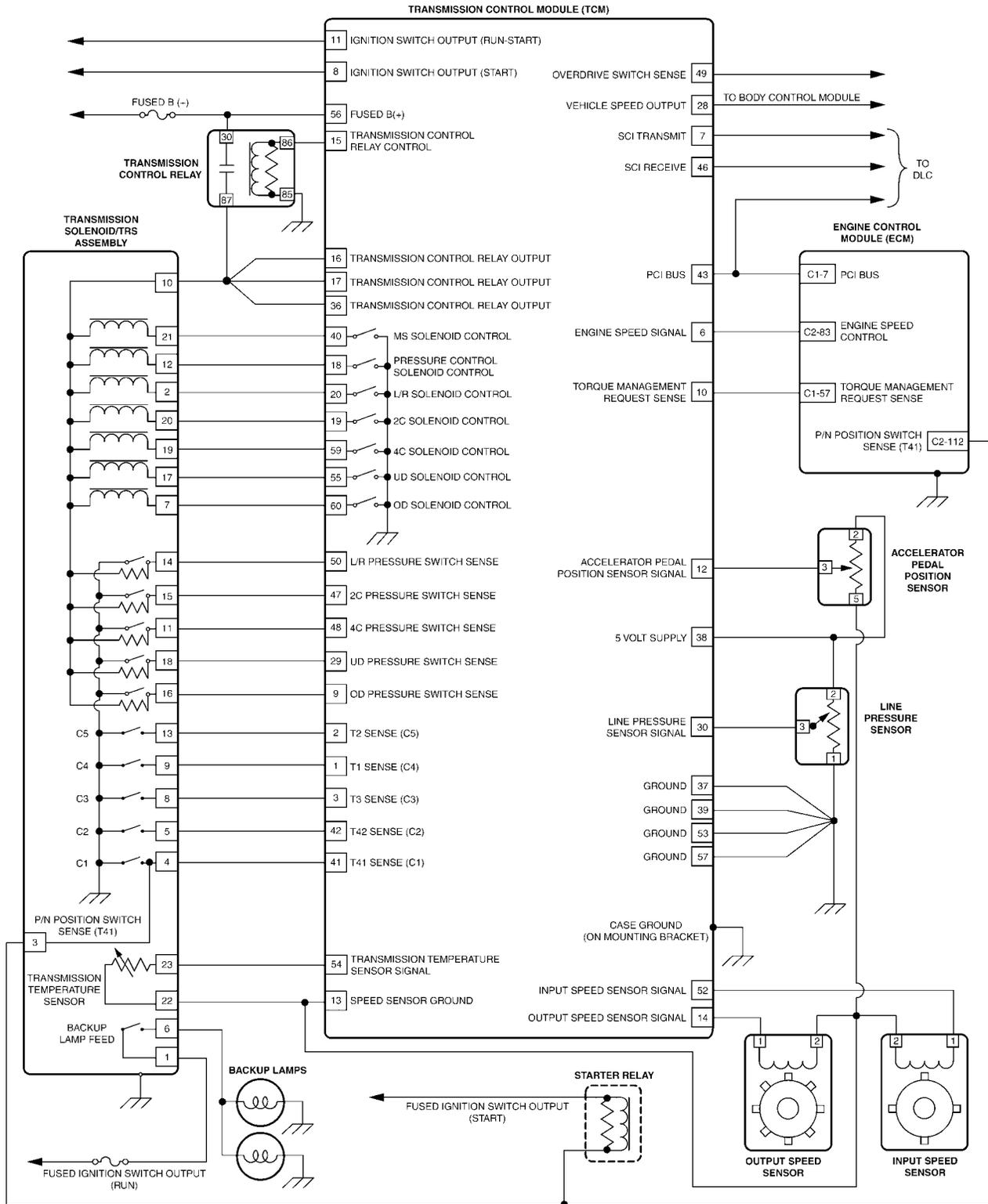
TRANSMISSION SOLENOID/TRS ASSEMBLY (2.8L 45RFE)

TRANSMISSION SOLENOID/TRS ASSEMBLY (2.8L 45RFE) - GRAY 23 WAY		
CAV	CIRCUIT	FUNCTION
1	C115 20DB	FUSED IGNITION SWITCH OUTPUT (RUN)
2	T20 18DG/WT	L/R SOLENOID CONTROL
3	T41 20YL/DB	TRS T41 SENSE (P/N)
4	T41 20YL/DB	TRS T41 SENSE (P/N)
5	T42 20DG/YL	TRS T42 SENSE
6	L10 20WT/GY	BACK-UP LAMP FEED
7	T60 18YL/GY	OD SOLENOID CONTROL
8	T3 20DG/DB	TRS T3 SENSE
9	T1 20DG/LB	TRS T1 SENSE
10	T16 16YL/OR	TRANSMISSION CONTROL RELAY OUTPUT
11	T48 20BR/YL	4C PRESSURE SWITCH SENSE
12	T118 20DG	PRESSURE CONTROL SOLENOID CONTROL
13	T4 20DG/LB	TRS T2 SENSE
14	T50 20YL/TN	L/R PRESSURE SWITCH SENSE
15	T147 20DG/YL	2C PRESSURE SWITCH SENSE
16	T9 20DG/TN	OD PRESSURE SWITCH SENSE
17	T59 18YL/LB	UD SOLENOID CONTROL
18	T29 20YL/WT	UD PRESSURE SWITCH SENSE
19	T159 20YL/DG	4C SOLENOID CONTROL
20	T219 20YL/LG	2C SOLENOID CONTROL
21	T140 20YL/GY	MS SOLENOID CONTROL
22	T13 20DG/VT	SPEED SENSOR GROUND
23	T54 20DG/OR	TRANSMISSION TEMPERATURE SENSOR SIGNAL

10.0 SCHEMATIC DIAGRAMS

10.1 DIESEL

45RFE / 545RFE TRANSMISSION (DIESEL)



SCHEMATIC DIAGRAMS

11.0 CHARTS AND GRAPHS

11.1 PRESSURE SWITCH STATES

45/545RFE

45RFE/545RFE NORMAL PRESSURE SWITCH STATES

GEAR	L/R	2C	4C	UD	OD
R	OPEN	OPEN	OPEN	OPEN	OPEN
N	CLOSED	OPEN	OPEN	OPEN	OPEN
1ST	CLOSED	OPEN	OPEN	CLOSED	OPEN
2ND	OPEN	CLOSED	OPEN	CLOSED	OPEN
2 PRIME	OPEN	OPEN	CLOSED	CLOSED	OPEN
3RD	OPEN	OPEN	OPEN	CLOSED	CLOSED
4TH	OPEN	CLOSED	CLOSED	OPEN	CLOSED
4 PRIME	OPEN	OPEN	OPEN	OPEN	CLOSED

NOTE: L/R PRESSURE SWITCH OPENS ABOVE 150 OUTPUT RPM IN 1ST GEAR AND CLOSSES BELOW 100 OUTPUT RPM.

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11.2 SHIFT LEVER ERROR CODES

45/545RFE

SHIFT LEVER ERROR CODES REPORTED BY THE DRBIII®

ERROR CODE	SWITCH STUCK	POSITION
1	T41/C1 STUCK	OPEN
2	T41/C1 STUCK	CLOSED
3	T42/C2 STUCK	OPEN
4	T42/C2 STUCK	CLOSED
5	T3/C3 STUCK	OPEN
6	T3/C3 STUCK	CLOSED
7	T1/C4 STUCK	OPEN
8	T1/C4 STUCK	CLOSED
9	T2/C5 STUCK	OPEN
10	T2/C5 STUCK	CLOSED
11	OD LOCKOUT STUCK	OPEN
12	OD LOCKOUT STUCK	CLOSED

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CHARTS AND GRAPHS

11.3 TRANSMISSION RANGE SENSOR SWITCH STATES

45/545RFE

45RFE/545RFE TRS SWITCH STATES

TRS	PARK	TMP1	REV	TMP 2	N1	N2	TMP 3	D	TMP 4	2	TMP 5	L
T1 (C4)	OPEN	OPEN	OPEN	OPEN	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN	OPEN
T2 (C5)	CLOSED	CLOSED	OPEN	CLOSED	CLOSED	CLOSED						
T3 (C3)	OPEN	OPEN	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN	OPEN	OPEN	CLOSED
T41 (C1)	CLOSED	OPEN	OPEN	OPEN	CLOSED	CLOSED	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN
T42 (C2)	CLOSED	OPEN	OPEN	OPEN	OPEN	OPEN						

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