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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 2002 Model Year WJ/WG equipped with a 45RFE/ 545RFE 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.

3.0 SYSTEM DESCRIPTION AND FUNCTIONAL OPERATION

3.1 GENERAL DESCRIPTION

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 gearsets, 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.

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 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

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 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.

(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 45RFE/545RFE transmission. The Temperature Sensor is an integral component of the Transmission Range Sensor (TRS). If the Temperature Sensor is faulty, (DTC P-1799) 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 speed, 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 inappro-

priate for the current conditions. The key highlights of the various shift schedules are as follows:

Extreme Cold: Oil temperature below -27°C (-16°F)

Goes to ″Super Cold″ schedule when temp rises above -24°C (-12°F) oil temperature

Park, Reverse, Neutral and 1st and 3rd gear only

No Torque Converter Clutch engagement

Super Cold: Oil temperature between -27°C (-16°F) and -17°C (0°F)

Goes to ″Cold″ schedule above -12°C (10°F) oil temperature

Delayed 2-3 upshift

Delayed 3-4 upshift

Early 4-3 coastdown shift

Early 3-2 coastdown shift

No 3-1 coastdown or kickdown

High speed 4-2, 3-2, 2-1 kickdown shifts are prevented

No Torque Converter Clutch engagement

Cold: Oil temperature between -17°C (0°F) and 2°C (36°F)

Goes to ″Warm″ schedule when temp rises above 4.4°C (40°F) oil temperature

Shifts at higher throttle openings will be early

High speed 4-2, 3-2, 2-1 kickdown shifts are prevented

Delayed 3-4 upshift

Early 4-3 coastdown shift

Torque Converter Clutch engagement allowed with sump temp greater than 18°C (65°F)

Warm: Oil temperature between 2°C (36°F) and 27°C (80°F)

Normal operation (upshifts, kickdowns, and coastdowns)

No Torque Converter Clutch engagement

Hot (Normal operation): Oil temperature between 27°C (80°F) and 115°C (240°F)

Goes to ″Overheat″ schedule above 115°C (240°F) oil temperature

Reverts to ″Hot″ when temp falls below 110°C (230°F)

Normal operation (upshifts, kickdowns, and coastdowns)

Normal Torque Converter Clutch engagement operation

Overheat: Oil temperature above 115°C (240°F) or engine coolant temperature above 118°C (244°F)

Reverts to ″Hot″ when temp falls below 110°C (230°F) oil temp or ″Overheat″ above 115°C (240°F) oil temp.

Delayed 2-3 upshift 40-51 km/h (25-32 MPH)

Delayed 3-4 upshift 66-77 km/h (41-48 MPH)

3rd gear FEMCC from 48-77 km/h (30-48 MPH)

3rd gear PEMCC from 43-50 km/h (27-31 MPH)

A DTC P0218 High Temperature Operation Activated will be set in the TCM.

Causes for operation in the wrong temperature shift schedule:

Extreme Cold or Cold shift schedule at start up:

Temperature Sensor or circuitry.

Overheat shift schedule after extended operation:

Operation in city traffic or stop and go traffic

Engine idle speed too high - Stuck AIS motor

Aggressive driving in low gear

Long idle time in drive position

Trailer towing in OD gear position (use ″3″ position if frequent shifting occurs)

Cooling system failure causing engine to operate over 110°C (230°F)

Engine coolant temperature stays low too long - If engine coolant temperature drops below 66°C (150°F), the transmission will disengage EMCC. Extended operation with the EMCC disengaged will cause the transmission to overheat.

Brake switch or circuitry - The TCM disengages the TCC when it receives a signal from the PCM that the brake has been depressed. A problem with the brake switch or circuitry will cause the EMCC to disengage. Extended operation with the EMCC disengaged will cause the transmission to overheat.

Transmission fluid overfilled

Transmission cooler or cooler lines restricted

Engine cooling fan inoperative

Temperature Sensor or circuitry.

3.2.2 LINE PRESSURE CONTROL

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 P0932(CA), 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 69 kPa (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 Pressure 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

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 CVI 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 DRBIII®.

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.

NOTE: The transmission oil temperature must 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 then 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 changes, 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 become 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 diagnos-

tic 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 (pin 43).
- 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/EUROIII 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/EUROIII code that has not matured to the full 5 minutes. This applies only to codes that will turn on the MIL after 5 minutes of substituted gear operation.

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, such as codes P0932(CA), P0891(14), P0888(15), P0725(18), P1694(19), P0841(81), P0846(82), P0871(84), P0988(88), P0876(90), P0750(C1), P0755(C2), P0760(C3), P0770(C4), P0765(C5), P2706(C6), P1793(48), P0715(56), P0720(57), P1794(58), and P1799(74) are caused by wiring or connector problems. However intermittent codes P0731(51), P0732(52), P0733(53), P0734(54), P0736(50), P0735(59), P1736(55) (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.

- 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 LIST OF DIAGNOSTIC TROUBLE CODES (DTC) (Detailed descriptions follow list)

The TCM may report any of the following DTC's.				
DTC	**P-Code**	**Name of Code**	**Limp-in**	**MIL**
11	P0613	Internal TCM	Yes	Yes
12	P1684	Battery was disconnected	No	No
13	P0613	Internal TCM	Yes	Yes
14	P0891	Relay output always on	Yes	Yes
15	P0888	Relay output always off	Yes	Yes
16	P0605	Internal TCM	Yes	Yes
17	P0604	Internal TCM	Yes	Yes
18	P0725	Engine speed sensor circuit	Yes	Yes
19	P1694	Bus communication with engine module	No	No
28	P0706	Check shifter signal	No	No
29	P0120	Throttle position sensor signal circuit	No	No
35	P0944	Loss of prime	No	No
36	P1790	Fault immediately after shift	No	No
37	P1775	Solenoid switch valve latched in TCC position	No	Yes
38	P0740	Torque converter clutch control circuit	No	Yes
45	P0613	Internal TCM	No	No
47	P1776	Solenoid switch valve latched in L-R position	Yes	Yes
48	P1793	TRD link communication error	No	No
50	P0736	Gear ratio error in reverse	Yes	Yes
51	P0731	Gear ratio error in 1st	Yes	Yes
52	P0732	Gear ratio error in 2nd	Yes	Yes
53	P0733	Gear ratio error in 3rd	Yes	Yes
54	P0734	Gear ratio error in 4th	Yes	Yes
55	P1736	Gear ratio error in 2nd Prime	Yes	Yes
56	P0715	Input speed sensor error	Yes	Yes
57	P0720	Output speed sensor error	Yes	Yes
58	P1794	Speed sensor ground error	Yes	Yes
59	P0735	Gear ratio error in 4th Prime	Yes	Yes
60	P2700	Inadequate Element Volume LR	No	No
61	P2701	Inadequate Element Volume 2C	No	No
62	P2702	Inadequate Element Volume OD	No	No
63	P2703	Inadequate Element Volume UD	No	No
64	P2704	Inadequate Element Volume 4C	No	No
65	P1715	Restricted Port in T3 Range	No	No
74	P1799	Calculated Oil temperature in use	No	No
75	P0218	High temperature operation activated	No	No
76	P0884	Power up at speed	No	No
80	P0890	Switched battery	Yes	Yes
81	P0841	L-R pressure switch sense circuit	Yes	Yes
82	P0846	2C pressure switch sense circuit	Yes	Yes
84	P0871	OD pressure switch sense circuit	Yes	Yes
88	P0988	4C pressure switch sense circuit	Yes	Yes
90	P0876	UD pressure switch sense circuit	Yes	Yes
A2	P0845	2C hydraulic pressure test failure	Yes	Yes
A4	P0870	OD hydraulic pressure test failure	Yes	Yes
A8	P0987	4C hydraulic pressure test failure	Yes	Yes
B0	P0875	UD hydraulic pressure test failure	Yes	Yes
C1	P0750	L-R solenoid circuit	Yes	Yes

The TCM may report any of the following DTC's.				
DTC	**P-Code**	**Name of Code**	**Limp-in**	**MIL**
C2	P0755	2C solenoid circuit	Yes	Yes
C3	P0760	OD solenoid circuit	Yes	Yes
C4	P0770	4C solenoid circuit	Yes	Yes
C5	P0765	UD solenoid circuit	Yes	Yes
C6	P2706	MS solenoid circuit	Yes	Yes
C8	P0867	Line pressure fault	No	No
C9	P0868	Line pressure low	No	No
CA	P0932	Line pressure sensor fault	No	No
CB	P0869	Line pressure high	No	No
Yes (underlined) indicates that this DTC can take up to five minutes of problem identification before illuminating the MIL.				

3.3.7 DTC DESCRIPTIONS

Name of code: P0604, P0605, P0613(11, 13, 16, 17 or 45) - Internal Controller
When monitored: Whenever the key is in the Run or Run/Start position.
Set condition: This code is set whenever Transmission Control Module (TCM) senses an internal error
Theory of operation: The TCM is constantly monitoring it's internal processor. If an internal problem is detected, this DTC will be set. This DTC can also be set by a bad ground to the TCM and/or Trans Control Relay. In fact, this DTC is rarely set due to a TCM error, it is usually set by a poor ground.
Transmission Effects: The MIL will illuminate (this DTC can take up to five minutes of problem identification before illuminating the MIL) and the transmission system will default to the Immediate Shutdown routine.
Possible causes:

> TCM ground circuit. (check main ground attachment to engine block)
> Relay ground circuit. (check main ground attachment to engine block)
> TCM

Name of code: P1684(12) - Battery was Disconnected (Info Only)
When monitored: Whenever the key is in the Run or Run/Start position.
Set condition: This code is set whenever Transmission Control Module (TCM) is disconnected from battery power (B+) or ground. It will also be set during the DRBIII® Quick Battery Disconnect procedure.
Theory of operation: A battery backed RAM (Random Access Memory) is used to maintain some learned values. When the battery B(+) is disconnected, the memory is lost. When the B(+) is restored, this memory loss is detected by the TCM. The code is set and the learned values are initialized to known constants or previously learned values from EEPROM (Electronic Erasable Programmable Read Only Memory). This results in the reinitialization of some parameters.
Transmission Effects: Loss of trouble code data. The Transmission system will default to the Immediate shutdown routine if power is lost while operating the vehicle. Normal operation is resumed if the power is restored during the same key start.
Possible causes:

> Battery voltage removed from TCM (Fused B+)
> TCM disconnected
> Dead Battery
> Low battery voltage during cranking
> Quick Battery Disconnect by DRBIII® or MDS
> Bad TCM ground circuit.

Name of code: P0891(14) - 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.
Theory of operation: The transmission control relay is used to supply power to the solenoids and pressure switches when the transmission is in normal operating mode. The relay output is fed back to the TCM through pins 16, 17, and 36. It is referred to as ″Transmission Control Relay Output″. This circuit does not supply power to the TCM, it is only a sense circuit. When the relay is off, no power is supplied to the solenoids and pressure switches, and the transmission is in ″limp-in″ or ″default″ mode.

Transmission Effects: The MIL will illuminate (this DTC can take up to five minutes of problem identification before illuminating the MIL) and the transmission system will default to the Immediate Shutdown routine.

Possible causes:

> Short to voltage in the Transmission Solenoid/TRS Assembly (internal into any solenoid control circuit)

> Short to voltage on any solenoid control circuit

> Relay contacts stuck together.

> Short to voltage in Transmission Control Relay output circuit(s).

> Short to voltage in Transmission Relay Control circuit.

> Short to voltage on any pressure switch sense circuit.

> TCM connector problems.

> TCM.

Name of code: P0888(15) - Relay Output Always Off

When monitored: Continuously

Set condition: This code is set when less than 3 volts are present at any transmission control relay output (pins 16,17 or 36) circuits at the Transmission Control Module (TCM) when the TCM is energizing the relay.

Theory of operation: The Transmission Control Relay is used to supply power to the solenoids and pressure switches when the transmission is in normal operating mode. The relay output is fed back to the TCM through pins 16, 17, and 36. It is referred to as ″Transmission Control Relay Output″. This circuit does not supply power to the TCM, it is only a sense circuit. When the relay is off, no power is supplied to the solenoids and pressure switches, and the transmission is in ″limp-in″ or ″default″ mode.

After a controller reset (ignition key turned to the ″run″ position or after cranking engine), the controller energizes the relay. Prior to this the TCM verifies that the contacts are open by checking for no voltage at the switched battery terminals. After the relay is energized, the TCM monitors the terminals to verify that the voltage is greater than 3 volts.

Transmission Effects: The MIL will illuminate (this DTC can take up to five minutes of problem identification before illuminating the MIL) and the transmission system will default to the Immediate Shutdown routine.

Possible causes:

> Transmission Control Relay (intermittent relay function caused by oxidized or contaminated relay contacts)

> Short to ground or open circuit in the transmission control relay output circuit(s)

> Short to ground or open circuit in the Transmission Solenoid/TRS assembly

> TCM connector problem

> Relay connector problem

> Relay Ground circuit

> TCM Ground circuit(s)

> TCM

Name of code: P0725(18) - Engine Speed Sensor Circuit

When monitored: Continuously with engine running.

Set condition: This code is set when the engine speed calculated by the Transmission Control Module (TCM) is less than 390 RPM, while the engine speed broadcast by the PCM is greater than 383 RPM. The DTC also sets if the calculated engine speed is greater than 8000 RPM for more that 2.0 seconds. Theory of operation: The TCM uses the crank sensor signal to calculate engine RPM. The TCM uses RPM data from the PCM which is broadcast over the communication bus to determine if the engine is running. The TCM continuously compares calculated engine speed to the engine RPM reported on the bus, by the PCM, so that loss of crankshaft position sensor signal to the TCM will not be misinterpreted as engine not running.

Transmission Effects: The MIL will illuminate (this DTC can take up to five minutes of problem identification before illuminating the MIL) and the transmission system will default to the Logical Shutdown routine.

Possible causes:

> Open or short in engine speed sensor circuit. (Crank sensor signal)

> TCM connector problems (Crank sensor signal or sensor ground terminals)

> Open or short in sensor ground circuit

> Low engine idle speed

> TCM

> PCM.

Name of code: P1694(19) - Bus Communication with Engine Module

When monitored: Continuously with key on.

Set condition: If no bus messages are received from the Powertrain Control Module (PCM) for 10 seconds.

Theory of operation: The TCM communicates with the PCM using the communication bus. It relies on certain information to function properly. The TCM continuously monitors the bus to check for messages broadcast from the PCM.

Transmission Effects: Delayed 3-4 shifts. No EMCC and early 3-4 shifts for a few minutes after engine is started. Generally poor shift quality.

Possible causes:

> Open or shorted bus circuit

> TCM

> PCM

Name of code: P0706(28) - Check Shifter Signal

When Monitored: Continuously with the key on.

Set Condition: Any occurrences of an invalid PRNDL code which lasts for more than 0.028 second.

Theory of Operation: The C1 through C5 (TRS T1, TRS T2, TRS T3, TRS T41, and TRS T42) sense circuits communicate the shift lever position to the TCM. Each circuit is terminated at the transmission with a switch. Each switch can be either open or closed, depending on the shift lever position. The TCM can decode this information and determine the shift lever position. Each shift lever position has it own unique combination of closed and open switches. This is called a PRNDL code. There are 5 switches, therefore: there are many possible combinations of open and closed switches (codes). There are 12 valid codes, two for neutral, one for each other gear position (5), and five temporary (transition zone) codes. The remainder of the codes should **never occur,** these are called invalid codes.

Transmission Effects and possible causes: (This code alone will not illuminate the MIL)

> Excessive metal debris in the tranmsission oil pan

> Worn Code Plate. Check for heavy wearing by TRS switch contacts

> Intermittent C1 through C5 (T1, T2, T3, T41 or T42) circuits. Check for corrosion, terminal push-outs or spread terminals at 60-way TCM connector and/or 23-way transmission connector.

> TRS connector not plugged in, or unplugged with the key on.

> TRS C1 through C5 (T1, T2, T3, T41, or T42) circuit(s) are either open, shorted to ground, or shorted to 12 volts.

> TRS

> TCM

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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NOTE: If you are using the transmission simulator and do not push the OD off button in the vehicle when performing a Shift Lever position test, you will receive a code 11 OD lockout stuck open.

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	OPEN	OPEN	OPEN	OPEN	OPEN	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	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN	OPEN	OPEN	OPEN	OPEN

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Name of code: P0120(29) - Throttle Position Signal
When monitored: Whenever the engine is running.
Set condition: This code is set if the throttle angle goes out of range or changes erratically i.e. faster than the throttle body motion should occur.
Theory of operation: The Transmission Control Module (TCM) receives the throttle position signal from the Throttle Position Sensor (TPS). The TPS has a 5-volt pull up supplied from the Powertrain Control Module (PCM). The signal is checked for out-of-range as well as intermittent (excessive signal changes).
Transmission Effects: The MIL will illuminate, the transmission system will not go into limp-in mode. The TCM will use a ″calculated throttle angle″ supplied by the PCM over the communication bus. If the communication bus is unavailable, the TCM will use a default throttle angle of 24(degrees for the key start in which the code was set. The TCM will try to use the TPS signal again on the next key start. The vehicle may experience extremely erratic transmission shifting just prior to setting the code. If the intermittent does not last long enough to set the code, the customer will say that the transmission violently hunts between gears.
Possible causes:

> Open or shorted TPS signal and/or ground circuits
> TCM connector problems
> Failed TPS or TPS connector (Check PCM DTC's)
> PCM
> TCM

Name of code: P0944(35) - Loss Of Prime
When monitored: If the transmission is slipping in any forward gear and all the pressure switches are indicating no pressure, a loss of prime test is run.
Set condition: If the transmission begins to slip in any forward gear, and all pressure switches are open, a loss of prime test begins. All available elements are momentarily turned on by the Transmission Control Module (TCM) to see if pump prime exists. The code is set if none of the pressure switches respond. The TCM will continue to run the loss of prime test until pump pressure returns. Note: Loss of Prime test is not run when transmission temperature is ″Super Cold″.
Theory of operation: The loss of prime test is used to prevent transmission defaults, which can be caused by a lack of pump prime.
Transmission Effects: Vehicle will not move or transmission slips. Normal operation will continue if pump prime returns.
Possible causes:

> Low transmission fluid level
> Transmission fluid filter improperly installed (Seal installed onto filter neck instead of into pump bore, seal not fully seated against pump bore housing, filter neck not engaged into pump, bolts loose or O-ring missing or damaged)
> Transmission fluid filter clogged, damaged or cracked
> Transmission has massive hydraulic leak (valve body pipe plugs missing, etc.)
> Transmission oil pump
> Transmission oil pump drive is sheared or damaged
> PRNDL indicates a valid OD code in the hydraulic reverse position

Name of code: P1790(36) - Fault Immediately After Shift
When monitored: When a speed ratio error DTC (50 through 55) is stored.
Set condition: This code is set if the associated speed ratio code is stored within 1.3 seconds after a shift.
Theory of operation: This code will only be stored along with a 50 series code. If this code is set, it indicates a probable hydraulic (line pressure) or mechanical problem exists. When this code is set, diagnosing the transmission should be based on the associated speed ratio code and mechanical causes should be considered first.
Transmission Effects: None
Possible causes:

> Mechanical causes as listed under associated speed ratio code.
> Inadequate line pressure
> Cut or damaged clutch piston seals

Name of code: P1775(37) - Solenoid Switch Valve Latched in TCC Position
When monitored: During an attempted shift into 1st gear.
Set condition: This code is set if 6 unsuccessful attempts are made to get into 1st gear, with transmission temp above 27°C (80°F), in one given key start.
Theory of operation: The solenoid switch valve (SSV) controls the direction of the transmission fluid when the L-R solenoid is energized. The SSV will be in the downshifted position in 1st gear, thus directing the fluid to the L-R clutch circuit. In 2nd, 3rd, and 4th, it will be in the upshifted position and directs the fluid into the torque converter clutch (TCC). When shifting into 1st gear, a special hydraulic sequence is performed to ensure SSV movement into the downshifted position. The L-R pres-

sure switch is monitored to confirm SSV movement. If movement is not confirmed (the L-R pressure switch does not close), EMCC is inhibited until SSV operation is confirmed.

Transmission Effects: Transmission will have 1st gear, and no EMCC operation. The MIL will illuminate after 5 minutes of no EMCC operation.

Possible causes:

> Valve body - Solenoid Switch Valve stuck in TCC position

> L-R solenoid armature or plunger broken (should also set DTC P0841 (81) and often sets P0740 (38)

> Solenoid malfunction - may also set code P0841(81)

> L-R Pressure Switch Sense circuit shorted to battery

> High idle speed

> PRNDL indicates a valid OD code in the hydraulic reverse position

Name of code: P0740(38) - Torque Converter Clutch Control Circuit

When monitored: During Electronically Modulated Converter Clutch (EMCC) Operation

Set condition: The code will be set if one of the following events happens three times in a given key start, at a throttle angle less than 30° a) With the transmission in EMCC, the TCC/L-R solenoid achieves the maximum duty cycle and is still unable to pull the engine speed within 60 RPM of input speed. b) With the transmission in FEMCC, the TCC RPM (Engine speed - Input speed) is more than 100 RPM for 7.2 seconds.

Theory of operation: When in 2nd, 2nd Prime, 3rd, or 4th gear, the torque converter clutch (TCC) can be engaged when certain conditions are met. The TCC piston is electronically modulated by increasing the duty cycle of the L-R solenoid until the torque converter slip difference (difference between engine and transmission input speed) is within 60 RPM. Then the L-R solenoid is fully energized (FEMCC / 100 duty cycle). Torque converter slip is monitored in FEMCC to ensure adequate clutch capacity.

Transmission Effects: EMCC will still be available after code is set. MIL will illuminate after 5 minutes of accumulated slip in FEMCC. The transmission will attempt normal operation (no limp-in) even after the MIL is illuminated.

Possible causes:

> Cut converter hub O-ring and/or failed torque converter - both should be replaced during a rebuild with code P0740(38) present.

> Sticky CC Regulator valve

Name of code: P1776(47) - Solenoid Switch Valve (SSV) Latched in L-R 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 code will be set after four unsuccessful attempts to perform PEMCC or FEMCC.

Theory of operation: The solenoid switch valve (SSV) controls the direction of the transmission fluid when the L-R solenoid is energized. SSV will be in the downshifted position in 1st gear, thus directing the fluid to the L-R clutch circuits. In 2nd, 3rd, and 4th, the SSV will be in the upshifted position and directs the fluid into the torque converter clutch (TCC). When doing PEMCC or FEMCC, the L-R pressure switch should indicate no pressure if the SSV is in the TCC position. If the L-R pressure switch indicates pressure while in PEMCC or FEMCC, EMCC operation is aborted and inhibited to avoid inadvertent application of the L-R clutch. Partial EMCC will be attempted if the L-R pressure switch does not indicate pressure. Four occurences of detection of L-R pressure results in setting the code.

Transmission Effects: EMCC is inhibited and the transmission system will default to the Orderly Shutdown routine. (this DTC can take up to five minutes of problem identification before illuminating the MIL).

Possible causes:

> Valve body - Solenoid Switch Valve stuck in L-R position

> Intermittent short to ground or open circuit in L-R Pressure Switch Sense circuit (with code P0841 only)

> Solenoid/TRS assembly (with code P0841(81) only)

> TCM (with code P0841(81) only)

Name of Code: P1793(48) - Torque Reduction (TRD) Link Communication Error

When Monitored: During torque managed shifts (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 (TCM) sends two subsequent torque reduction messages to the Powertrain Control Module (PCM) via the TRD link circuit and does not receive a confirmation from the PCM over the communication bus.

Theory of Operation: During high torque shifts the TCM will send a message requesting that the PCM reduce engine power until the shift is completed. This message is sent from the TCM to the PCM across the Torque Management Request Sense Circuit. The PCM will acknowledge the TCM request by sending a confirmation message across the communication bus. The TRD Link communi-

cation is also tested periodically for operation whenever the engine is running and the vehicle is not moving with zero degrees throttle.

Transmission Effects: Maximum throttle angle used by TCM will be 54 degrees. As a result a customer may complain about loss of performance, short shifting when driving aggressively, and/or normal shifting and WOT shifts may be harsh.

Possible Causes:

> Sticky Throttle Position Sensor (TPS)

> Wiring or Connector problems in the Torque Management Request Sense Circuit

> Bus communication problems.

> PCM

> TCM

Name of code:

P0736(50) - Gear Ratio Error in Reverse
P0731(51) - Gear Ratio Error in 1st
P0732(52)- Gear Ratio Error in 2nd
P0733(53) - Gear Ratio Error in 3rd
P0734(54) - Gear Ratio Error in 4th
P1736(55) - Gear Ratio Error in 2nd Prime
P0715(56) - Input Speed Sensor
P0720(57) - Output Speed Sensor
P1794(58) - Speed Sensor Ground
P0735(59) - Gear Ratio Error in 4th Prime

When monitored: The transmission gear ratio is monitored continuously while the transmission is in gear.

Set condition: This code is set if the gear ratio is not correct for the current gear.

– Codes 50 through 59 sets if the ratio of the input RPM (Nt) to the output RPM (No) does not match the current gear ratio.

– Code 56 sets if there is an excessive change in input RPM in any gear

– Code 57 sets if there is an excessive change in output RPM in any gear

– Code 58 sets after a TCM reset in neutral and Nt/No equals a ratio of input to output of 2.00

Theory of operation: The transmission system uses two speed sensors, one to measure input RPM and one to measure output RPM. These inputs are essential for proper transmission operation. Therefore, the integrity of this data is verified through the following checks:

1. When in gear, if the gear ratio does not compare to a known gear ratio, the corresponding in-gear trouble code is set (codes 50 through 59).
2. An excessive change in input or output speeds indicating signal intermittent will result in codes 56 and/or 57 being set.
3. If the common speed sensor ground circuit is lost, both sensor inputs will read the signal from the input speed sensor at idle in neutral. Since the input speed sensor has 60 teeth and the output speed sensor has 30 teeth, this results in a ratio of 2.00.

Transmission Effects: If a gear ratio error develops, the appropriate code is set as a one trip failure and the 5 minute Intelligent Recovery Timer (IRT) is started. The transmission will then substitute a 1-3 or 3-1 shift to a different gear for the one in which the problem was identified. For example, if a problem is identified while in first gear, the transmission will shift to third gear. The IRT is only counting up while the transmission is substituting one gear for another. Using the previous example, if the vehicle continued down the road and shifted to fourth gear for a long period of time, the IRT would have only counted the time that the transmission was in third gear instead of second. The MIL will illuminate (this DTC can take up to five minutes of problem identification before illuminating the MIL). The transmission system will default to the Logical Shutdown without Recovery routine after 5 minutes of substituted gear operation or if three gear ratio error events occur in a given key start.

Possible causes:

Code P0736(50) - Excludes gear train failures which should be obvious upon disassembly

> If code P0944(35) or any line pressure DTC's are set, diagnose these first

> Valve body - #3 check ball

> L-R switch valve sticking - may also set code P0731(51)

> Speed sensor or associated wiring - may also set codes P0731(51), P0715(56), or P0720(57)

> Multi Select Solenoid sticking or leaking

> Failed or slipping L-R clutch - may also set code P0731(51)
– L-R seal leakage (Intermittent no drive or reverse)
– Sticky L-R accumulator seals (Intermittent no drive or reverse)

> Failed reverse clutch (hard code)
– OD/Rev lip seal leakage
– Worn reaction shaft support seal rings

Code P0731(51) - Excludes gear train failures which should be obvious upon disassembly

> If code P0944(35) or any line pressure DTC's are set, diagnose these first

> Valve body - #1, #2, and/or #4 check ball

> L-R switch valve sticking

> Speed sensor or associated wiring - may also set codes P0736(50), P0715(56), or P0720(57)

> Solenoid/TRS assembly (stuck solenoid(s))

> Failed or intermittent slipping UD clutch - may also set P0732(52) or P0733(53)

– UD seal leakage
– Sticky UD accumulator seals - Worn reaction shaft support seal rings

> Failed or slipping L-R clutch - may have code P0736(50)
– L-R seal leakage
– Sticky L-R accumulator seals

Code P0732(52) – Excludes gear train failures which should be obvious upon disassembly

> If code P0944(35) or any line pressure DTC's are set, diagnose these first

> Valve body - #1, #2, #4, #5 and/or #7 check ball

> Solenoid/TRS assembly - may also set codes P0846(54) and/or P0845(A2)

> Failed or slipping 2nd clutch - 2nd clutch seal leakage - Sticky 2nd clutch accumulator seals

> Failed or intermittent slipping UD clutch - may also set code P0731(51) and/or P0733(53)
– UD clutch seal leakage
– Worn input hub bushing
– Sticky UD clutch accumulator seals
– Worn reaction shaft support seal rings

Code P0733(53) - Excludes geartrain failures which should be obvious upon disassembly

> If code P0944(35) or any line pressure DTC's are set, diagnose these first

> Valve body - #1, #2, and/or #6 check ball

> Speed sensor or associated wiring - may also set codes P0736(50), P0715(56), or P0720(57)

> Solenoid/TRS assembly - may also set codes P0871(84) and/or P0870(A4)

> Failed or slipping OD clutch - may also set code P0734(54)
– OD clutch inner and outer lip seal leakage
– Sticky OD clutch accumulator seals
– Worn reaction shaft support seal rings

> Failed or intermittent slipping UD clutch - may also set codes P0731(51) and/or P0732(52)
– UD seal leakage
– Worn input hub bushing
– Sticky UD clutch accumulator seals
– Worn reaction shaft support seal rings

Code P0734(54) – Excludes gear train failures which should be obvious upon disassembly

> If code P0944(35) or any line pressure DTC's are set, diagnose these first

> Valve body - #1, #2, #5 and/or #6 check ball

> Speed sensor or associated wiring - may also set codes P0736(50), P0715(56), or P0720(57)

> Solenoid/TRS assembly - may also set codes P0988(88) and/or P0987(A8)

> Failed or slipping OD clutch - may also set code P0733(53)
– OD clutch inner and outer lip seal leakage
– Sticky OD clutch accumulator seals
– Worn reaction shaft support seal rings

> Failed or intermittent slipping 4th clutch
– 4th clutch seal leakage
– Sticky 4th clutch accumulator seals
– Worn reaction shaft support seal rings

Code P1736(55) - Excludes gear train failures which should be obvious upon disassembly

> If code P0944(35) or any line pressure DTC's are set, diagnose these first

> Valve body - #1, #4 and/or #5 check ball

> Speed sensor or associated wiring - may also set codes P0736(50), P0715(56), or P0720(57)

> Solenoid/TRS assembly - may also set codes P0876(90) and/or P0875(B0)

> Failed or intermittent slipping UD clutch - may also set codes P0731(51) and/or P0732(52)
– UD seal leakage
– Worn input hub bushing
– Sticky UD clutch accumulator seals
– Worn reaction shaft support seal rings

> Failed or intermittent slipping 4th clutch
– 4th clutch seal leakage
– Sticky 4th clutch accumulator seals
– Worn reaction shaft support seal rings

Codes P0715(56) and P0720(57)

> Failed input or output speed sensor

> Shorted or open wiring between TCM and speed sensor(s)

> Connector problems at 60-way TCM connector and/or speed sensor connector(s)

> Transmission Solenoid/TRS Assembly has an internal short to the Speed Sensor Ground circuit (should also set a P1794 and P1799).

Code P1794(58)

> Open or shorted speed sensor ground (speed sensor ground is different from chassis ground)

> Open or shorted Temperature Sensor wiring to TRS

> Transmission Solenoid/TRS Assembly has an internal short to the Speed Sensor Ground circuit

> TRS - Will also set code P1799(74)

> TCM

Code P0735(59) - Excludes gear train failures which should be obvious upon disassembly

> If code P0944(35) or any line pressure DTC's are set, diagnose these first

> These codes may also be set with the DTC - P1790(36), P0846(82), P0871(84), P0845(A2), P0870(A4), perform these diagnostics first.
> Speed sensor or associated wiring - may also set codes P0736(50), P0715(56), or P0720(57)
> Solenoid/TRS assembly (stuck solenoid(s))
> Failed or slipping OD clutch
OD seal leakage
> Failed or slipping 2C clutch
2C seal leakage

Name of Code: P2700, P2701, P2702, 2703, 2704 (60, 61, 62, 63, 64) - Inadequate Element Volume
When Monitored: Whenever the engine is running, the clutch volume is updated during the requested shift.
Set condition:
Note: Transmission temperature must be 43°C (110°F) to update all volumes.

> **P2700** - When the LR volume falls below 16, the LR volume is updated during a 3-1 or 2-1 manual downshift with the TPS angle below 5 degrees.
> **P2701** - When the 2C volume falls below 5, the 2C volume is updated during a 3-2 kickdown with the TPS angle between 10 and 54 degrees.
> **P2702** - When the OD volume falls below 5, the OD volume is updated during a 2-3 upshift with the TPS angle between 10 and 54 degrees.
> **P2703** - When the UD volume falls below 11, the UD volume is updated during a 4-3 kickdown with the TPS angle between 30 and 54 degrees.
> **P2704** - When the 4C volume falls below 30, 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.

Theory of Operation: The volumes of the transmission fluid needed to apply the friction elements are continuously monitored and learned for adaptive controls. As the clutch friction material wears, the volume of fluid needed to apply the clutch increases. The following are typical clutch volumes, the clutches may be damaged if the volumes are greater or less than the specified below:
2C clutch volume - between 25 and 85
OD clutch volume - between 30 and 100
4C clutch volume - between 30 and 85
UD clutch volume - between 30 and 100
Transmission Effects: These codes usually set with other DTC's, which indicates an internal transmission problem.
Possible Causes:

> Clutch pack clearance out of spec
> Snap ring out of position or broken
> Broken return spring
> Hydraulic leak into clutch circuit with near-zero volume

Name of Code: P1715(65) - Restricted Port in T3 Range
When Monitored: Whenever the Engine is running and the Manual valve is in the T3 range.
Set condition: The code is set if the conditions for a code 47 are present when the manual valve is in the T3 range.
Theory of Operation: The conditions to set a DTC 47 are easily satisfied while in the T3 range. There is no problem with the transmission itself if this code is set.
Transmission Effects: The transmission will go into neutral when this code is set. If the driver puts the shifter in neutral and back to drive, the transmission will operate normally.
Possible Causes:

> Manual linkage out of adjustment, causing T3 range while shifter is in OD.
> Driver resting hand on shift lever while driving, causing T3 range.

Name of Code: P1799(74) - Calculated Oil Temp in Use
When Monitored: Whenever the Engine is running.
Set condition: The code is set if any of the following conditions exist for three consecutive key starts:

> The Temperature Sensor voltage is out of range (below 0.07 volts or greater than 4.94 volts)
> Continuous erratic Temperature Sensor voltage is sensed.
> The Temperature Sensor temperature stays below 27°C (80°F) for an extended period of time.

Theory of Operation: The TCM uses a Temperature Sensor to monitor the transmission's sump temperature. This temperature is used to determine which shift schedule the TCM is to use. If the Temperature Sensor circuit fails to operate properly the TCM will use the calculated oil temperature routine found in prior model year TCM's. If this occurs for three consecutive key starts, the code will be set. The TCM will then test the Temperature Sensor circuit after every 35th OBDII/EUROIII warm-up start. If the Temperature Sensor circuit is OK, the Temperature Sensor data is used in place of the Calculated Oil Temperature Routine.
Transmission Effects: If the Temperature Sensor indicates a temperature below -18°C (0°F) or above

116°C (240°F) at start up, the TCM compares the calculated oil temperature to the indicated oil temperature. If the calculated oil temperature differs significantly from the Temperature Sensor value, the calculated oil temperature will be used for that key start. This code does not cause the transmission to go into limp-in mode.

Possible Causes:

> Transmission temperature sensor signal circuit short to ground, short to voltage, or open circuit.

> Speed sensor ground circuit shorted to ground, shorted to voltage, or open circuit.

> Temperature Sensor

> TCM

Name of Code: P0218(75) - High Temperature Operation Activated

When Monitored: Whenever the engine is running.

Set Condition: Immediately when the Overheat shift schedule is activated.

Theory of Operation: If the transmission oil temperature rises above 116°C (240°F), the overheat shift schedule is activated, refer to the Transmission Operation as a function of Transmission Oil Temperature. The code is an information code only and is being set to aid the technician in determining root cause of a customer driveability issue. The code is also intended to alert the technician to determine if a cooling system malfunction has occurred or if an additional transmission air to oil cooler should be added to the vehicle if the customer regularly drives in a manner that overheats the transmission. Extended operation above 116°C (240°F) will reduce the durability of the transmission and should be avoided. Correcting the cooling system malfunction or installing an additional transmission oil cooler will improve transmission durability especially for customers who operate in city/construction stop and go traffic, tow trailers regularly, drive aggressively in low gear or drive regularly in mountainous areas.

Transmission Effects: Information only code. - Overheat shift schedule was activated, no limp-in condition occurs. See description of overheat shift schedule.

Possible Causes:

> Transmission Overfilled with Oil

> Engine cooling fan failure

> Engine thermostat stuck closed

> Radiator corroded or packed with dirt

> Transmission cooler corroded or packed with dirt

> Transmission fan not functioning properly

> Transmission Oil Cooler Plugged

> Customer driving pattern requires additional transmission cooling

Name Of Code: P0884(76) - Power-Up at Speed

When Monitored: When TCM (Transmission Control Module) initially powers-up.

Set Condition: If the TCM powers up and senses a valid forward gear PRNDL code and the output RPM is above 800 RPM approx. 32 km/h (20 MPH) the code will be set.

Theory of Operation: If a vehicle loses power to the TCM, the solenoids will go to their respective power off state. Some solenoids are normally vented and some are normally applied in their power off state. The transmission is designed to be in 3rd gear with all of the solenoids in this state. However, if power is restored, the TCM will power-up and normal operation will be restored.

This code identifies that power to the TCM was restored when the gear selector was in a ″Drive″ position while the vehicle was moving at speeds above 32 km/h (20 MPH). This code does not indicate a problem with the transmission or TCM, instead, it suggests intermittent problems in the fused ignition switch output, fused B(+), or ground circuits to the TCM. Alternately, if a person performs a rolling restart maneuver, the code can be set. Therefore it is critical that this DTC be investigated if the vehicle is experiencing intermittent 3rd gear operation and a subsequent return to normal operation.

Transmission Effects: No limp-in, although the symptom might be described as an intermittent limp-in. Code is for information only when trying to diagnosis intermittent 3rd gear operation and a subsequent return to normal operation.

Possible Causes:

> No Problem if vehicle is started in ″neutral″ at speeds above 32 km/h (20 MPH) and shifted quickly to a forward gear position.

> Quick key off then on while driving is any forward gear.

FOR INTERMITTENT 3rd GEAR OPERATION AND THEN A SUBSEQUENT RETURN TO NORMAL OPERATION WITHOUT CYCLING THE IGNITION KEY

> Intermittent Direct Battery (Fused B(+)) connection between TCM (60-way pin 56) and battery.

> Intermittent Fused Ignition Switch Output between TCM (60-way pin 11) and ignition switch.

> Intermittent Ground to TCM (60 way pins 53 and 57).

Name of code: P0890(80) - 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.

Theory of operation: The Transmission control relay is used to supply power to the solenoids and pressure switches when the transmission is in normal operating mode. When the relay is off, no power is supplied and the transmission is in ″limp-in″ mode. The relay output is fed back to the TCM through pins 16, 17 and 38. It is referred to as ″Transmission Control Relay Output″.

Immediately after a controller reset (ignition key turned to the ″run″ position or after cranking engine), the TCM verifies that the relay contacts are open by checking for no voltage at the transmission control relay output terminals. After this is verified, the voltage at the pressure switches is checked. There should be no voltage on the pressure switches at this time. The TCM will then activate the relay.

Transmission Effects: The MIL will illuminate and the transmission system will default to the Immediate Shutdown routine.

Possible causes:

> Short to battery on one or more pressure switch sense circuits.

> TCM connector problems.

> Solenoid/TRS connector problems.

> TCM.

Name of code:

P0841(81) - LR Pressure Switch Sense Circuit
P0846(82) - 2C Pressure Switch Sense Circuit
P0871(84) - OD Pressure Switch Sense Circuit
P0988(88) - 4C Pressure Switch Sense Circuit
P0876(90) - UD 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 (see chart below).

Theory of operation: The Transmission system uses five pressure switches to monitor the fluid pressure in the LR, 2C, 4C, UD, and OD clutch circuits. The pressure switches are continuously monitored for the correct states in each gear as shown below.

OP = switch is open (No Pressure)
CL = switch is closed (Pressure Indicated)
*LR pressure switch opens above 150 output RPM in 1st gear and closes below a 100 output RPM.

Transmission Effects: The MIL will illuminate and the transmission system will default to the Immediate shutdown routine.

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

80b38409

Possible causes:

> If code P0944(35) is present, perform code P0944(35) diagnostic procedures

> Transmission fluid filter improperly installed (Seal installed onto filter neck instead of into pump bore, seal not fully seated against pump bore housing, filter neck not engaged into pump, bolts loose or O-ring missing or damaged)

> Reverse carrier snap ring dislodged (typically sets on heavy throttle acceleration from a dead stop)

> Pressure switch sense circuit open or shorted to ground between TCM and Solenoid/TRS assembly

> Pressure switch sense circuit shorted to battery

> Pressure switch

> Loose valve body bolts

> Plugged filter - internal transmission or torque converter failure

> Check ball not seating.

> Solenoid malfunction (If set with corresponding Solenoid DTC. Ie: 2C Pressure switch set with 2C solenoid)

> Oil Pump (Code P0841(81) only)

> TCM

Name of code:

P0845(A2) - 2C Hydraulic Pressure test failure
P0870(A4) - OD Hydraulic Pressure test failure
P0987(A8) - 4C Hydraulic Pressure test failure
P0875(B0) - 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: Immediately 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 do not have pressure to identify that the appropriate pressure switch closes. If the pressure switch does not close it is tested again. If the switch does not close the second time, the appropriate code is set.

Theory of operation: The Transmission Control Module (TCM) tests the pressure switches when they are off. The test verifies that the switches are operational (They will close with pressure applied). The TCM verifies that the switch closes when the corresponding element is applied. If a switch fails to close, it is re-tested. If it fails the second test, the code is set.

Transmission Effects: The MIL will illuminate and the transmission system will default to the orderly Shutdown routine Possible causes:

> Line Pressure Sensor

> Pressure switch sense circuit shorted to battery between TCM and solenoid/TRS assembly.

> Solenoid malfunction (If set with corresponding Solenoid DTC. Ie: 2C Hydraulic Pressure switch set with 2C solenoid)

> Low oil pressure

> Pressure switch

Name of code:

P0750(C1) - LR Solenoid Circuit
P0755(C2) - 2C Solenoid Circuit
P0760(C3) - OD Solenoid Circuit
P0770(C4) - 4C Solenoid Circuit
P0765(C5) - UD Solenoid Circuit
P2706(C6) - MS Solenoid Circuit

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

Set condition: Three consecutive solenoid continuity test failures, or one failure if test is run in response to a gear ratio or pressure switch error.

Theory of operation: Six solenoids are used to control the friction elements (clutches). The continuity of the solenoid circuits are periodically tested. Each inactive solenoid is turned on for a few milliseconds, then off. Each active solenoid is turned off for a few milliseconds, then on. This pulsing of voltage to the solenoid causes an inductive spike which can be sensed by the TCM. If an inductive spike is not sensed by the Transmission Control Module (TCM) during the continuity check, it is tested again. If the test fails three consecutive times, the appropriate code is set. If the solenoid test is run in response to a gear ratio or pressure switch error, one failure will result in setting the appropriate code.

Transmission Effects: The MIL will illuminate and the transmission system will default to the Immediate Shutdown routine.

Possible causes:

> Open or shorted solenoid circuit(s) between TCM and solenoid/TRS assembly.

> Open ground circuit.

> TCM connector problems.

> Solenoid/TRS connector problem.

> Solenoid/TRS assembly.

> TCM

Name of code:

P0867(C8) - Line Pressure Fault
P0868(C9) - Line Pressure Low
P0869(CB) - Line Pressure High

When monitored: Continuously with engine running.

Set condition: The TCM has an internal error counter for each DTC above. When any of the counters reaches a preset threshold, the appropriate code is set.

Theory of operation: Line pressured is controlled by the TCM. It is measured by the Line Pressure Sensor (LPS) and regulation is achieved by changing the duty cycle of the Pressure Control Solenoid (PCS). (5% duty cycle = solenoid off = max line pressure, 62% duty cycle = solenoid on = min line pressure). The TCM calculates the desired line pressure based on inputs from the transmission and engine. The TCM calculates torque input to the transmission and uses it as the primary input to the desired line pressure calculation. This is called Torque Based Line Pressure. In addition, the line pressure is set to a preset level 827 or 931 kPa (120 or 135 PSI) during shifts and in Park and Neutral to ensure consistent shift quality. The desired line pressure is continuously being compared to the actual line pressure. If the actual line pressure is consistently higher than the target, the line pressure high DTC P0869(CB) will be set. If the actual line pressure is consistently lower than the target, the line pressure low DTC P0868(C9) will be set. If it is consistently out of range, but not consistently high or low, it is considered out of range and the line pressure error DTC P0867(C8) will be set.

Transmission Effects: The Transmission system will default to open loop line pressure control resulting in a fixed PCS duty cycle. This duty cycle will change slightly depending on temperature and current gear. Possible causes:

> Sticking Regulator Valve

> Pressure Control Solenoid

> Line Pressure Sensor.

> Oil pump

> Plugged Filter

> 5V supply circuit to Line Pressure Sensor open (Sensor reading will read a constant value between 586 and 655 kPa (85 and 95 PSI)

> TCM

Name of code:

P0932(CA) - Line Pressure Sensor Fault

When monitored: Continuously with engine running.

Set condition: If the Line Pressure Sensor (LPS) voltage is below 0.35 volts or above 4.75 volts the code will be set.

Theory of operation: Line pressured is controlled by the TCM. It is measured by the LPS and regulation is achieved by changing the duty cycle of the Pressure Control Solenoid (PCS) (5% duty cycle = solenoid off = max line pressure, 62% duty cycle = solenoid on = min line pressure). This sensor is continuously checked for out of range voltage by the TCM.

Transmission Effects: The Transmission system will default to open loop line pressure control resulting in a fixed PCS duty cycle. This duty cycle will change slightly depending on temperature and current gear.

Possible causes:

> LPS signal circuit shorted to ground, shorted to voltage, or open.

> 5-volt supply circuit shorted to ground, shorted to voltage, or open.

> Open sensor ground

> Line Pressure Sensor

3.3.8 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

3.3.9 CLUTCH VOLUMES

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.

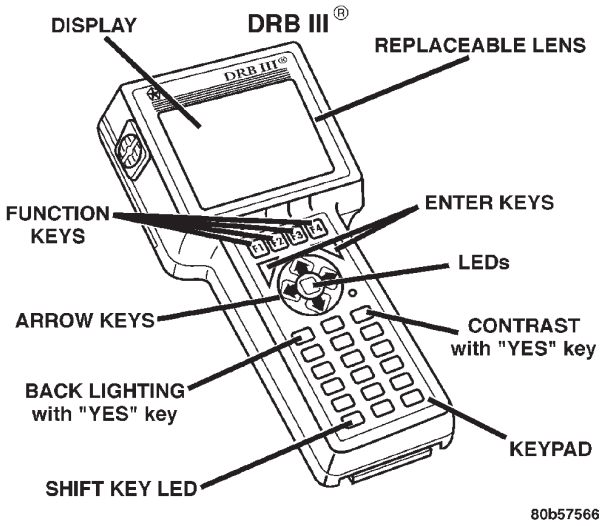
The OD clutch volume is updated when doing a 2-3 shift with throttle angle between 10° and 54°. The transmission temperature must be above 43°C (110°F). The clutch volume should be between 30 and 100.

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.

3.4 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.



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 DRBI-II® and the vehicle or other devices, and the vehicle battery is fully charged, an inoperative DRBIII® may be the result of faulty cable or vehicle wiring. For a blank screen, refer to the appropriate Body Diagnostic manual.

3.5.2 DISPLAY IS NOT VISIBLE

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

3.5.3 SOME DISPLAY ITEMS READ ″---″

This is caused by the scrolling the DRBIII® display a single line up or down. The line which

was scrolled onto the screen might read "---". Use the page down or page up function to display the information.

3.6 TRANSMISSION SIMULATOR (MILLER TOOL # 8333)

NOTE: Remove the starter Relay when using the transmission simulator - Failure to remove the Starter Relay can cause a TCM - No Response condition.

NOTE: The Transmission Simulator will not accurately diagnose an intermittent fault.

The transmission simulator, simply put, is an electronic device that simulates the electronic functions of any EATX controlled transmission (41TE, 42LE, and 45RFE/545RFE). It's 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 Transmission Control Module (TCM). 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 TCM and wiring are working properly and that the problem is internal.

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 TCM and not the transmission.

4.0 DISCLAIMERS, SAFETY, AND WARNINGS

4.1 DISCLAIMERS

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

4.2 SAFETY

4.2.1 TECHNICIAN SAFETY INFORMATION

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

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

Some operations in this manual require that hydraulic tubes, hoses, and fittings, disconnected for inspection or testing purposes. These systems, when fully charged, contain fluid at high preessure. Before disconnecting any hydraulic tubes, hoses, and fittings, be sure that the system is fully depressurized.

When servicing a vehicle, always wear eye protection, and remove any metal jewelry such as watchbands or bracelets that might make an inadvertent electrical contact. When diagnosing a Transmission system problem, it is important to follow approved procedures where applicable. These procedures can be found in the service information. Following these procedures is very important to the safety of individuals performing diagnostic tests.

4.2.2 VEHICLE PREPARATION FOR TESTING

Make sure the vehicle being tested has a fully charged battery. If it does not, false diagnostic DTC's or error messages may occur. It is extremely important that accurate shift lever position data is available to the 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 subcomponents may result in personal injury and/or improper system operation. Only those components with approved repair and installation procedures in the service information should be serviced.

4.2.4 DRBIII® SAFETY INFORMATION

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

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

FUNCTION	INPUT LIMIT
Volts	0-500 volts peak AC 0-500 volts DC
Ohms (resistance)*	0-1.12 megohms
Frequency measured Frequency generated	0-10 khz
Temperature	-58-1100°F -50-600°C
*Ohms cannot be measured if voltage is present. Ohms can be measured only in a non-powered circuit.	

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

4.3 WARNINGS

4.3.1 VEHICLE DAMAGE WARNINGS

Before disconnecting any control module, make sure the ignition is ″lock″ position. Failure to do so could damage the module. When testing voltage or continuity at any control module, use the terminal side (not the wire end) of the connector. Do not probe a wire through the insulation: this will damage the wire and eventually cause the wire to fail because of corrosion. Be careful when performing electrical tests so as to prevent accidental shorting of terminals. Such mistakes can damage fuses or components. Also, a second DTC could be set, making diagnosis of the original problem more difficult. When replacing a blown fuse, it is important to use only a fuse having the correct amperage rating. The use of a fuse with a rating other than indicated may result in a dangerous electrical system overload. If a properly rated fuse continues to blow, it indicates a problem in the circuit that must be corrected.

4.3.2 ROAD TESTING A COMPLAINT VEHICLE

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

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

Road testing is an essential step in the diagnostic process that must not be overlooked. Along with the diagnostic information obtained from the DRBIII® Scan Tool and the original customer concern, the road test helps verify the problem was current and any repairs performed, fixed the vehicle correctly. Always operate and observe the vehicle under actual driving conditions.

Just as important as the road test is, there are preliminary inspections that should be performed prior to the road test. Always check the fluid level and condition before taking the vehicle on a road test. Determine if 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 shift linkage is correctly adjusted. If the shift linkage 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 or worn linkage:

- Delayed clutch engagement
- Erratic shifts
- Vehicle will drive in neutral
- Engine will not crank in park or neutral
- Gear shift linkage will be able to be shifted 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.

4.4.4 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
> Ohmmeter
> Voltmeter
> Pressure gauge 0-2068 kPa (0-300 PSI)

6.0 GLOSSARY OF TERMS

6.1 ACRONYMS

CKT	Circuit
CVI	Clutch Volume Index
DLC	Data Link Connector
DRBIII®	Diagnostic Readout Box
DTC	Diagnostic Trouble Code
EATX	Electronic Automatic Transmission
EMCC	Electronically Modulated Converter Clutch
FEMCC	Full Electronically Modulated Converter Clutch
IOD	Ignition off-draw
IRT	Intelligent Recovery Timer
ISS	Input Speed Sensor
LED	Light Emitting Diode
LPS	Line Pressure Sensor
LR	Low/reverse Clutch
MIL	Malfunction Indicator Lamp
MS	Multi Select
OBD	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
REV	Reverse Clutch
SSV	Solenoid Switch Valve
SW	Switch
TCC	Torque Converter Clutch
TCCM	Transfer Case Control Module
TCM	Transmission Control Module
TP	Throttle Position
TRD	Torque Reduction
TRS	Transmission Range Sensor
TTS	Transmission Temperature Sensor
UD	Underdrive Clutch
2C	2nd Clutch
4C	4th 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 startup. 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 - GAS 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 B(+) CIRCUIT OPEN
GROUND CIRCUIT(S) OPEN
OPEN PCI BUS CIRCUIT
TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. **Note: As soon as one or more module communicates with the DRB, answer the question.** With the DRB, attempt to communicate with the Airbag Control Module (ACM). With the DRB, attempt to communicate with the Body Control Module (BCM). Was the DRB able to I/D or establish communications with either of the modules? Yes → Go To 2 No → Refer to the Body Communication category and perform the symptom PCI Bus Communication Failure. Perform 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 - GAS ONLY — Continued

TEST	ACTION	APPLICABILITY
3	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? Yes → Go To 4 No → Repair the Fused Ignition Switch Output (Start) circuit for an open. Refer to the wiring diagrams located in the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. **Note: Reinstall the original Starter Relay.**	All
4	Turn the ignition off. Disconnect the TCM harness connector. Using a 12-volt test light connected to ground, check the Fused B(+) circuit. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 5 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.	All
5	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Using a 12-volt test light connected to 12-volts, check each ground circuit in the TCM harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly at all the ground circuits? Yes → Go To 6 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.	All

*NO RESPONSE FROM TRANSMISSION CONTROL MODULE - GAS ONLY — Continued

TEST	ACTION	APPLICABILITY
6	**Note: Ensure there is PCI Bus communication with other modules on the vehicle before proceeding. If not, refer to the symptom list from the menu and repair as necessary.** Disconnect the TCM harness connector. Use Scope input cable CH7058, Cable to Probe adapter CH7062, and the red and black test probes. Connect the scope input cable to the channel one connector on the DRB. Attach the red and black leads and the cable to probe adapter to the scope input cable. With the DRBIII® select Pep Module Tools. Select lab scope. Select Live Data. Select 12 volt square wave. Press F2 for Scope. Press F2 and use the down arrow to set voltage range to 20 volts. Set Probe to x10. Press F2 again when complete. Connect the Black lead to the chassis ground. Connect the Red lead to the PCI Bus circuit in the TCM connector. Turn the ignition on. Observe the voltage display on the DRB Lab Scope. Does the voltage pulse from 0 to approximately 7.5 volts? Yes → Go To 7 No → Repair the PCI Bus circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All
7	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

P0120-THROTTLE POSITION SENSOR SIGNAL CIRCUIT

When Monitored and Set Condition:

P0120-THROTTLE POSITION SENSOR SIGNAL CIRCUIT

When Monitored: Whenever the engine is running.

Set Condition: The DTC is set if the throttle angle goes out of range or if throttle angle changes abruptly (i.e.: faster than the throttle body motion should occur). Note: This DTC can also be set by repeatedly stabbing the throttle.

POSSIBLE CAUSES
RELATED TPS PCM DTC'S PRESENT
INTERMITTENT WIRING AND CONNECTORS
TPS VOLTAGE CHANGE NOT SMOOTH
SENSOR GROUND CIRCUIT OPEN TO TCM
TPS SIGNAL CIRCUIT OPEN TO TCM
TCM - THROTTLE POSITION CIRCUIT

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

P0120-THROTTLE POSITION SENSOR SIGNAL CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check Powertrain Control Module DTC's. Are any of the DTCs P0122, P0123 or P0121 present? Yes → Refer to the Powertrain category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, check the TPS degree. Is the TPS degree reading below 6° or over 120°? Yes → Go To 4 No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS
4	Turn the ignition off to the lock position. Disconnect the TPS harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Sensor Ground circuit between the TPS harness connector and the Transmission Control Module harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the open Sensor Ground circuit between the TCM harness connector and the splice. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
5	Turn the ignition off to the lock position. Disconnect the Throttle Position Sensor (TPS). Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the TPS Signal Circuit from the TCM harness connector to the TPS harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the open TPS signal circuit between the TCM harness connector and the splice. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
6	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0120-THROTTLE POSITION SENSOR SIGNAL CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Pay particular attention to the the point where the TPS signal and sensor ground circuits splice off from the engine circuits. Were there any problems found? Yes → Repair wiring and/or connector as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
8	Ignition On, Engine Not Running. With the DRBIII®, read the TPS voltage. While monitoring the DRBIII®, slowly open and close the throttle. Is the TPS voltage change smooth? Yes → Test Complete. No → Replace the Throttle Position Sensor. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
P0218-HIGH TEMPERATURE OPERATION ACTIVATED

When Monitored and Set Condition:

P0218-HIGH TEMPERATURE OPERATION ACTIVATED

When Monitored: Whenever the engine is running.

Set Condition: Immediately when the Overheat shift schedule is activated 116 degrees C transmission oil temp. (240 degrees F. Trans oil temp).

POSSIBLE CAUSES
ENGINE COOLING SYSTEM
TRANSMISSION OIL PUMP FLOW
HIGH TEMPERATURE OPERATIONS ACTIVATED

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	Perform the Oil Pump Flow test per the Service Information. Did the Oil Pump Flow test pass? Yes → Go To 3 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.	5-SPD AUTOMATIC 5-45RFE TRANS

P0218-HIGH TEMPERATURE OPERATION ACTIVATED — Continued

TEST	ACTION	APPLICABILITY
3	Perform Engine Cooling System diagnostics per the Service Information. Is the Engine Cooling System functioning properly? Yes → Go To 4 No → Repair the cause of the engine overheating. Refer to the Service Information for the proper repair procedure. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
4	This DTC is an informational DTC designed to aid the Technician in diagnosing shift quality complaints. This DTC indicates that the transmission has been operating in the ″Overheat″ shift schedule which may generate a customer complaint. The customer driving patterns may indicate the need for an additional transmission oil cooler. If there are no possible causes remaining, view repair. Repair Repair the cause of transmission overheating. Refer to the Service Information for the proper repair procedure. Make sure to check for any TSBs pertaining to this problem. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:

P0604-INTERNAL TCM

When Monitored and Set Condition:

P0604-INTERNAL TCM

When Monitored: Continuously with the key on.

Set Condition: When ever the TCM detects an internal controller problem.

POSSIBLE CAUSES
TCM INTERNAL ERROR

TEST	ACTION	APPLICABILITY
1	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.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
P0605-INTERNAL TCM

When Monitored and Set Condition:

P0605-INTERNAL TCM

When Monitored: Continuously with the key on

Set Condition: When ever the TCM detects an internal controller problem.

POSSIBLE CAUSES
TCM INTERNAL ERROR

TEST	ACTION	APPLICABILITY
1	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.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
P0613-INTERNAL TCM

When Monitored and Set Condition:

P0613-INTERNAL TCM

When Monitored: Continuously with the key on.

Set Condition: When ever the TCM detects an internal controller problem.

POSSIBLE CAUSES
GROUND CIRCUIT OPEN
TCM INTERNAL ERROR

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 three 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 three 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.	5-SPD AUTOMATIC 5-45RFE TRANS
2	If there are no possible causes remaining, view repair. 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.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:

P0706-CHECK SHIFTER SIGNAL

When Monitored and Set Condition:

P0706-CHECK SHIFTER SIGNAL

When Monitored: Continuously with the ignition key on.

Set Condition: 3 occurrences in one key start of an invalid PRNDL code which lasts for more than 0.1 second.

POSSIBLE CAUSES
INTERMITTENT WIRING & CONNECTORS
SHIFT LINKAGE 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
TCM - TRS T1 SENSE CIRCUIT
TCM - TRS T2 SENSE CIRCUIT
TCM - TRS T3 SENSE CIRCUIT
TCM - TRS T41 SENSE CIRCUIT
TCM - TRS T42 SENSE CIRCUIT

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, perform the Shift Lever Position Test. Select the test outcome from the following: Test passes: Go To 3 Test fails with DTC: Go To 4 Test fails without DTC: Go To 27	5-SPD AUTOMATIC 5-45RFE TRANS
3	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
4	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 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 DTC P0613 (11).** Did the Shift Lever Position test pass? Yes → Go To 5 No → Go To 6 **NOTE: Make sure to disconnect the Transmission Simulator and reconnect all disconnected connectors before proceeding.**	5-SPD AUTOMATIC 5-45RFE TRANS
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.	5-SPD AUTOMATIC 5-45RFE TRANS
6	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. TRS T1 sense (C4) Go To 7 TRS T2 sense (C5) Go To 11 TRS T3 sense (C3) Go To 15 TRS T41 sense (C1) Go To 19 TRS T42 sense (C2) Go To 23	5-SPD AUTOMATIC 5-45RFE TRANS

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 circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
8	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 T1 Sense circuit in the TCM harness connector.. Is the resistance below 5.0 ohms? Yes → Repair the TRS T1 Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	5-SPD AUTOMATIC 5-45RFE TRANS
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 in the TCM harness connector. 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 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
11	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 12	5-SPD AUTOMATIC 5-45RFE TRANS
12	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 in the TCM harness connector. Is the resistance below 5.0 ohms? Yes → Repair the TRS T2 Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 13	5-SPD AUTOMATIC 5-45RFE TRANS
13	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 in the TCM harness connector. Is the voltage above 0.5 volt? Yes → Repair the TRS T2 Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 14	5-SPD AUTOMATIC 5-45RFE TRANS
14	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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.** 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? Yes → Repair the open TRS T3 Sense circuit. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 16	5-SPD AUTOMATIC 5-45RFE TRANS
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 between ground and the TRS T3 Sense circuit in the TCM harness connector. Is the resistance below 5.0 ohms? Yes → Repair the TRS T3 Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 17	5-SPD AUTOMATIC 5-45RFE TRANS
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.** 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 18	5-SPD AUTOMATIC 5-45RFE TRANS
18	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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 T41 Sense circuit from the TCM harness connector to the Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair open TRS T41 Sense circuit. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 20	5-SPD AUTOMATIC 5-45RFE TRANS
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 T41 Sense circuit in the TCM harness connector. Is the resistance below 5.0 ohms? Yes → Repair the TRS T41 Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 21	5-SPD AUTOMATIC 5-45RFE TRANS
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 T41 Sense circuit in the TCM harness connector. 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	5-SPD AUTOMATIC 5-45RFE TRANS
22	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0706-CHECK SHIFTER SIGNAL — Continued

TEST	ACTION	APPLICABILITY
23	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 24	5-SPD AUTOMATIC 5-45RFE TRANS
24	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 in the TCM harness connector. Is the resistance below 5.0 ohms? Yes → Repair the TRS T42 Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 25	5-SPD AUTOMATIC 5-45RFE TRANS
25	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 at the TCM harness connector. 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 26	5-SPD AUTOMATIC 5-45RFE TRANS
26	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
27	If there are no possible causes remaining, view repair. Repair Adjust the shift linkage per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT WIRING AND CONNECTORS
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
TCM - INPUT SPEED SENSOR

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

P0715-INPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
2	Start the engine 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	5-SPD AUTOMATIC 5-45RFE TRANS
3	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 Transmission Simulator Miller tool #8333. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. Using the Transmission Simulator, set the rotary knob to the middle (3000/1000) position. Turn the ″Input/Output″ switch to ″ON″. 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 (within 50 RPM)? Yes → Go To 4 No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS
4	If there are no possible causes remaining, view repair. Repair Replace the Input Speed Sensor. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
5	Turn ignition switch 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 connector to the Input Speed Sensor connector. Is the resistance above 5.0 ohms? Yes → Repair the Input Speed Sensor Signal circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
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 of the Speed Sensor Ground circuit from the TCM harness connector to the Input Speed Sensor harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Speed Sensor Ground circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS

P0715-INPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
7	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 8	5-SPD AUTOMATIC 5-45RFE TRANS
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Input Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Speed Sensor Ground circuit. 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 9	5-SPD AUTOMATIC 5-45RFE TRANS
9	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.** 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 in the TCM harness connector. Is the voltage above 0.5 volts? Yes → Repair the Input Speed Sensor Signal circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	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.** 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? Yes → Repair the Speed Sensor Ground circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS

P0715-INPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
11	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
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. Were any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT WIRING AND CONNECTORS
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
TCM - OUTPUT SPEED SENSOR

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

P0720-OUTPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
2	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	5-SPD AUTOMATIC 5-45RFE TRANS
3	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, 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	5-SPD AUTOMATIC 5-45RFE TRANS
4	If there are no possible causes remaining, view repair. Repair Replace the Output Speed Sensor. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS

P0720-OUTPUT SPEED SENSOR ERROR — Continued

TEST	ACTION	APPLICABILITY
6	Turn ignition switch 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 connector to the Output Speed Sensor 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 7	5-SPD AUTOMATIC 5-45RFE TRANS
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Output Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Output Speed Sensor Signal circuit. Is the resistance Below 5.0 ohms? Yes → Repair the Output Speed Sensor Signal circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
8	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Output Speed Sensor harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Speed Sensor Ground circuit. 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 9	5-SPD AUTOMATIC 5-45RFE TRANS
9	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.** Place a jumper wire between the Fused B+ circuit and the Transmission Relay Output circuit in the Transmission Control Relay connector. Turn ignition on. Measure the voltage of the Output Speed Sensor Signal circuit in the TCM harness connector. Is the voltage above 0.5 volts? Yes → Repair the Output Speed Sensor Signal circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	5-SPD AUTOMATIC 5-45RFE TRANS

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 from the PDC. **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 in the TCM harness connector. Is the voltage above 0.5 volts? Yes → Repair the Speed Sensor Ground circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
11	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.	5-SPD AUTOMATIC 5-45RFE TRANS
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. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
P0725-ENGINE SPEED SENSOR CIRCUIT

When Monitored and Set Condition:

P0725-ENGINE SPEED SENSOR CIRCUIT

When Monitored: Continuously with engine running.

Set Condition: This code is set when the engine speed sensed by the Transmission Control Module (TCM) is less than 400 RPM and the engine is running (As reported by the PCM over the communication bus) for 2 seconds. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES
RELATED PCM DTC'S PRESENT
INTERMITTENT WIRING AND CONNECTORS
CKP SIGNAL CIRCUIT OPEN TO TCM
SENSOR GROUND CIRCUIT OPEN TO TCM
TCM- ENGINE SPEED SENSOR CIRCUIT

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

P0725-ENGINE SPEED SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	Ignition on, engine not running. With the DRBIII®, check Powertrain Control Module DTC's. Are the DTCs P0320, P1391, and/or P1398 present? Yes → Refer to the Powertrain category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	Start the engine. Allow the engine to idle. With the DRBIII®, under ″Engine″, in Sensors, read and record ″Engine RPM″. With the DRBIII®, under ″Transmission″, in ″Sensors″, read and record ″Engine RPM″. Compare the two readings. Are the two readings within 50 RPM of each other? No → Go To 4 Yes → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS
4	Turn the ignition off to the lock position. Disconnect the CKP harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the CKP Sensor Signal circuit between the CKP harness connector and the TCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 5 No → Repair the CKP Signal circuit for an open. Pay special attention to the location of CKP Signal circuit spice to the Transmission Control Module. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
5	Turn the ignition off to the lock position. Disconnect the CKP Sensor harness connector. Disconnect the TCM harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Sensor Ground circuit between the CKP Sensor and the TCM harness connector. Is the resistance below 5.0 ohms? Yes → Go To 6 No → Repair the Sensor Ground circuit for an open. Pay special attention to the location of Sensor Ground splice to the TCM. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0725-ENGINE SPEED SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
6	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Pay particular attention to the point where the CKP Signal circuit and the Sensor Ground circuit splice off from the engine circuits. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT GEAR RATIO ERRORS
INTERNAL TRANSMISSION

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

P0731-GEAR RATIO ERROR IN 1ST — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, 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? Yes → Refer to Symptom list for the related symptom(s). 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. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, perform the 1st Gear Clutch Test. Follow the instructions on the DRBIII®. Increase the throttle angle or TPS Degree to 30°, for no more than a few seconds. **CAUTION: Do not overheat the transmission.** Did the Clutch Test pass, Input Speed remain at zero? Yes → Go To 4 No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS
4	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. Remove the Starter Relay from the PDC before using the Transmission Simulator Miller tool # 8333. **NOTE: Failure to remove the Starter Relay can cause a TCM - 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. Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS
5	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 procedures. If DTC's P0876 and/or P0875 were present in addition to the P0731, replace the Transmission Solenoid/TRS Assembly in addition to necessary internal repairs. If there are no possible causes remaining, view repair. Repair Repair internal transmission problem or replace the transmission per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT GEAR RATIO ERRORS
INTERNAL TRANSMISSION

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

P0732-GEAR RATIO ERROR IN 2ND — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, 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? 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. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, perform the 2nd Gear Clutch Test. Follow the instructions on the DRBIII®. Increase the throttle angle, TPS Degree to 30° for no more than a few seconds. **CAUTION: Do not overheat the transmission.** Did the clutch test pass, Input speed remain at zero? Yes → Go To 4 No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS
4	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 before installing the Transmission Simulator. **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. Were there any problems found? Yes → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS
5	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? Yes → Repair or replace the Transmission or Solenoid/TRS assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS

P0732-GEAR RATIO ERROR IN 2ND — Continued

TEST	ACTION	APPLICABILITY
6	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. If DTC's P0846 and/or P0845 are also present, replace the Transmission Solenoid/TRS Assembly in addition to internal repairs. If there are no possible causes remaining, view repair. Repair Repair internal transmission problem or replace the transmission per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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

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

P0733-GEAR RATIO ERROR IN 3RD — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, 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? 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. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	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? Yes → Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS
4	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? Yes → Go To 5 No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
5	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 before installing the Transmission Simulator. **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. Were there any problems found. Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

P0733-GEAR RATIO ERROR IN 3RD — Continued

TEST	ACTION	APPLICABILITY
6	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. Repair Repair internal transmission problem or replace the transmission per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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

P0734-GEAR RATIO ERROR IN 4TH — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, 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? 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. No → Go To 3	5-SPD AUTO-MATIC 5-45RFE TRANS
3	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? Yes → Replace the Transmission or Solenoid/TRS assembly per current warranty policy. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	5-SPD AUTO-MATIC 5-45RFE TRANS
4	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. Repair Replace the Transmission or repair internal transmission problem per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTO-MATIC 5-45RFE TRANS

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
INTERMITTENT GEAR RATIO ERRORS
INTERNAL TRANSMISSION

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

P0735-GEAR RATIO ERROR 4TH PRIME — Continued

TEST	ACTION	APPLICABILITY
2	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? 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. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, perform the 2nd Gear Clutch Test. Follow the instructions on the DRBIII® for 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 test pass, Input speed remain at zero? Yes → Go To 4 No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS
4	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 before installing the Transmission Simulator. **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. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS
5	If there are no possible causes remaining, view repair. Repair 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.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT GEAR RATIO ERRORS
INTERNAL TRANSMISSION

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

P0736-GEAR RATIO ERROR IN REVERSE — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, 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? 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. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, perform the Reverse Gear Clutch Test. Follow the instructions on the DRBIII®. Increase the throttle angle , TPS Degree, to 30°, for no more than a few seconds. **CAUTION: Do not overheat the transmission.** Did the clutch test pass, Input speed remain at zero? Yes → Go To 4 No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS
4	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 before installing the Transmission Simulator. **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 Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS
5	If there are no possible causes remaining, view repair. Repair 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.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
P0740-TORQUE CONVERTER CLUTCH CONTROL CIRCUIT

When Monitored and Set Condition:

P0740-TORQUE CONVERTER CLUTCH CONTROL CIRCUIT

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

Set Condition: Transmission must be in EMCC, with input speed > 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
INTERMITTENT WIRING AND/OR CONNECTORS
INTERNAL TRANSMISSION PROBLEM - TCC OUT OF RANGE
L/R SOLENOID INOPERATIVE

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

P0740-TORQUE CONVERTER CLUTCH CONTROL CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read transmission DTC's Is the DTC P0750 present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	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? Yes → Go To 4 No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS
4	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. 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. Were there any problems found? Yes → Repair as necessary. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS
5	With the DRBIII®, check for other transmission DTC's. Are codes P1775 and P0841 present also? Yes → Replace the Transmission Solenoid/TRS assembly per the Service Information. Perform POWERTRAIN VERIFICATION TEST VER - 5. No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
6	If there are no possible causes remaining, view repair. Repair Internal transmission problem, inspect the oil pump per service manual information and replace if necessary. If no problems are found in the Oil Pump, replace the Solenoid/TRS assembly also replace the Torque Converter in either case. Perform POWERTRAIN VERIFICATION TEST VER - 5.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
P0750-LR SOLENOID CIRCUIT

When Monitored and Set Condition:

P0750-LR SOLENOID CIRCUIT

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

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

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
INTERMITTENT WIRING AND CONNECTORS
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
L/R SOLENOID CONTROL CIRCUIT OPEN
L/R SOLENOID CONTROL CIRCUIT SHORT TO GROUND
L/R SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
SOLENOID/TRS ASSEMBLY- L/R SOLENOID
TCM - L/R SOLENOID CIRCUIT

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

P0750-LR SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other transmission DTC's. Are there any Transmission Control Relay related DTC's P0890, P0891, or P0888 present? Yes → Refer to symptom list and perform test for Transmission Relay related DTC's. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0750 **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter for P0750 set at 0? Yes → Go To 4 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
4	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 Transmission Simulator Miller tool #8333. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the DRBIII®, actuate the L/R Solenoid. Monitor the L/R Solenoid LED on the Transmission Simulator. Did the L/R Solenoid LED on the Transmission Simulator blink on and off? Yes → Go To 5 No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
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.	5-SPD AUTOMATIC 5-45RFE TRANS
6	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 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 7 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0750-LR SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector Disconnect the Transmission Solenoid /TRS Assembly harness connector **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the L/R Solenoid Control circuit from the TCM harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the L/R Solenoid Control circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
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 Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the L/R Solenoid Control circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	5-SPD AUTOMATIC 5-45RFE TRANS
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 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 L/R Solenoid Control circuit in the TCM harness connector. Is the voltage above 0.5 volt? Yes → Repair the L/R Solenoid Control circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	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.	5-SPD AUTOMATIC 5-45RFE TRANS

P0750-LR SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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. They will also be tested immediately after a gear ratio or pressure switch error is detected.

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

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
INTERMITTENT WIRING AND CONNECTORS
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
2C SOLENOID CONTROL CIRCUIT OPEN
2C SOLENOID CONTROL CIRCUIT SHORT TO GROUND
2C SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
SOLENOID/TRS ASSEMBLY - 2C SOLENOID
TCM - 2C SOLENOID CIRCUIT

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

P0755-2C SOLENOID 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 symptom list and perform test for Transmission Relay related DTC's. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0755. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter for P0755 set at 0? Yes → Go To 4 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
4	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 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? Yes → Go To 5 No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
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.	5-SPD AUTOMATIC 5-45RFE TRANS
6	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 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 7 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0755-2C SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the Transmission Control Module 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? Yes → Repair the 2C Solenoid Control circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
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 2C Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the 2C Solenoid Control circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	5-SPD AUTOMATIC 5-45RFE TRANS
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 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 2C Solenoid Control circuit in the Transmission Control Module harness connector. Is the voltage above 0.5 volt? Yes → Repair the 2C Solenoid Control circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0755-2C SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
P0760-OD SOLENOID CIRCUIT

When Monitored and Set Condition:

P0760-OD SOLENOID CIRCUIT

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

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

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
INTERMITTENT WIRING AND CONNECTORS
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
OD SOLENOID CONTROL CIRCUIT OPEN
OD SOLENOID CONTROL CIRCUIT SHORT TO GROUND
OD SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
SOLENOID/TRS ASSEMBLY - OD SOLENOID
TCM - OD SOLENOID CIRCUIT

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

P0760-OD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other transmission DTC's. Are there any Transmission Control Relay related DTC's P0890, P0891 or P0888 present. Yes → Refer to symptom list and perform test for Transmission Relay related DTC's. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0760. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter for P0760 set at 0? Yes → Go To 4 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
4	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 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? Yes → Go To 5 No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
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.	5-SPD AUTOMATIC 5-45RFE TRANS
6	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 Assembly harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 7 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0760-OD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the Transmission Control Module 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 Transmission Control Module harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the OD Solenoid Control circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
8	Turn the ignition off to the lock position. Disconnect the Transmission Control Module 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? Yes → Repair the OD Solenoid Control circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	5-SPD AUTOMATIC 5-45RFE TRANS
9	Turn the ignition off to the lock position. Disconnect the Transmission Control Module harness connector. Disconnect the 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 OD Solenoid Control circuit in the Transmission Control Module harness connector. Is the voltage above 0.5 volt? Yes → Repair the OD Solenoid Control circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0760-OD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
P0765-UD SOLENOID CIRCUIT

When Monitored and Set Condition:

P0765-UD SOLENOID CIRCUIT

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

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

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
INTERMITTENT WIRING AND CONNECTORS
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
SOLENOID/TRS ASSEMBLY - UD SOLENOID
TCM - UD SOLENOID CIRCUIT

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

P0765-UD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other transmission DTC's. Are there any Transmission Control Relay related DTCs P0890, P0891or P0888 present? Yes → Refer to symptom list and perform test for Transmission Control Relay related DTCs. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, Check the STARTS SINCE SET counter for P0765 **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter for P0765 set at 0? Yes → Go To 4 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
4	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 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? Yes → Go To 5 No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
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.	5-SPD AUTOMATIC 5-45RFE TRANS
6	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 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 7 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0765-UD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid /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 to the Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the UD Solenoid Control circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
8	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? Yes → Repair the UD Solenoid Control circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	5-SPD AUTOMATIC 5-45RFE TRANS
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 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 UD Solenoid Control circuit in the TCM harness connector. Is the voltage above 0.5 volt? Yes → Repair the UD Solenoid Control circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair Replace the TCM per the Service Information. WITH THE DRBI-II® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0765-UD SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Were any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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. They will also be tested immediately after a gear ratio or pressure switch error is detected.

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

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
INTERMITTENT WIRING AND CONNECTORS
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
4C SOLENOID CONTROL CIRCUIT OPEN
4C SOLENOID CONTROL CIRCUIT SHORT TO GROUND
4C SOLENOID CONTROL CIRCUIT SHORT TO VOLTAGE
SOLENOID/TRS ASSEMBLY - 4C SOLENOID
TCM - 4C SOLENOID CIRCUIT

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

P0770-4C SOLENOID 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 symptom list and perform test for Transmission Relay related DTC's. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	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? Yes → Go To 4 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
4	Turn the ignition off to the lock position. Remove the Starter Control Relay from the PDC. **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. 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? Yes → Go To 5 No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
5	If there are no possible causes remaining, view repair. Repair. Replace Transmission Solenoid/TRS Assembly as required. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
6	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 Assembly harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 7 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0770-4C SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the Transmission Control Module 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 Transmission Control Module harness connector to the Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the 4C Solenoid Control circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
8	Turn the ignition off to the lock position. Disconnect the Transmission Control Module 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? Yes → Repair the 4C Solenoid Control circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	5-SPD AUTOMATIC 5-45RFE TRANS
9	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 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 4C Solenoid Control circuit in the Transmission Control Module harness connector. Is the voltage above 0.5 volt? Yes → Repair the 4C Solenoid Control circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0770-4C SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT CONDITIONS
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
TCM - L/R PRESSURE SWITCH

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

P0841-LR PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other Transmission DTC's. Is DTC P0944 present in addition to the DTC that you are diagnosing? Yes → Refer to symptom list and perform test for P0944. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	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 symptom list and perform test for the related Transmission Control Relay DTC (s). Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS
4	With the DRBIII®, Check the STARTS SINCE SET counter for P0841. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 5 No → Go To 12	5-SPD AUTOMATIC 5-45RFE TRANS
5	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. Place pressure switch selector on L/R and observe L/R Pressure Switch state on the DRBIII® screen while pressing the pressure switch test button. Did the pressure switch state change from open to closed when the switch was depressed? Yes → Go To 6 No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS
6	If there are no possible causes remaining, view repair. Repair Replace the Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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	5-SPD AUTO-MATIC 5-45RFE TRANS
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 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? Yes → Go To 9 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.	5-SPD AUTO-MATIC 5-45RFE TRANS
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 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 10	5-SPD AUTO-MATIC 5-45RFE TRANS

P0841-LR PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
10	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 11	5-SPD AUTOMATIC 5-45RFE TRANS
11	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
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. 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. Sump filter installed incorrectly Reverse carrier snap ring dislodged (typically sets code on heavy throttle acceleration from a dead stop) Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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
RELATED PRESSURE SWITCH AND/OR SPEED RATIO DTC'S PRESENT
TCM AND WIRING - LOW LINE PRESSURE
INTERMITTENT WIRING AND CONNECTORS
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
INTERNAL TRANSMISSION PROBLEM - 2C PRESSURE TEST
TCM - 2C PRESSURE SWITCH
TCM - NO 5 VOLT - LOW LINE PRESSURE SENSOR

P0845-2C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check for other transmission DTC's Are there any line pressure related DTC's P0867, P0932, P0868, P0869, or P0944 present? Yes → Refer to Symptom List for the related symptom(s). Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, check for other transmission DTC's Is the DTC P0732 and/or P0846 present also? Yes → Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS
4	With the DRBIII, Check the STARTS SINCE SET counter for P0845. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 5 No → Go To 19	5-SPD AUTOMATIC 5-45RFE TRANS

P0845-2C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
5	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? Yes → Go To 6 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
6	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? Yes → Disconnect and properly reconnect the Line Pressure Sensor connector. Inspect terminals and repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS
7	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? Yes → Replace the Line Pressure Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS

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	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN AND REPROGRAM PINION FACTOR. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
11	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 Miller tool# 8333, 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 12 No → Go To 14	5-SPD AUTOMATIC 5-45RFE TRANS

P0845-2C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
12	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 13	5-SPD AUTOMATIC 5-45RFE TRANS
13	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.	5-SPD AUTOMATIC 5-45RFE TRANS
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 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? Yes → Repair the 2C Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 15	5-SPD AUTOMATIC 5-45RFE TRANS
15	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Disconnect the TCM harness connector. 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 16 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.	5-SPD AUTOMATIC 5-45RFE TRANS

P0845-2C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
16	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? Yes → Repair the 2C Pressure Switch circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 17	5-SPD AUTOMATIC 5-45RFE TRANS
17	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 2C Pressure Switch Sense circuit in the TCM harness connector. Is the voltage above 0.5 volt? Yes → Repair the 2C Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 18	5-SPD AUTOMATIC 5-45RFE TRANS
18	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
19	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. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT CONDITIONS
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
TCM - 2C PRESSURE SWITCH

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

P0846-2C 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 symptom list and perform test for Transmission Control Relay related DTCs. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, Check the STARTS SINCE SET counter. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter for P0846, 2 or less? Yes → Go To 4 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
4	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. **Note: Check connectors - Clean/repair as necessary.** Ignition on, engine not running. With the Transmission Simulator, turn the Pressure Switch selector switch on 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? Yes → Go To 5 No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
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.	5-SPD AUTOMATIC 5-45RFE TRANS
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 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? Yes → Repair the 2C Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS

P0846-2C PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	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 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 8 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.	5-SPD AUTOMATIC 5-45RFE TRANS
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 2C Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the 2C Pressure Switch Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	5-SPD AUTOMATIC 5-45RFE TRANS
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 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 2C Pressure Switch Sense circuit in the TCM harness connector. Is the voltage above 0.5 volt? Yes → Repair the 2C Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0846-2C PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Check for a Sump filter not installed correctly Reverse carrier snap ring dislodged (typically sets on heavy throttle acceleration from a dead stop) Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
P0867-LINE PRESSURE FAULT

When Monitored and Set Condition:

P0867-LINE PRESSURE FAULT

When Monitored: Continuously while driving in a forward gear.

Set Condition: The TCM continuously monitors Actual Line Pressure and compares it to Desired Line Pressure. If the difference between Actual Line Pressure and Desired Line Pressure is 10 PSI or greater, this code will be set.

POSSIBLE CAUSES
RELATED DTC'S PRESENT
INTERMITTENT WIRING AND CONNECTORS
POOR CONNECTION OR WIRING
TRANSMISSION - LINE PRESSURE OUT OF RANGE
TCM - LINE PRESSURE OUT OF RANGE

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

P0867-LINE PRESSURE FAULT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other transmission DTC's. Are there any other line pressure related DTC's P0932, P0868, or P0869 present? Yes → Refer to symptom list and perform test for other line pressure related DTC's. Run test for P0932 first if present. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	**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 Degrees. While firmly applying the brakes place shifter in the R position. Then slowly press the accelerator pedal to 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? No → Go To 4 Yes → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
4	With the DRBIII®, monitor the Line Pressure Sensor voltage while wiggling the wiring harness and connectors pertaining to the Line Pressure Sensor and the Solenoid/TRS assembly. Did the voltage remain steady while wiggling the wiring harness and connectors? Yes → Go To 5 No → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
5	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 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? Yes → Go To 6 No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS

P0867-LINE PRESSURE FAULT — Continued

TEST	ACTION	APPLICABILITY
6	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
7	If there are no possible causes remaining, view repair. Repair If the transmission is to be repaired, inspect the oil pump per Service Manual information and replace if necessary. If no problem is found, replace the Solenoid/TRS assembly - stuck Pressure Control Solenoid. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
8	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Where there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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 Actual Line Pressure and compares it to Desired Line Pressure. If Actual Line Pressure is more than 10 PSI below Desired Line Pressure, this code will be set.

POSSIBLE CAUSES
CHECK FOR RELATED DTC'S
TCM AND WIRING - LOW LINE PRESSURE
INTERMITTENT WIRING AND CONNECTORS
5 VOLT SUPPLY CIRCUIT OPEN
POOR 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 LOW
LINE PRESSURE SENSOR - CALIBRATION OUT OF LIMITS
PLUGGED FILTER
TCM - LINE PRESSURE LOW

P0868-LINE PRESSURE LOW — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check for other transmission DTC's Is the DTC P0932 present also? Yes → Refer to symptom list for problems related to P0932. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, check the STARTS SINCE SET counter for P0868. **NOTE: This counter only applies to the last DTC set.** Is the START SINCE SET COUNTER 2 or less? Yes → Go To 4 No → Go To 14	5-SPD AUTOMATIC 5-45RFE TRANS
4	Ignition on, engine not running. With the DRBIII®, monitor 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 connector was pushed? Yes → Disconnect and properly reconnect the Line Pressure Sensor connector. Inspect terminals and repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS

P0868-LINE PRESSURE LOW — Continued

TEST	ACTION	APPLICABILITY
5	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? Yes → Go To 6 No → Go To 9	5-SPD AUTOMATIC 5-45RFE TRANS
6	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? Yes → Go To 7 No → Replace the Line Pressure Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
7	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? 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. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS

P0868-LINE PRESSURE LOW — Continued

TEST	ACTION	APPLICABILITY
8	If there are no possible causes remaining, view repair. Repair Repair internal transmission problem. If the transmission is to be repaired, inspect the oil pump per the Service Information and replace if necessary. If no problem is found, replace the Solenoid/TRS assembly. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS
11	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Remove the Transmission Control Relay from the PDC. 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	5-SPD AUTOMATIC 5-45RFE TRANS

P0868-LINE PRESSURE LOW — Continued

TEST	ACTION	APPLICABILITY
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 Trans Relay Output circuit in the 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	5-SPD AUTOMATIC 5-45RFE TRANS
13	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
14	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. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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 TCM continuously monitors Actual Line Pressure and compares it to Desired Line Pressure. If Actual Line Pressure is more than 10 PSI above Desired Line Pressure, this code will be set.

POSSIBLE CAUSES
CHECK FOR RELATED DTC'S
TCM AND WIRING - LINE PRESSURE HIGH
INTERMITTENT WIRING AND CONNECTORS
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 - CALIBRATION OUT OF LIMITS
TCM - LINE PRESSURE HIGH

P0869-LINE PRESSURE HIGH — Continued

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

P0869-LINE PRESSURE HIGH — Continued

TEST	ACTION	APPLICABILITY
5	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? Yes → Go To 6 No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
6	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 reading between the DRBIII® and the Pressure Gage. Is the Pressure Gauge reading within 34 kPa or 5 PSI of the DRBIII® reading? Yes → Go To 7 No → Replace the Line Pressure Sensor. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
7	If there are no possible causes remaining, view repair. Repair If the transmission is to be repaired, inspect the oil pump per the Service Information and replace if necessary. If no problem is found, replace the Solenoid/TRS assembly - stuck Pressure Control Solenoid. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
8	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? Yes → Repair the 5-volt Supply circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	5-SPD AUTOMATIC 5-45RFE TRANS

P0869-LINE PRESSURE HIGH — Continued

TEST	ACTION	APPLICABILITY
9	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 10	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS
12	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0869-LINE PRESSURE HIGH — Continued

TEST	ACTION	APPLICABILITY
13	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. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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
RELATED SPEED RATIO AND/OR PRESSURE SWITCH DTC'S PRESENT
TCM AND WIRING - LOW LINE PRESSURE
INTERMITTENT WIRING & CONNECTORS
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
INTERNAL TRANSMISSION PROBLEM - OD PRESSURE TEST
TCM - NO 5 VOLTS - LOW LINE PRESSURE SENSOR
TCM - OD PRESSURE SWITCH

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check for other Transmission DTC's Are there any Line Pressure related DTC's P0867, P0932, P0868, P0869, or P0944 present? Yes → Refer to symptom list and perform appropriate test. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTO-MATIC 5-45RFE TRANS
3	With the DRBIII®, check for other Transmission DTC's Is the DTC P0733 and/or P0871 present also? Yes → Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	5-SPD AUTO-MATIC 5-45RFE TRANS
4	With the DRBIII®, Check the STARTS SINCE SET counter for P0870. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 5 No → Go To 19	5-SPD AUTO-MATIC 5-45RFE TRANS

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
5	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? Yes → Go To 6 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
6	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? Yes → Replace the Line Pressure Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS
7	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? 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. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS

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 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
11	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 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 12 No → Go To 14	5-SPD AUTOMATIC 5-45RFE TRANS
12	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 13	5-SPD AUTOMATIC 5-45RFE TRANS

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
13	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.	5-SPD AUTOMATIC 5-45RFE TRANS
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 of the OD 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 OD Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 15	5-SPD AUTOMATIC 5-45RFE TRANS
15	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. Disconnect the Transmission Control Relay from the PDC. 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 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 16 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.	5-SPD AUTOMATIC 5-45RFE TRANS
16	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 circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 17	5-SPD AUTOMATIC 5-45RFE TRANS

P0870-OD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
17	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 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 18	5-SPD AUTOMATIC 5-45RFE TRANS
18	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
19	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. Were any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT WIRING & CONNECTORS
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
TCM - OD PRESSURE SWITCH

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

P0871-OD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other transmission DTC's. Are there any Transmission Control Relay related DTC's, P0890, P0891, or P0888 present? Yes → Refer to symptom list and perform test for Transmission Control Relay related DTCs. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	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? Yes → Go To 4 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
4	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 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? Yes → Go To 5 No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
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.	5-SPD AUTOMATIC 5-45RFE TRANS
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 OD 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 OD Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS

P0871-OD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	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 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? Yes → Go To 8 No → Repair cause of unlit or dim test light. Open circuit or high resistance in Transmission Relay output circuit. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
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 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 9	5-SPD AUTOMATIC 5-45RFE TRANS
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 the PDC. **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? Yes → Repair the OD Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0871-OD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Check for a Sump filter not installed correctly Reverse carrier snap ring dislodged (typically sets on heavy throttle acceleration from a dead stop) Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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 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
RELATED SPEED RATIO AND/OR PRESSURE SWITCH DTC'S PRESENT
TCM AND WIRING - LOW LINE PRESSURE
INTERMITTENT WIRING AND CONNECTORS
5-VOLT SUPPLY CIRCUIT OPEN
POOR LINE PRESSURE SENSOR CONNECTION
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
UD PRESSURE SWITCH SENSE CIRCUIT OPEN
5-VOLT SUPPLY CIRCUIT SHORT TO GROUND
UD PRESSURE SWITCH CIRCUIT SHORT TO GROUND
UD PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
EXCESSIVE DEBRIS IN OIL PAN
INTERNAL TRANSMISSION - UD PRESSURE TEST
TCM - NO 5 VOLTS - LOW LINE PRESSURE SENSOR
TCM - UD PRESSURE SWITCH

P0875-UD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check for other Transmission DTC's Are there any line pressure related DTC's, P0867, P0932, P0868, P0869, or P0944 present? Yes → Refer to Symptom List for the related symptom(s). Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, check for other transmission DTC's Are the DTC's P0731, P0732, P0733 and/or P0876 present? Yes → Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS
4	With the DRBIII®, Check the STARTS SINCE SET counter for P0875. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 5 No → Go To 19	5-SPD AUTOMATIC 5-45RFE TRANS

P0875-UD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
5	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? Yes → Go To 6 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
6	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? 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. No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS
7	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? Yes → Replace the Line Pressure Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS

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 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
11	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 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 Miller tool# 8333, place 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 12 No → Go To 14	5-SPD AUTOMATIC 5-45RFE TRANS
12	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 13	5-SPD AUTOMATIC 5-45RFE TRANS

P0875-UD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
13	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.	5-SPD AUTOMATIC 5-45RFE TRANS
14	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 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 15 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.	5-SPD AUTOMATIC 5-45RFE TRANS
15	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 16	5-SPD AUTOMATIC 5-45RFE TRANS
16	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 circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 17	5-SPD AUTOMATIC 5-45RFE TRANS

P0875-UD HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
17	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 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 18	5-SPD AUTOMATIC 5-45RFE TRANS
18	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
19	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. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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
RELATED RELAY DTC'S PRESENT
INTERMITTENT CONDITIONS
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
TCM - UD PRESSURE SWITCH

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

P0876-UD 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 DTCs P0890, P0891, and/or P0888 present? Yes → Refer to symptom list and perform test for Transmission Control Relay related DTC's. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	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? Yes → Go To 4 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
4	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. **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? Yes → Go To 5 No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
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.	5-SPD AUTOMATIC 5-45RFE TRANS
6	Turn 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 Assembly harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 7 No → Repair the Transmission Control Relay Output circuit for an open. If the fuse is open make sure to check for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0876-UD 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 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? Yes → Repair the UD Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
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 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 9	5-SPD AUTOMATIC 5-45RFE TRANS
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 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 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 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair. Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0876-UD PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Sump filter installed incorrectly. Reverse carrier snap ring dislodged (typically sets code on heavy throttle acceleration from a dead stop) Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
P0884-POWER UP AT SPEED

When Monitored and Set Condition:

P0884-POWER UP AT SPEED

When Monitored: When TCM (Transmission Control Module) initially powers-up.

Set Condition: If the TCM powers up and senses a valid forward gear PRNDL code and the output RPM is above 800 RPM (approximate. 32 km/h 20 MPH) the code will be set.

POSSIBLE CAUSES
POWER UP AT SPEED

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	This DTC is set when the TCM is initialized while the vehicle is moving down the road in a valid forward gear. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. **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.** If there are no possible causes remaining, view repair. Repair Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT WIRING AND CONNECTORS
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 SHORTED TO GROUND
TRANSMISSION CONTROL RELAY STUCK OPEN
TCM - TRANSMISSION CONTROL RELAY ALWAYS OFF

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

P0888-RELAY OUTPUT ALWAYS OFF — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, Check the STARTS SINCE SET counter. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter equal to 0? Yes → Go To 3 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
3	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? Yes → Go To 4 No → Repair the Fused B(+) circuit for an open. If the fuse is open make sure to check for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
4	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? Yes → Go To 5 No → Repair the Transmission Control Relay Output circuit for an open or high resistance. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
5	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 6	5-SPD AUTOMATIC 5-45RFE TRANS

P0888-RELAY OUTPUT ALWAYS OFF — Continued

TEST	ACTION	APPLICABILITY
6	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? Yes → Repair the Ground circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS
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 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 8	5-SPD AUTOMATIC 5-45RFE TRANS
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 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 9	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS

P0888-RELAY OUTPUT ALWAYS OFF — Continued

TEST	ACTION	APPLICABILITY
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
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. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT WIRING AND CONNECTORS
2C PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
4C PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
L/R PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
OD PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
UD PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
TCM- SWITCHED BATTERY

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

P0890-SWITCHED BATTERY — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, Check the STARTS SINCE SET counter for P0890. **NOTE: This counter only applies to the last DTC set.** Is the ″Starts Since Set″ counter equal to zero? Yes → Go To 3 No → Go To 9	5-SPD AUTOMATIC 5-45RFE TRANS
3	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 2C Pressure Switch Sense circuit in the TCM harness connector. Is the voltage above 0.5 volt? Yes → Repair the 2C Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS
4	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 harness 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 volts? Yes → Repair the 4C Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS

P0890-SWITCHED BATTERY — Continued

TEST	ACTION	APPLICABILITY
5	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 L/R Pressure Switch Sense circuit in the TCM harness connector. Is the voltage above 0.5 volts? 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 6	5-SPD AUTOMATIC 5-45RFE TRANS
6	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 OD Pressure Switch Sense circuit in the TCM harness connector. Is the voltage above 0.5 volts? Yes → Repair the OD Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS
7	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 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 8	5-SPD AUTOMATIC 5-45RFE TRANS

P0890-SWITCHED BATTERY — Continued

TEST	ACTION	APPLICABILITY
8	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
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. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT WIRING AND CONNECTORS
TRANSMISSION CONTROL RELAY CONTROL CIRCUIT SHORT TO VOLTAGE
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT SHORT TO VOLTAGE
TRANSMISSION CONTROL RELAY STUCK CLOSED
TCM - TRANSMISSION CONTROL RELAY ALWAYS ON

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

P0891-TRANSMISSION RELAY ALWAYS ON — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, Check the STARTS SINCE SET counter. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter equal to 0? Yes → Go To 3 No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS
3	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.** 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? Yes → Repair the Transmission Control Relay Control circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS
4	Turn the ignition off to the lock position. Remove the Transmission Control Relay from the PDC. Turn the ignition off to the lock position. Measure the voltage at the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Is the voltage above 0.5 volts? Yes → Repair the Transmission Control Relay Output circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS
5	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? Yes → Go To 6 No → Replace the Transmission Control Relay. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
6	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0891-TRANSMISSION RELAY ALWAYS ON — Continued

TEST	ACTION	APPLICABILITY
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
P0932-LINE PRESSURE SENSOR FAULT

When Monitored and Set Condition:

P0932-LINE PRESSURE SENSOR FAULT

When Monitored: Continuously with engine running.

Set Condition: If the Line Pressure Sensor (LPS) voltage is below 0.2 volts or above 4.75 volts the code will be set.

POSSIBLE CAUSES
INTERMITTENT WIRING AND CONNECTORS
5-VOLT SUPPLY CIRCUIT OPEN
GROUND CIRCUIT OPEN
LINE PRESSURE SENSOR SIGNAL CIRCUIT OPEN
5-VOLT SUPPLY CIRCUIT SHORT TO GROUND
LINE PRESSURE SENSOR SIGNAL CIRCUIT SHORT TO GROUND
LINE PRESSURE SENSOR SIGNAL CIRCUIT SHORT TO VOLTAGE
LINE PRESSURE SENSOR
TCM - HIGH LINE PRESSURE SENSOR
TCM - LOW LINE PRESSURE SENSOR

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

P0932-LINE PRESSURE SENSOR FAULT — Continued

TEST	ACTION	APPLICABILITY
2	Ignition on, engine not running. With the DRBIII®, read the Line Pressure Sensor voltage. Is the Line Pressure Sensor voltage between 0.2 and 4.75 volts? Yes → Go To 3 No → Go To 4	5-SPD AUTO-MATIC 5-45RFE TRANS
3	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Were any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTO-MATIC 5-45RFE TRANS
4	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 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. What is the Line Pressure Sensor voltage? Below 0.2 volts (241Kpa or 35 PSI). Go To 5 Between .2 and 4.75 volts (76 PSI) Go To 9 Above 4.75 volts (1586 Kpa or 230 PSI) Go To 10	5-SPD AUTO-MATIC 5-45RFE TRANS
5	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 of the 5-Volt Supply circuit from the Line Pressure Sensor connector to the TCM 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	5-SPD AUTO-MATIC 5-45RFE TRANS

P0932-LINE PRESSURE SENSOR FAULT — Continued

TEST	ACTION	APPLICABILITY
6	Turn ignition switch 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 the 5-Volt Supply circuit and ground. 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	5-SPD AUTO-MATIC 5-45RFE TRANS
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	5-SPD AUTO-MATIC 5-45RFE TRANS
8	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTO-MATIC 5-45RFE TRANS
9	If there are no possible causes remaining, view repair. Repair Replace the Line Pressure Sensor. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTO-MATIC 5-45RFE TRANS
10	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 of the Ground circuit from the Line Pressure Sensor connector to the TCM 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 11	5-SPD AUTO-MATIC 5-45RFE TRANS

P0932-LINE PRESSURE SENSOR FAULT — Continued

TEST	ACTION	APPLICABILITY
11	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 of the Line Pressure Sensor Signal circuit from the Line Pressure Sensor connector to the TCM 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 12	5-SPD AUTO-MATIC 5-45RFE TRANS
12	Turn the ignition switch 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(+) and the Transmission Relay Output circuits in the relay connector. Turn ignition on. Measure the voltage of the Line Pressure Sensor Signal circuit in the TCM connector. Is the voltage above 5.5 volts? Yes → Repair the Line Pressure Sensor Signal circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 13	5-SPD AUTO-MATIC 5-45RFE TRANS
13	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTO-MATIC 5-45RFE TRANS

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
INTERMITTENT OPERATION
TRANSMISSION OIL FILTER
OIL PUMP - LOSS OF PRIME

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

P0944-LOSS OF PRIME — Continued

TEST	ACTION	APPLICABILITY
2	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 transmission in (R) 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). No → Go To 3 Yes → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS
3	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 my apply. Has the customer experienced any delayed engagement and/or ″No Drive″ conditions? 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. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS
4	Using the DRBIII®, perform a Shift Lever Position test. Follow the instructions on the DRBIII®. Did the Shift Lever Position Test pass? Yes → Go To 5 No → Refer to symptom list and perform the appropriate test for DTC P0706. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
5	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? 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. No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS

P0944-LOSS OF PRIME — Continued

TEST	ACTION	APPLICABILITY
6	If there are no possible causes remaining, view repair. Repair Replace the Transmission or Transmission Oil Pump as necessary. Refer to the Service Information for the proper repair procedure. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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
RELATED LINE PRESSURE DTC'S PRESENT
RELATED SPEED RATIO AND/OR PRESSURE SWITCH DTC PRESENT
POOR LINE PRESSURE SENSOR CONNECTION
TCM AND WIRING - LOW LINE PRESSURE
INTERMITTENT WIRING AND CONNECTORS
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
INTERNAL TRANSMISSION - 4C PRESSURE TEST
TCM - 4C PRESSURE SWITCH
TCM - NO 5 VOLTS LOW LINE PRESSURE SENSOR

P0987-4C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, check for other transmission DTC's Are there any Line Pressure related DTC's P0867, P0932, P0868, P0869, or P0944 present? Yes → Refer to symptom list and perform the appropriate test. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, check for other transmission DTC's Is the DTC P0734 and/or P0988 present also? Yes → Replace the Transmission Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS
4	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 for P0987. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 5 No → Go To 19	5-SPD AUTOMATIC 5-45RFE TRANS

P0987-4C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
5	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? Yes → Go To 6 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
6	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 Yes → Disconnect and properly reconnect the Line Pressure Sensor connector. Inspect terminals and repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS
7	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: 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? Yes → Replace the Line Pressure Sensor per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS

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	5-SPD AUTOMATIC 5-45RFE TRANS
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 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
11	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. **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. While monitoring the DRBIII® 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 12 No → Go To 14	5-SPD AUTOMATIC 5-45RFE TRANS

P0987-4C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
12	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 13	5-SPD AUTOMATIC 5-45RFE TRANS
13	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.	5-SPD AUTOMATIC 5-45RFE TRANS
14	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? Yes → Repair the 4C Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 15	5-SPD AUTOMATIC 5-45RFE TRANS
15	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: Failure to remove the Starter Relay can cause a TCM - No Response condition.** 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 TCM harness connector. **NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.** Does the test light illuminate brightly? Yes → Go To 16 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.	5-SPD AUTOMATIC 5-45RFE TRANS

P0987-4C HYDRAULIC PRESSURE TEST FAILURE — Continued

TEST	ACTION	APPLICABILITY
16	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? Yes → Repair the 4C Pressure Switch Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 17	5-SPD AUTOMATIC 5-45RFE TRANS
17	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 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 4C Pressure Switch Sense circuit in the TCM harness connector. Is the voltage above 0.5 volt? Yes → Repair the 4C Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 18	5-SPD AUTOMATIC 5-45RFE TRANS
18	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
19	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. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT CONDITIONS
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
TCM - 4C PRESSURE SWITCH

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	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 symptom list and perform test for Transmission Control Relay related DTCs. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS
4	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. **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	5-SPD AUTOMATIC 5-45RFE TRANS
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.	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS

P0988-4C PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	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 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 8 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.	5-SPD AUTOMATIC 5-45RFE TRANS
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 4C Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the 4C Pressure Switch Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	5-SPD AUTOMATIC 5-45RFE TRANS
9	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 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 4C Pressure Switch Sense circuit in the TCM harness connector. Is the voltage above 0.5 volt? Yes → Repair the 4C Pressure Switch Sense circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P0988-4C PRESSURE SWITCH SENSE CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Sump filter installed incorrectly. Reverse carrier snap ring dislodged (typically sets code on heavy throttle acceleration from a dead stop) Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
P1684-BATTERY WAS DISCONNECTED

When Monitored and Set Condition:

P1684-BATTERY WAS DISCONNECTED

When Monitored: Whenever the key is in the Run/Start position.

Set Condition: This code is set whenever Transmission Control Module - TCM is disconnected from battery power B+ or ground. It will also be set during the DRBIII® Battery Disconnect 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	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	This DTC is an informational DTC only. This DTC is set due to a momentary loss of the Fused B(+) feed to the TCM. Continue to view the possible causes for this DTC. Continue Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS

P1684-BATTERY WAS DISCONNECTED — Continued

TEST	ACTION	APPLICABILITY
3	Has the battery been disconnected, lost it's charge, or been replaced recently? Yes → This is the cause of the DTC. Erase the DTC and return vehicle to customer. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS
4	Has a DRBIII® Battery Disconnect procedure been performed? Yes → This is the cause of the DTC. Erase the DTC and return the vehicle to customer. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS
5	Has a ″QUICK LEARN″ been performed with the DRBIII®? Yes → This is the cause of the DTC. Erase the DTC and return the vehicle to customer. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
6	Has the TCM been replaced or disconnected? Yes → Replacing or disconnecting the TCM will set this DTC. Erase the DTC and return the vehicle to the customer. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. **NOTE: Check all power and ground circuits to the TCM for intermittent or high resistance circuits.** Wiggle the wires while checking for shorts and open circuits. Check for any TSB's or controller flash updates that may apply. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT WIRING AND CONNECTORS
PCI BUS CIRCUIT OPEN
TCM - BUS PROBLEM

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, Check the STARTS SINCE SET counter. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET counter equal to zero? Yes → Go To 3 No → Go To 6	5-SPD AUTO-MATIC 5-45RFE TRANS

P1694-BUS COMMUNICATION WITH ENGINE MODULE — Continued

TEST	ACTION	APPLICABILITY
3	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? Yes → Refer to the Communication Category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS
4	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? Yes → Repair the open PCI Bus circuit between the PCM and the Data Link Connector. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
6	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Note: Some after market equipment will set this DTC. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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	With the DRBIII®, check for other transmission DTC's Are any of the following DTC's P0731, P0732, P0733, P0734, P1736 or P0715 present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 2	5-SPD AUTOMATIC 5-45RFE TRANS
2	Check Shifter adjustment per the Service Information. Adjust if necessary. Did the shifter need to be adjusted?. Yes → Adjust the shift linkage per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	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. Repair 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.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT GEAR RATIO ERRORS
TRANSMISSION INTERNAL - GEAR RATIO ERROR 2ND PRIME

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

P1736-GEAR RATIO ERROR IN 2ND PRIME — Continued

TEST	ACTION	APPLICABILITY
2	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? 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. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	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? Yes → Go To 4 No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS
4	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. If there are no possible causes remaining, view repair. Repair Repair as necessary. If a internal problem is present, refer to the Service information for the proper internal repair procedure. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
5	If there are no possible causes remaining, view repair. Repair Repair or replace 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 pump and Pressure Control Solenoid per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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 code is set if three unsuccessful attempts are made to get into 1st gear in one given key start. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES
RELATED DTC P0841 PRESENT
INTERMITTENT WIRING AND CONNECTORS
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 - SOLENOID SWITCH VALVE STUCK
TCM - LR PRESSURE SWITCH

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

P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other transmission DTC's Is the DTC P0841 present also? Yes → Refer to symptom list and perform test for P0841. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	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 for P1775 at 2 or less? Yes → Go To 4 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
4	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. **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? Yes → Go To 5 No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
5	If there are no possible causes remaining, view repair. Repair Repair internal transmission as necessary. Inspect the Solenoid Switch Valve per the Service Information and repair or replace as necessary. If no problems are found, replace the Transmission Solenoid/TRS Assembly. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
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 LR 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 LR Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS

P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid/TRS Assembly harness connector. 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 8 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.	5-SPD AUTOMATIC 5-45RFE TRANS
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 LR Pressure Switch Sense circuit. Is the resistance below 5.0 ohms? Yes → Repair the LR Pressure Switch Sense circuit short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	5-SPD AUTOMATIC 5-45RFE TRANS
9	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.** 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 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P1775-SOLENOID SWITCH VALVE LATCHED IN TCC POSITION — Continued

TEST	ACTION	APPLICABILITY
11	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. This DTC can also be set by the SSV intermittently sticking in it's bore under extreme temperature conditions. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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 code will be set after two unsuccessful attempts to perform PEMCC or FEMCC. This DTC can take up to five minutes of problem identification before illuminating the MIL.

POSSIBLE CAUSES
TRANSMISSION CONTROL RELAY OUTPUT CIRCUIT OPEN
RELATED DTC P0841 PRESENT
INTERMITTENT WIRING AND CONNECTORS
LR PRESSURE SWITCH SENSE CIRCUIT OPEN
LR PRESSURE SWITCH SENSE CIRCUIT SHORT TO GROUND
LR PRESSURE SWITCH SENSE CIRCUIT SHORT TO VOLTAGE
INTERNAL TRANSMISSION - SOLENOID SWITCH VALVE STUCK
TCM - LR PRESSURE SWITCH

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

P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other transmission DTC's Is the DTC P0841 present also? Yes → Refer to symptom list and perform the appropriate test for DTC P1784. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	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? Yes → Go To 4 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
4	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 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? Yes → Go To 5 No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
5	If there are no possible causes remaining, view repair. Repair Repair internal transmission problem as necessary. Inspect the Solenoid Switch Valve per the Service Information and repair or replace as necessary. If no problems are found, replace the Solenoid/TRS Assembly per the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the Transmission Solenoid /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? Yes → Repair the LR Pressure Switch Sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS
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.** 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	5-SPD AUTOMATIC 5-45RFE TRANS
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 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.	5-SPD AUTOMATIC 5-45RFE TRANS

P1776-SOLENOID SWITCH VALVE LATCHED IN LR POSITION — Continued

TEST	ACTION	APPLICABILITY
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
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. This DTC can also be set by the Solenoid Switch Valve intermittently sticking in it's bore under extreme temperature conditions. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
P1790-FAULT IMMEDIATELY AFTER SHIFT

When Monitored and Set Condition:

P1790-FAULT IMMEDIATELY AFTER SHIFT

When Monitored: After a speed ratio error is stored.

Set Condition: This code is set if the associated speed ratio code is stored within 1.3 seconds after a shift.

POSSIBLE CAUSES
FAULT AFTER SHIFT

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	This DTC is set along with a speed ratio DTC. Perform the appropriate test for the Speed Ratio DTC stored. Check 1 trip failures if there are no speed ratio codes current. If there are no possible causes remaining, view repair. Repair This code is set if an associated speed ratio code is stored within 1.3 seconds after a shift. Perform the appropriate speed ratio DTC test. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT WIRING & CONNECTORS
TORQUE MANAGEMENT REQUEST SENSE CIRCUIT OPEN
TORQUE MANAGEMENT REQUEST SENSE CIRCUIT SHORT TO GROUND
TORQUE MANAGEMENT REQUEST SENSE CIRCUIT SHORTED TO VOLTAGE
PCM - TRD LINK COMMUNICATION ERROR
TCM - TRD LINK COMMUNICATION ERROR

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

P1793-TRD LINK COMMUNICATION ERROR — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other transmission DTC's Are any of the DTCs P1694, P0731, P0732, P0733, P0734, or P1736 present also? Yes → If any of these DTCs are present, disregard the P1793 DTC. Refer to the symptom list and perform the diagnostics for the other DTC's first. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, Check the STARTS SINCE SET counter. **NOTE: This counter only applies to the last DTC set.** Is the STARTS SINCE SET equal to zero? Yes → Go To 4 No → Go To 9	5-SPD AUTOMATIC 5-45RFE TRANS
4	Turn the ignition off to the lock position. Disconnect the TCM harness connector. Disconnect the PCM harness connector(s). **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Torque Management Request Sense circuit from the TCM harness connector to the PCM harness connector. Is the resistance above 5.0 ohms? Yes → Repair the open Torque Management Request Sense circuit. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS
5	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? Yes → Repair the Torque Management Request Sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS

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	5-SPD AUTOMATIC 5-45RFE TRANS
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 connector. Is the voltage above 7.0 volts? Yes → Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
8	If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module. Perform POWERTRAIN VERIFICATION TEST VER - 2.	5-SPD AUTOMATIC 5-45RFE TRANS
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. Were any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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
INTERMITTENT WIRING AND CONNECTORS
SPEED SENSOR GROUND CIRCUIT OPEN
SPEED SENSOR GROUND CIRCUIT SHORT TO GROUND
SPEED SENSOR GROUND CIRCUIT SHORT TO VOLTAGE
TCM - SPEED SENSOR GROUND CIRCUIT

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	Engine Running. Shift lever in park. With the DRBIII®, read the Transmission Output and Input Speed Sensor states. Is the Output Speed Sensor reading twice the Input Speed Sensor reading? Yes → Go To 3 No → Go To 8	5-SPD AUTO-MATIC 5-45RFE TRANS

P1794-SPEED SENSOR GROUND ERROR — Continued

TEST	ACTION	APPLICABILITY
3	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 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 state. Does the input speed read 3000 RPM and the Output speed read 1000 RPM, within 50 RPM? Yes → Go To 8 No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS
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 Senor Ground circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
6	Turn the ignition off to the lock position. Disconnect the Input and Output Speed Sensors. **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	5-SPD AUTOMATIC 5-45RFE TRANS

P1794-SPEED SENSOR GROUND ERROR — Continued

TEST	ACTION	APPLICABILITY
7	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
8	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
P1799-CALCULATED OIL TEMP IN USE

When Monitored and Set Condition:

P1799-CALCULATED OIL TEMP IN USE

When Monitored: Whenever the engine is running.

Set Condition: The DTC will set if any of the three conditions are present. Thermistor voltage (Transmission Temperature Sensor) out of range. Continuous erratic thermistor voltage is sensed. Thermistor Temperature stays low for an extended period of time.

POSSIBLE CAUSES
INTERMITTENT WIRING & CONNECTORS
SPEED SENSOR GROUND CIRCUIT OPEN
TRANSMISSION TEMPERATURE SENSOR SIGNAL CIRCUIT OPEN
TRANSMISSION TEMPERATURE SENSOR SIGNAL CIRCUIT SHORT TO GROUND
SPEED SENSOR GROUND CIRCUIT SHORT TO VOLTAGE
TRANSMISSION TEMPERATURE SENSOR SIGNAL CIRCUIT SHORT TO VOLTAGE
TRANSMISSION TEMPERATURE SENSOR - INOPERATIVE
TCM - CALCULATED OIL TEMP IN USE
TCM - TRANSMISSION TEMPERATURE SENSOR HIGH
TCM - TRANSMISSION TEMPERATURE SENSOR LOW

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

P1799-CALCULATED OIL TEMP IN USE — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, Check the STARTS SINCE SET counter. **Note: This counter only applies to the last code set.** Is the STARTS SINCE SET counter 2 or less? Yes → Go To 3 No → Go To 12	5-SPD AUTOMATIC 5-45RFE TRANS
3	Turn the ignition off to the lock position. Remove the Starter Relay from the PDC. **NOTE: Failure to remove 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 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. Pick one of the following that best matches your readings. DRBIII® readings always high. Go To 4 DRBIII® readings = simulator +/- 0.25 V Go To 9 DRBIII® readings always low Go To 10 DRBIII® readings erratic. Go To 12	5-SPD AUTOMATIC 5-45RFE TRANS
4	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 Speed Sensor Ground circuit from the TCM harness connector to the Transmission Solenoid/TRS Assembly 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 5	5-SPD AUTOMATIC 5-45RFE TRANS

P1799-CALCULATED OIL TEMP IN USE — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off to the lock position. Disconnect the TCM harness connector.. Disconnect the Transmission Solenoid /TRS Assembly harness connector **Note: Check connectors - Clean/repair as necessary.** Measure the resistance of the Transmission Temperature Sensor Signal circuit from the TCM harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Transmission Temperature Sensor Signal circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
6	Turn the ignition off to the lock position. Disconnect the Input and Output Speed Sensors. **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	5-SPD AUTOMATIC 5-45RFE TRANS
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.** Connect a jumper wire between the Fused B(+) circuit and the Transmission Control Relay Output circuit in the Transmission Control Relay connector. Ignition on, engine not running. Measure the voltage of the Transmission Temperature Sensor Signal circuit in the TCM harness connector. Is the voltage above 0.5 volts? Yes → Repair the Transmission Temperature Sensor Signal circuit for a short to voltage. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	5-SPD AUTOMATIC 5-45RFE TRANS
8	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P1799-CALCULATED OIL TEMP IN USE — Continued

TEST	ACTION	APPLICABILITY
9	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/TRS assembly as required. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
10	Turn the ignition off to the lock position. Disconnect the TCM harness connector.. Disconnect the Transmission Solenoid/TRS Assembly harness connector. **Note: Check connectors - Clean/repair as necessary.** Measure the resistance between ground and the Transmission Temperature Sensor Signal circuit. Is the resistance below 5.0 ohms? Yes → Repair the Transmission Temperature Sensor Signal circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
11	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
12	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 any applicable TSB's that may apply. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 13	5-SPD AUTOMATIC 5-45RFE TRANS
13	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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 volume is updated during a 3-1 or 2-1 manual downshift with throttle angle below 5 degrees. Trans temp must be at least 43 C (110 F)

Set Condition: When the LR volume falls below 16.

POSSIBLE CAUSES
INTERNAL TRANSMISSION - LR CLUTCH VOLUME INDEX LOW
TCM - LR CLUTCH VOLUME INDEX LOW

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, erase DTC″s **NOTE: The TRANS TEMP DEG must be at least 43°C or 110°F before performing the following steps.** 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. With the DRBIII®, read the LR CL VOL INDEX. Is the LR CL VOL INDEX below 20? Yes → Go To 3 No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS

P2700-INADEQUATE ELEMENT VOLUME LR — Continued

TEST	ACTION	APPLICABILITY
3	If there are no possible causes remaining, view repair. Repair 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. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
4	**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? Yes → Go To 5 No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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 volume is updated during a 3-2 kickdown with throttle angle between 10 and 54 degrees. Trans temp must be at least 43 C (110 F)

Set Condition: When the 2C volume falls below 5.

POSSIBLE CAUSES
INTERNAL TRANSMISSION - 2C CLUTCH VOLUME INDEX LOW
TCM - 2C CLUTCH VOLUME INDEX LOW

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

P2701-INADEQUATE ELEMENT VOLUME 2C — Continued

TEST	ACTION	APPLICABILITY
2	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? Yes → Go To 3 No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS
3	If there are no possible causes remaining, view repair. Repair 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.	5-SPD AUTOMATIC 5-45RFE TRANS
4	**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? Yes → Go To 5 No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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 volume is updated during a 2-3 upshift with throttle angle between 10 and 54 degrees. Trans temp must be at least 43 C (110 F)

Set Condition: When the OD volume falls below 5.

POSSIBLE CAUSES
INTERNAL TRANSMISSION - O/D CLUTCH VOLUME INDEX LOW
TCM- OD CLUTCH VOLUME INDEX LOW

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, erase DTC″s **NOTE: The TRANS TEMP DEG must be at least 43° C or 110° F before performing the following steps.** Drive the vehicle and perform at least ten 2-3 upshifts with the throttle between 10 and 54 TPS DEGREES. With the DRBIII®, read the OD CL VOL INDEX. Is the OD CL VOL INDEX below 10? Yes → Go To 3 No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS

P2702-INADEQUATE ELEMENT VOLUME OD — Continued

TEST	ACTION	APPLICABILITY
3	If there are no possible causes remaining, view repair. Repair 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. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
4	**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? Yes → Go To 5 No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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 volume is updated during a 4-3 kickdown with throttle angle between 10 and 54 degrees. Trans temp must be at least 43 C (110 F)

Set Condition: When the UD volume falls below 11.

POSSIBLE CAUSES
INTERNAL TRANSMISSION - UD CLUTCH VOLUME INDEX LOW
TCM- UD CLUTCH VOLUME INDEX LOW

TEST	ACTION	APPLICABILITY
1	**NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.** **NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.** With the DRBIII®, read the engine DTC's. Check and repair all engine DTC's prior to performing transmission symptom diagnostics. With the DRBIII®, read Transmission DTC's. Record all DTC's and 1 Trip Failures. **NOTE: Diagnose 1 Trip Failures as a fully matured DTC.** Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Perform the Shift Lever Position Test. If the test does not pass, refer to Symptom test for P0706 Check Shifter Signal. For Gear Ratio DTC's, check and record all CVI's. Most DTC's set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. **Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.** **NOTE: Check for applicable TSB's related to the problem.** Perform this procedure prior to Symptom diagnosis. Continue Go To 2	All
2	With the DRBIII®, erase DTC″s **NOTE: The TRANS TEMP DEG must be at least 43° C or 110° F before performing the following steps.** 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. With the DRBIII®, read the UD CL VOL INDEX. Is the UD CL VOL INDEX below 10? Yes → Go To 3 No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS

P2703- INADEQUATE ELEMENT VOLUME UD — Continued

TEST	ACTION	APPLICABILITY
3	If there are no possible causes remaining, view repair. Repair 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. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
4	**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 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? Yes → Go To 5 No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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 volume is updated during a 3-4 upshift with throttle angle between 10 and 54 degrees. Trans temp must be at least 43 C (110 F)

Set Condition: When the 4C volume falls below 5.

POSSIBLE CAUSES
INTERNAL TRANSMISSION - 4C CLUTCH VOLUME LOW
TCM- 4C VOLUME LOW

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

P2704-INADEQUATE ELEMENT VOLUME 4C — Continued

TEST	ACTION	APPLICABILITY
2	**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.** 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? Yes → Go To 3 No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS
3	If there are no possible causes remaining, view repair. Repair Repair or replace the transmission as necessary per the Service Information. Pay special attention to the mechanical components related to the 4th clutch. A deteriorated return spring or a dislocated snap ring could cause this problem. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
4	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. With the DRBIII®, observe and record CVI's. With the DRBIII®, perform a battery disconnect. With the DRBIII®, Observe CVI's Are any of the CVI's less than 5 or are they different than before the battery disconnect? Yes → Go To 5 No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

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. They will also be tested immediately after a gear ratio or pressure switch error is detected.

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

POSSIBLE CAUSES
RELATED RELAY DTC'S PRESENT
INTERMITTENT WIRING AND CONNECTORS
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 INOPERATIVE
TCM - MS SOLENOID CIRCUIT

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

P2706-MS SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, check for other transmission DTC's. Are there any Transmission Control Relay related DTCs P0890, P0891, and/or P0888 present? Yes → Refer to symptom list and perform test for Transmission Control Relay related DTCs. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	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 for P2706 set at 0? Yes → Go To 4 No → Go To 11	5-SPD AUTOMATIC 5-45RFE TRANS
4	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. **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? Yes → Go To 5 No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS
5	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/TRS Assembly as required. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
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 MS Solenoid Control circuit between the TCM harness connector to the Transmission Solenoid/TRS Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the MS Solenoid Control circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	5-SPD AUTOMATIC 5-45RFE TRANS

P2706-MS SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	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 8 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.	5-SPD AUTOMATIC 5-45RFE TRANS
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 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 9	5-SPD AUTOMATIC 5-45RFE TRANS
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 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 10	5-SPD AUTOMATIC 5-45RFE TRANS
10	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. WITH THE DRBIII® PERFORM QUICK LEARN Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

P2706-MS SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
11	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. Check for any applicable TSB that may apply. Wiggle the wires while checking for shorts or open circuits. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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.	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS
3	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/TRS Assembly as required. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
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 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:

***BACKUP LAMPS INOPERATIVE**

POSSIBLE CAUSES
BACK UP LAMP GROUND CIRCUIT OPEN
BACKUP LAMP SUPPLY CIRCUIT OPEN
FUSED IGNITION SWITCH OUTPUT CIRCUIT OPEN
BACKUP LAMP SUPPLY CIRCUIT SHORT TO GROUND
OPEN BACKUP LAMP BULBS
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	5-SPD AUTOMATIC 5-45RFE TRANS
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	5-SPD AUTOMATIC 5-45RFE TRANS
3	If there are no possible causes remaining, view repair. Repair Replace Transmission Solenoid/TRS Assembly as required.	5-SPD AUTOMATIC 5-45RFE TRANS
4	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 5 No → Repair the bad ground circuit to the Back up Lamp bulb socket.	5-SPD AUTOMATIC 5-45RFE TRANS
5	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 as required. No → Go To 6	5-SPD AUTOMATIC 5-45RFE TRANS

*BACKUP LAMPS INOPERATIVE — Continued

TEST	ACTION	APPLICABILITY
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 Supply circuit from the Backup lamp Socket to the Solenoid/TRS connector. Is the resistance above 5.0 ohms? Yes → Repair the Backup Lamp circuit for an open. No → Go To 7	5-SPD AUTO-MATIC 5-45RFE TRANS
7	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid /TRS harness connector. Ignition on, engine not running. Using a 12-volt test light connected to ground, check the Fused Ignition Switch Output circuit. Does the light illuminate brightly? Yes → Go To 8 No → Repair the Fused Ignition Switch Output circuit for an open. Check fuse and replace, if necessary repair cause of open fuse. Possible short to ground or excessive resistance.	5-SPD AUTO-MATIC 5-45RFE TRANS
8	Turn the ignition off to the lock position. Remove the Backup Lamp bulb. Disconnect the Transmission Solenoid/TRS connector. Measure the resistance between the Backup Lamp Supply circuit and ground. Is the resistance below 5.0 ohms? Yes → Repair the Backup Supply Lamp circuit for a short to ground.. Check fuse and replace if necessary. No → Test Complete.	5-SPD AUTO-MATIC 5-45RFE TRANS

Symptom:

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

POSSIBLE CAUSES
STICKING SLIP JOINT

TEST	ACTION	APPLICABILITY
1	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. Repair Check for TSB's relating to this condition.	5-SPD AUTOMATIC 5-45RFE TRANS

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.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
*CHECKING PARK/NEUTRAL SWITCH OPERATION

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

TEST	ACTION	APPLICABILITY
1	Ignition on, engine not running. With the DRBIII®, monitor the PNP 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	5-SPD AUTOMATIC 5-45RFE TRANS
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 shorts and open circuits. Were there any problems found? Yes → Repair as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS
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 PNP switch sense circuit for an open. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
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 PNP switch sense circuit for a short to ground. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS

*CHECKING PARK/NEUTRAL SWITCH OPERATION — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off to the lock position. Disconnect the PCM harness connector. Check connectors - Clean/repair as necessary Move the gear selector through all gear positions, from Park to 1st and back. While moving the gear selector through the gear positions, measure the resistance between ground and the PNP Switch Sense circuit in the PCM harness connector. Did the display change from above 10.0 ohms to below 10.0 ohms? Yes → Go To 6 No → Replace the Park/Neutral Position Switch in accordance with the Service Information. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
6	If there are no possible causes remaining, view repair. Repair Replace the Powertrain Control Module. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:

***POOR SHIFT QUALITY**

POSSIBLE CAUSES
POOR SHIFT QUALITY

TEST	ACTION	APPLICABILITY
1	Check the transmission fluid level per the service information. Is the fluid level ok? Yes → Test Complete. No → Correct the fluid level as necessary. Check and repair all leaks in the transmission if the fluid level is low. Note: This is one possible cause of poor shift quality. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:
*TRANSMISSION NOISY WITH NO DTC'S PRESENT

POSSIBLE CAUSES
INCORRECT FLUID LEVEL
INTERNAL TRANSMISSION PROBLEM - NOISY WHILE DRIVING
INTERNAL TRANSMISSION PROBLEM - NOISY WHILE STANDING STILL

TEST	ACTION	APPLICABILITY
1	Check and adjust the oil level per the service information before continuing. Place vehicle on hoist. Run vehicle on hoist under conditions necessary to duplicate the noise. Using Chassis Ears or other suitable device, verify that the noise is coming from the transmission. Is the noise coming from the transmission? Yes → Go To 2 No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS
2	Check the transmission fluid level per the Service Information. **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.** Is the fluid level OK? Yes → Go To 3 No → Adjust fluid level. Repair cause of incorrect fluid level. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the shift lever in neutral, raise the engine speed and listen to the noise. **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.** Does the noise get louder or change pitch while the engine speed is changing? Yes → Go To 4 No → Go To 5	5-SPD AUTOMATIC 5-45RFE TRANS
4	The transmission has an internal problem and must be replaced or repaired. If the transmission is to be repaired, inspect all of the transmission components for signs of wear. Pay particular attention to bearings in front half of transmission. If no problems found, replace oil pump.. If there are no possible causes remaining, view repair. Repair Replace transmission or repair internal transmission problem as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

*TRANSMISSION NOISY WITH NO DTC'S PRESENT — Continued

TEST	ACTION	APPLICABILITY
5	View repair options. Repair Repair internal transmission problem as necessary. If the transmission is to be repaired, inspect all of the transmission components for signs of wear. Pay particular attention to bearings, pinion gears, etc. Repair or replace as necessary. Perform 45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:

***TRANSMISSION SHIFTS EARLY WITH NO DTC'S**

POSSIBLE CAUSES
COLD TRANSMISSION
BUS PROBLEMS
INTERMITTENT WIRING & CONNECTORS

TEST	ACTION	APPLICABILITY
1	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? Yes → The software is designed to protect the transmission from high torque and/or high RPM shifts during cold operation. No → Go To 2	5-SPD AUTOMATIC 5-45RFE TRANS
2	Using the DRBIII®, attempt communication with other Modules, check for signs of a bus problem such as bus related DTC's and/or communication problems. Although it takes two occurences 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, the bus must be repaired first Do any of the other modules show signs of a bus problem? Yes → Refer to the appropriate category for the bus problem. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	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 shorts and open circuits. Although it takes two occurences 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, the bus must be repaired first Were any problems found? Yes → Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

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 No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:

***TRANSMISSION SIMULATOR WILL NOT POWER UP**

TEST	ACTION	APPLICABILITY
1	**Note: If the transmission simulator tool 8333 will not power up, this is a symptom of the transmission relay being open (such as Limp-in) and/or this also could be a indication of the trans simulator not installed correctly on the vehicle.** **Note: Check the simulator ground cable connection.** Repair these symptoms before having the transmission simulator 8333 repaired. Continue Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

Symptom:

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

POSSIBLE CAUSES
ENGINE VISCOUS FAN
COLD TRANSMISSION
BUS PROBLEMS
INTERMITTENT WIRING & CONNECTORS

TEST	ACTION	APPLICABILITY
1	**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? Yes → Repair the engine viscous fan per the Service Information. No → Go To 2	5-SPD AUTOMATIC 5-45RFE TRANS
2	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? Yes → The software is designed to protect the transmission from high torque and/or high RPM shifts during cold operation. No → Go To 3	5-SPD AUTOMATIC 5-45RFE TRANS
3	With the DRBIII®, attempt communications with other Modules, check for signs of a bus problem such as bus related DTC's and/or communication problems. Although it takes two occurences 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, the bus must be repaired first Do any of the other modules show signs of a bus problem? Yes → Refer to the appropriate category for the bus problem. No → Go To 4	5-SPD AUTOMATIC 5-45RFE TRANS
4	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 shorts and open circuits. Although it takes two occurences 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, the bus must be repaired first Were any problems found? Yes → Repair as necessary. No → Test Complete.	5-SPD AUTOMATIC 5-45RFE TRANS

Verification Tests

45RFE/545RFE TRANSMISSION VERIFICATION TEST - VER 1	APPLICABILITY
1. Connect the DRBIII® to the Data Link Connector. 2. Reconnect any disconnected components. 3. With the DRBIII®, erase DTC's. 4. With the DRBIII®, display Transmission Temperature. Start and run the engine until the Transmission Temperature is HOT above 43° Celsius 110° Fahrenheit. 5. Check the Transmission fluid and adjust if necessary. Refer to the Service Information for the Fluid Fill procedure. **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.** 7. Road test the vehicle. With the DRBIII®, monitor TPS. Make fifteen to twenty 1-2, 2-3, and 3-4 upshifts and (4 - 4prime for 545RFE only). 8. Perform these shifts from a standing start to 97 Km/h 60 MPH with a constant throttle opening of 20 to 25 degrees. 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. 10. Check for DTC's during the road test. **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.** Were any Trouble Codes set during the road test? Yes → Refer to the Symptom List for the appropriate diagnostic tests. No → Repair is complete.	All

POWERTRAIN VERIFICATION TEST VER - 2	APPLICABILITY
1. Inspect the vehicle to ensure that all engine components are properly installed and connected. Reassemble and reconnect components as necessary. 2. If this verification procedure is being performed after a NO TROUBLE CODE repair, perform steps 3 and 4. 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. 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. 5. If this verification procedure is being performed after a DTC repair, perform steps 6 through 13. 6. Connect the DRBIII® to the data link connector. Using the DRBIII® erase any diagnostic trouble codes and reset all values. 7. If the PCM was not replaced, skip steps 8 through 10 and continue with the verification. 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. 9. For ABS and Air Bag systems: Enter correct VIN and Mileage in PCM. Erase codes in ABS and Air Bag modules. 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 11. Road test the vehicle. If the test is for an A/C DTC, ensure it is operating during the following test. 12. Drive the vehicle for at least 5 minutes at or around 64 Kmh (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. 13. With the DRBIII®, read DTCs. Are there any DTC(s) present? Yes → Check for any related Technical Service Bulletins and/or refer to the appropriate Symptom list (Diagnostic Procedure). No → Repair is complete.	5-SPD AUTO-MATIC 5-45RFE TRANS

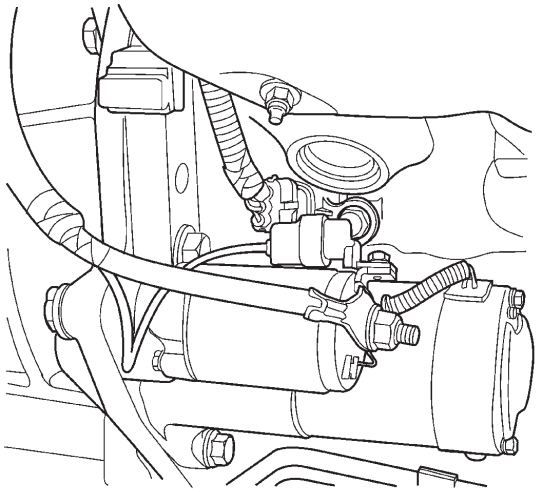
Verification Tests — Continued

POWERTRAIN VERIFICATION TEST VER - 5	APPLICABILITY
1. Inspect the vehicle to ensure that all engine components are properly installed and connected. Reassemble and reconnect components as necessary. 2. If any existing diagnostic trouble codes have not been repaired, go to the appropriate Symptom List and follow path specified. 3. Connect the DRBIII® to the data link connector. 4. Ensure the fuel tank has at least a quarter tank of fuel. Turn off all accessories. 5. If the PCM was not replaced skip steps 6 through 8 and continue the verification. 6. 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 Module (SKIM), Secret Key data must be updated to enable start. 7. For ABS and Air Bag systems: Enter correct VIN and Mileage in PCM. Erase codes in ABS and Air Bag modules. 8. For SKIM theft alarm: Connect DRBIII® to data link connectorto 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. 9. If the Catalyst was replaced, with the DRBIII® go to the miscellaneous Menu Option ″Catalyst Replaced″ and press enter. 10. If a Comprehensive Component DTC was repaired, perform steps 11 and 13. If a Major OBDII Monitor DTC was repaired skip step 11 and continue the verification. 11. After the ignition has been off for at least 10 seconds, restart the vehicle and run 2 minutes. 12. With the DRBIII®, monitor the appropriate pre-test enabling conditions until all conditions have been met. Once the conditions have been met, switch screen to the appropriate OBDII monitor, (Audible beeps when the monitor is running). 13. If the conditions cannot be duplicated, erase all DTCs with the DRBIII®. Did the OBD II monitor run successfully and has the Good Trip Counter changed to one or more? Yes → Repair is complete. No → Check for any related Technical Service Bulletins and/or refer to the appropriate Symptoms list (Diagnostic Procedure).	5-SPD AUTOMATIC 5-45RFE TRANS

NOTES

8.0 COMPONENT LOCATIONS

8.1 CRANKSHAFT POSITION SENSOR



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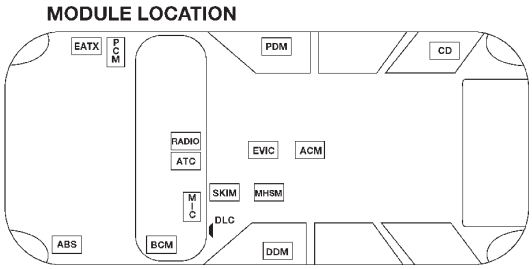
8.2 ELECTRONIC MODULE LOCATIONS



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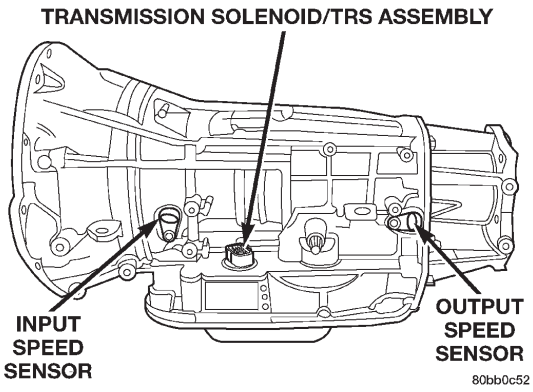
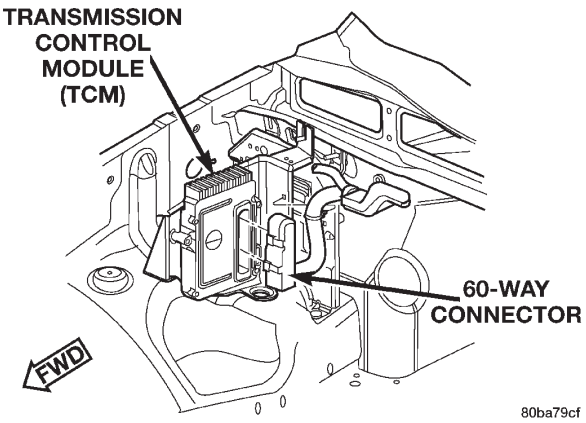
8.3 TRANSMISSION COMPONENT LOCATIONS



8.4 TRANSMISSION CONTROL MODULE



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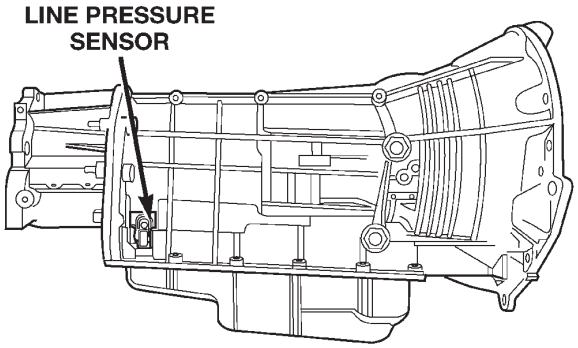
8.5 TRANSMISSION LINE PRESSURE SENSOR



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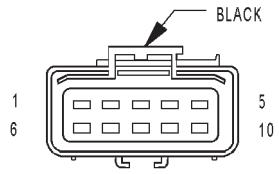
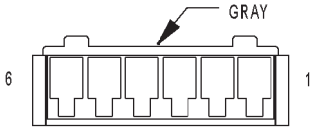
9.0 CONNECTOR PINOUTS



ACCELERATOR PEDAL POSITION SENSOR (DIESEL)

ACCELERATOR PEDAL POSITION SENSOR (DIESEL) - BLACK 10 WAY

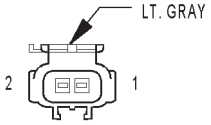
CAV	CIRCUIT	FUNCTION
1	-	-
2	F855 18BR/YL	SENSOR REFERENCE VOLTAGE A
3	K22 14RD/DB	ACCELERATOR PEDAL POSITION SENSOR 2 SIGNAL
4	-	-
5	-	-
6	K225 18BK	ACCELERATOR PEDAL POSITION SENSOR 2 GROUND
7	K81 20DB/DG	ACCELERATOR PEDAL POSITION SENSOR 1 SIGNAL
8	K255 20WT/DG	ACCELERATOR PEDAL POSITION SENSOR 1 GROUND
9	-	-
10	Y43 20WT/VT	ACCELERATOR PEDAL POSITION SENSOR 1 5-VOLT SUPPLY



BRAKE LAMP SWITCH

BRAKE LAMP SWITCH - GRAY 6 WAY

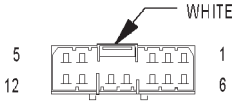
CAV	CIRCUIT	FUNCTION
1	K29 18WT/PK	SECONDARY BRAKE SWITCH SIGNAL
2	Z238 18BK (LHD)	GROUND
2	Z243 18BK (RHD)	GROUND
3	V32 22OR/DG (GAS)	SPEED CONTROL POWER SUPPLY
4	V30 22DB/RD (GAS)	SPEED CONTROL BRAKE SWITCH OUTPUT
5	L50 20VT/TN (LHD)	PRIMARY BRAKE SWITCH SIGNAL
5	L50 20WT/TN (RHD)	PRIMARY BRAKE SWITCH SIGNAL
6	F32 20PK/DB	FUSED B(+)



C113 (DIESEL)

C113 (DIESEL) - LT. GRAY (TRANSMISSION SIDE)

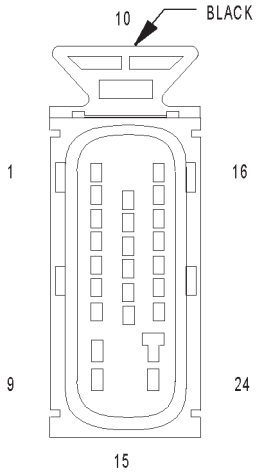
CAV	CIRCUIT
1	D52 18LG/WT
2	D51 18DG/WT



C201 (DIESEL)

C201 (DIESEL) - WHITE (SHIFTER ASSEMBLY SIDE)

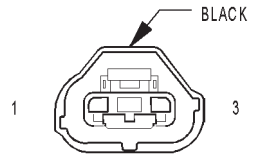
CAV	CIRCUIT
1	-
2	-
3	-
4	K2 20WT/PK
5	D25 20RD
6	-
7	D21 20PK
8	F12 20DB/WT
9	T2 20TN/BK
10	Z234 20WT
11	T41 20BK/WT
12	F991 20OR/DB



CONTROLLER ANTILOCK BRAKE

CONTROLLER ANTILOCK BRAKE - BLACK 24 WAY

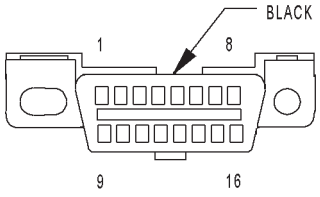
CAV	CIRCUIT	FUNCTION
1	Z101 12BK/OR	GROUND
2	B1 18YL/DB	RIGHT REAR WHEEL SPEED SENSOR SIGNAL
3	B2 18YL	RIGHT REAR WHEEL SPEED SENSOR 12 VOLT SUPPLY
4	-	-
5	D25 18VT/YL	PCI BUS
6	B6 18WT/DB	RIGHT FRONT WHEEL SPEED SENSOR SIGNAL
7	B7 18WT	RIGHT FRONT WHEEL SPEED SENSOR 12 VOLT SUPPLY
8	-	-
9	A20 12RD/DB	FUSED B(+)
10	F20 18DB/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
11	D52 18LG/WT (DIESEL)	CAN C BUS(+)
12	-	-
13	B22 18DG/YL	VEHICLE SPEED SIGNAL
14	D51 18DG/YL (DIESEL)	CAN C BUS(-)
15	-	-
16	Z102 12BK/OR	GROUND
17	G9 18GY/BK	BRAKE FLUID LEVEL SWITCH SENSE
18	L50 18WT/TN	PRIMARY BRAKE SWITCH SIGNAL
19	B3 18LG/DB	LEFT REAR WHEEL SPEED SENSOR SIGNAL
20	B4 18LG	LEFT REAR WHEEL SPEED SENSOR 12 VOLT SUPPLY
21	Z231 18BK	GROUND
22	B8 18RD/DB	LEFT FRONT WHEEL SPEED SENSOR SIGNAL
23	B9 18RD	LEFT FRONT WHEEL SPEED SENSOR 12 VOLT SUPPLY
24	A10 12RD/DG	FUSED B(+)



CRANKSHAFT POSITION SENSOR (GAS)

CRANKSHAFT POSITION SENSOR (GAS) - BLACK 3 WAY

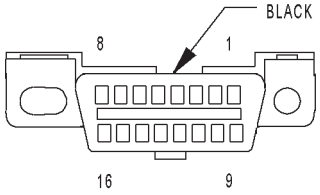
CAV	CIRCUIT	FUNCTION
1	K24 18GY/BK	CRANKSHAFT POSITION SENSOR SIGNAL
2	K4 18BK/LB	SENSOR GROUND
3	K7 18OR	5 VOLT SUPPLY



DATA LINK
CONNECTOR

DATA LINK CONNECTOR - BLACK 16 WAY

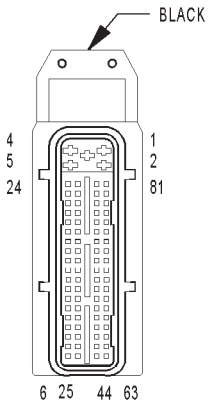
CAV	CIRCUIT	FUNCTION
1	-	-
2	D25 20YL/VT	PCI BUS
3	-	-
4	Z305 20BK/OR	GROUND
5	Z306 20BK/LG	GROUND
6	D32 20LG/DG	SCI RECEIVE
7	D21 20PK	SCI TRANSMIT
8	-	-
9	D19 20VT/OR	BODY CONTROL MODULE FLASH ENABLE
10	-	-
11	-	-
12	-	-
13	-	-
14	D20 20LG	SCI RECEIVE
15	-	-
16	F33 20PK/RD	FUSED B(+)



DIAGNOSTIC
JUNCTION PORT

DIAGNOSTIC JUNCTION PORT - BLACK 16 WAY

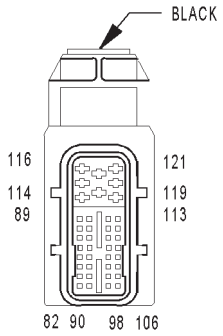
CAV	CIRCUIT	FUNCTION
1	D25 20YL/VT/BR	PCI BUS (PCM/ECM TCM PDM CD SKIM)
2	D25 20YL/VT/DG (AZC)	PCI BUS (AZC)
3	D25 20YL/VT/DB	PCI BUS (RADIO)
4	D25 20YL/VT/OR	PCI BUS (ACM)
5	D25 20YL/VT/RD	PCI BUS (MIC)
6	D25 20YL/VT/WT	PCI BUS (BCM)
7	D25 20YL/VT	PCI BUS (DLC)
8	D25 20YL/VT/GY	PCI BUS (DDM ABS MEM EVIC APM ITM RAIN SENSOR)
9	-	-
10	-	-
11	D25 20YL/VT (DIESEL)	PCI BUS (SHIFTER ASSEMBLY)
12	-	-
13	-	-
14	-	-
15	-	-
16	-	-



ENGINE CONTROL MODULE C1 (DIESEL)

ENGINE CONTROL MODULE C1 (DIESEL) - BLACK 81 WAY

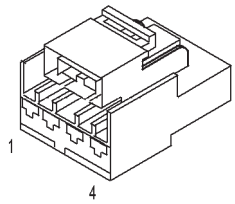
CAV	CIRCUIT	FUNCTION
1	Z108 14BK/DG	GROUND
2	Z108 14BK/DG	GROUND
3	K20 14DB	GENERATOR FIELD CONTROL
4	F142 14RD/DG	FUSED AUTO SHUT DOWN RELAY OUTPUT
5	F142 14RD/DG	FUSED AUTO SHUT DOWN RELAY OUTPUT
6	D52 18DG/WT	CAN C BUS(+)
7	D25 20VT/YL	PCI BUS
8	K944 20BR/DG	CAMSHAFT POSITION SENSOR GROUND
9	K44 20YL/GY	CAMSHAFT POSITION SENSOR SIGNAL
10	-	-
11	Y53 20BK/YL	BOOST PRESSURE SENSOR SIGNAL
12	K155 20YL/WT	MASS AIR FLOW SENSOR SIGNAL
13	Y40 20DG/VT	FUEL PRESSURE SENSOR SIGNAL
14	K22 20RD/DB	ACCELERATOR PEDAL POSITION SENSOR 2 SIGNAL
15	K81 20DB/DG	ACCELERATOR PEDAL POSITION SENSOR 1 SIGNAL
16	Y100 20BR/GY	FUEL PRESSURE SENSOR GROUND
17	-	-
18	-	-
19	F300 20RD/BK	BATTERY SENSE (+)
20	Z11 20BK/WT	BATTERY SENSE (-)
21	K4 18BK/LB	SENSOR GROUND
22	F991 20RD/DB	FUSED IGNITION SWITCH OUTPUT (RUN-START)
23	K6 18VT/WT	SENSOR REFERENCE VOLTAGE B
24	K3 20BK	CRANKSHAFT POSITION SENSOR SIGNAL 1
25	D51 18WT	CAN C BUS(-)
26	-	-
27	-	-
28	-	-
29	K77 20BR/WT	TRANSFER CASE POSITION SENSOR SIGNAL
30	G60 20BR/DB	ENGINE OIL PRESSURE SENSOR SIGNAL
31	-	-
32	K25 20VT/DG	BATTERY TEMPERATURE SENSOR SIGNAL
33	-	-
34	K255 20WT/DG	ACCELERATOR PEDAL POSITION SENSOR 1 GROUND
35	Y43 20WT/VT	ACCELERATOR PEDAL POSITION SENSOR 1 5-VOLT SUPPLY
36	C18 20DB	A/C PRESSURE SENSOR SIGNAL
37	-	-
38	V37 20RD/DG	SPEED CONTROL SWITCH SIGNAL
39	K226 20DB/WT	FUEL LEVEL SENSOR SIGNAL
40	K2 20DG/RD	ENGINE COOLANT TEMPERATURE SENSOR SIGNAL
41	K21 20DG/WT	INTAKE AIR TEMPERATURE SENSOR SIGNAL
42	Y101 20	CRANKSHAFT POSITION SENSOR SHIELD
43	K924 20YL	CRANKSHAFT POSITION SENSOR SIGNAL 2
44	-	-
45	-	-
46	-	-
47	L50 20WT/DB	PRIMARY BRAKE SWITCH SIGNAL
48	K29 20WT/PK	SECONDARY BRAKE SWITCH SIGNAL
49	-	-
50	F855 18BR/YL	SENSOR REFERENCE VOLTAGE A
51	-	-
52	-	-
53	-	-
54	Z189 20BR	MASS AIR FLOW SENSOR GROUND
55	B22 20DG/YL	VEHICLE SPEED SENSOR SIGNAL
56	K225 18BK	ACCELERATOR PEDAL POSITION SENSOR 2 GROUND
57	-	-
58	K4 20BK/LB	WATER IN FUEL SENSOR GROUND
59	K900 18GY	INTAKE PORT SWIRL ACTUATOR SIGNAL
60	K7 20RD/WT	FUEL PRESSURE SENSOR 5 VOLT SUPPLY
61	K51 20DB/YL	AUTO SHUT DOWN RELAY CONTROL
62	-	-
63	-	-
64	-	-
65	-	-
66	-	-
67	K173 20GY	HYDRAULIC RADIATOR FAN SOLENOID CONTROL
68	-	-
69	C13 20DB/RD	A/C COMPRESSOR CLUTCH RELAY CONTROL
70	-	-
71	-	-
72	K236 20GY/PK	GLOW PLUG RELAY NO. 2 CONTROL
73	-	-
74	T752 20DG/RD	ENGINE STARTER MOTOR RELAY CONTROL
75	K132 20BR/BK	VISCOUS/CABIN HEATER RELAY CONTROL
76	Y42 20BR/BK	WASTEGATE SOLENOID CONTROL
77	K152 20WT	GLOW PLUG RELAY NO. 1 CONTROL
78	-	-
79	-	-
80	K46 20DB/BK	FUEL PRESSURE SOLENOID CONTROL
81	K46 20DB/BK	FUEL PRESSURE SOLENOID CONTROL



ENGINE CONTROL MODULE C2 (DIESEL)

ENGINE CONTROL MODULE C2 (DIESEL) - BLACK 40 WAY

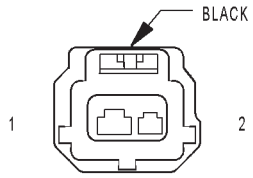
CAV	CIRCUIT	FUNCTION
82	D21 20PK	SCI TRANSMIT
83	-	-
84	-	-
85	-	-
86	-	-
87	-	-
88	-	-
89	K35 20GY/YL	EGR SOLENOID CONTROL
90	-	-
91	-	-
92	-	-
93	-	-
94	G123 20DG/WT	WATER IN FUEL SIGNAL
95	-	-
96	-	-
97	-	-
98	-	-
99	-	-
100	-	-
101	-	-
102	-	-
103	-	-
104	-	-
105	-	-
106	-	-
107	-	-
108	-	-
109	-	-
110	-	-
111	-	-
112	T41 20BK/WT	PARK/NEUTRAL POSITION SWITCH SENSE
113	-	-
114	-	-
115	K14 14BK/YL	FUEL INJECTOR NO. 4 CONTROL
116	K63 14BK	COMMON INJECTOR DRIVER
117	-	-
118	K11 14BK/DB	FUEL INJECTOR NO. 1 CONTROL
119	K38 14BK/DG	FUEL INJECTOR NO. 5 CONTROL
120	K12 14BK/VT	FUEL INJECTOR NO. 2 CONTROL
121	K13 14BK/RD	FUEL INJECTOR NO. 3 CONTROL



GOVERNOR PRESSURE SENOR

GOVERNOR PRESSURE SENSOR

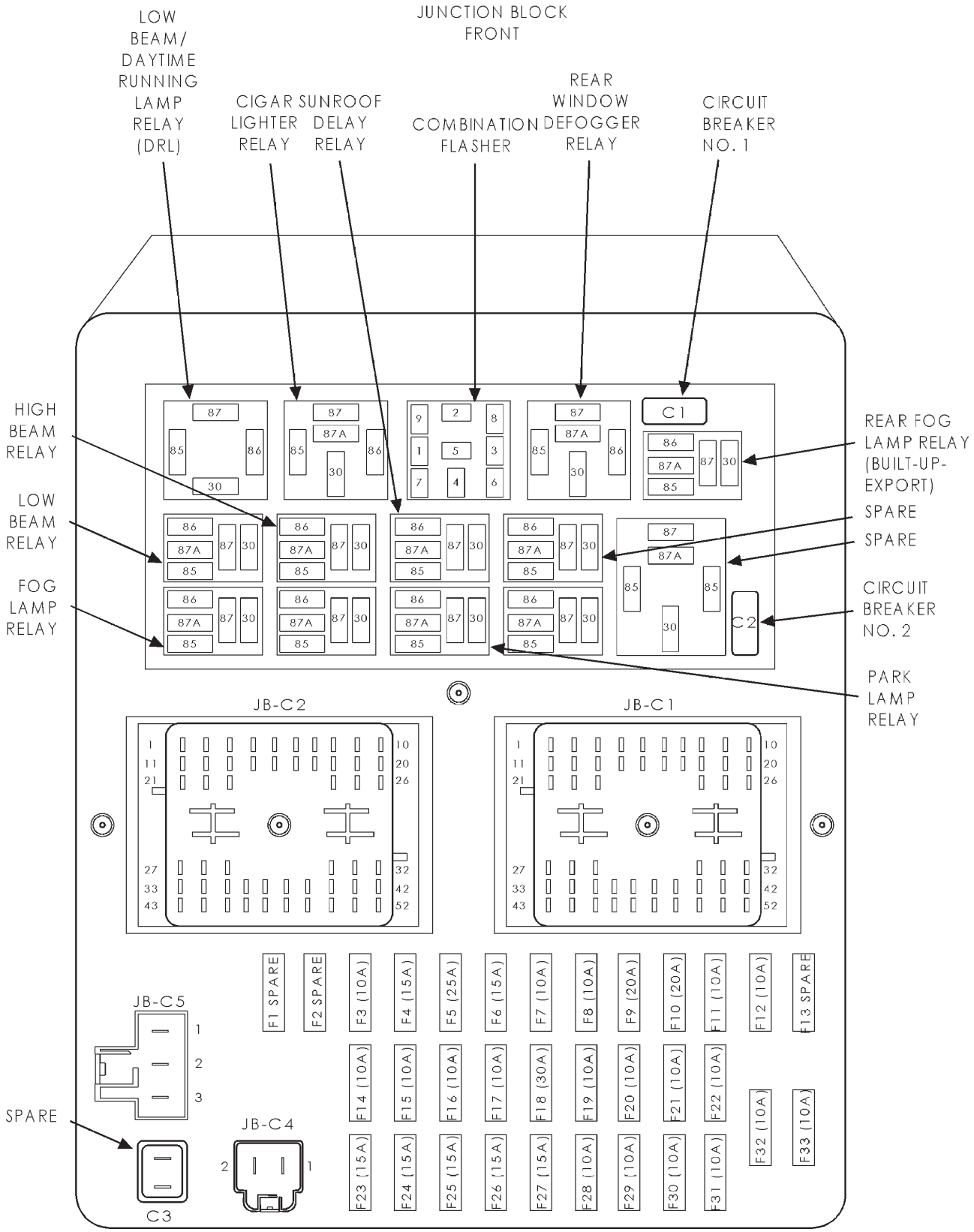
CAV	CIRCUIT	FUNCTION
1	RD	5 VOLT SUPPLY
2	WT	GOVERNOR PRESSURE SENSOR SIGNAL
3	DG	SENSOR GROUND
4	BK	TRANSMISSION FLUID TEMPERATURE SIGNAL



INPUT
SPEED
SENSOR
(4.7L)

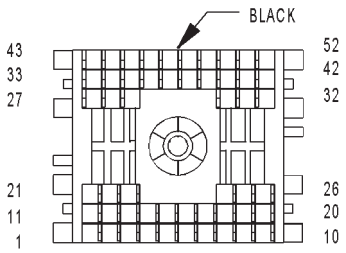
INPUT SPEED SENSOR (4.7L) - BLACK 2 WAY

CAV	CIRCUIT	FUNCTION
1	T52 18RD/BK	INPUT SPEED SENSOR SIGNAL
2	T13 18DB/BK	SPEED SENSOR GROUND


JUNCTION BLOCK
FRONT
LOW BEAM/ DAYTIME RUNNING LAMP RELAY (DRL)
CIGAR LIGHTER RELAY
SUNROOF DELAY RELAY
COMBINATION FLASHER
REAR WINDOW DEFOGGER RELAY
CIRCUIT BREAKER NO. 1
HIGH BEAM RELAY
LOW BEAM RELAY
FOG LAMP RELAY
REAR FOG LAMP RELAY (BUILT-UP-EXPORT)
SPARE
SPARE
CIRCUIT BREAKER NO. 2
PARK LAMP RELAY
JB-C2
JB-C1
JB-C5
JB-C4
C1
C2
C3
SPARE
F1 SPARE
F2 SPARE
F3 (10A)
F4 (15A)
F5 (25A)
F6 (15A)
F7 (10A)
F8 (10A)
F9 (20A)
F10 (20A)
F11 (10A)
F12 (10A)
F13 SPARE
F14 (10A)
F15 (10A)
F16 (10A)
F17 (10A)
F18 (30A)
F19 (10A)
F20 (10A)
F21 (10A)
F22 (10A)
F23 (15A)
F24 (15A)
F25 (15A)
F26 (15A)
F27 (15A)
F28 (10A)
F29 (10A)
F30 (10A)
F31 (10A)
F32 (10A)
F33 (10A)

FUSES (JB)

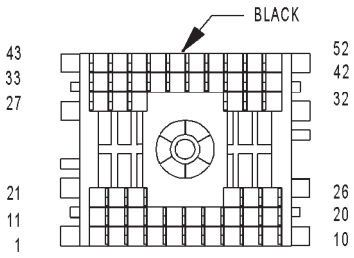
FUSE NO.	AMPS	FUSED CIRCUIT	FUNCTION
1	-	-	-
2	-	-	-
3	10A	L33 18RD	FUSED HIGH BEAM RELAY OUTPUT
4	15A	INTERNAL	FUSED B(+)
5	25A	INTERNAL	FUSED B(+)
6	15A	INTERNAL	FUSED B(+)
7	10A	INTERNAL	FUSED B(+)
8	15A	INTERNAL	FUSED B(+)
9	20A	INTERNAL	FUSED B(+)
10	20A	F72 16RD/YL (EXCEPT BUILT-UP-EXPORT)	FUSED B(+)
11	10A	C15 20BK/WT	FUSED REAR WINDOW DEFOGGER RELAY OUTPUT
12	10A	F991 20OR/DB	FUSED IGNITION SWITCH OUTPUT (RUN-START)
13	-	-	-
14	10A	L43 18VT	FUSED LOW BEAM RELAY OUTPUT
15	10A	L44 18VT/RD	FUSED LOW BEAM RELAY OUTPUT
16	10A	L34 18RD/OR	FUSED HIGH BEAM RELAY OUTPUT
17	10A	INTERNAL	FUSED B(+)
18	30A	F9 20RD/BK	FUSED B(+)
19	10A	F20 18DB/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
20	10A	INTERNAL	FUSED IGNITION SWITCH OUTPUT (RUN)
21	10A	INTERNAL	FUSED IGNITION SWITCH OUTPUT (RUN-START)
22	10A	INTERNAL	FUSED IGNITION SWITCH OUTPUT (RUN-START)
23	15A	F32 20PK/DB	FUSED B(+)
24	15A	INTERNAL	FUSED B(+)
25	15A	INTERNAL	FUSED B(+)
26	15A	F30 18RD	FUSED CIGAR LIGHTER RELAY OUTPUT
27	15A	INTERNAL (BUILT-UP-EXPORT)	FUSED B(+)
28	10A	INTERNAL	FUSED IGNITION SWITCH OUTPUT (RUN-ACC)
29	10A	INTERNAL	FUSED IGNITION SWITCH OUTPUT (RUN-ACC)
30	10A	X12 18RD/WT (RHD)	FUSED IGNITION SWITCH OUTPUT (RUN-ACC)
30	10A	X12 16WT/RD (LHD)	FUSED IGNITION SWITCH OUTPUT (RUN-ACC)
31	10A	F45 20YL/RD	FUSED IGNITION SWITCH OUTPUT (START)
32	10A	F14 18LG/YL	FUSED IGNITION SWITCH OUTPUT (RUN-START)
33	10A	F23 18DB/YL	FUSED IGNITION SWITCH OUTPUT (RUN)



JUNCTION
BLOCK C2
(LHD)

JUNCTION BLOCK C2 (LHD) - BLACK 52 WAY

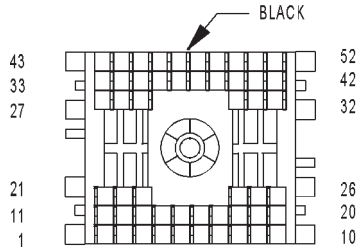
CAV	CIRCUIT	FUNCTION
1	X3 22GY/OR	HORN RELAY CONTROL
2	-	-
3	L39 20LB	FOG LAMP RELAY OUTPUT
4	-	-
5	L61 20TN/LG	LEFT TURN SIGNAL
6	-	-
7	-	-
8	V6 16DB	FUSED IGNITION SWITCH OUTPUT (RUN-ACC)
9	V6 16DB (GAS)	FUSED IGNITION SWITCH OUTPUT (RUN-ACC)
10	L62 18BR/RD	RIGHT TURN SIGNAL
11	F991 20OR/DB	FUSED IGNITION SWITCH OUTPUT (RUN-START)
12	L39 20LB	FOG LAMP RELAY OUTPUT
13	-	-
14	-	-
15	V16 22VT	WIPER HIGH/LOW RELAY CONTROL
16	-	-
17	-	-
18	-	-
19	-	-
20	L7 20BK/YL	PARK LAMP RELAY OUTPUT
21	L7 20BK/YL	PARK LAMP RELAY OUTPUT
22	-	-
23	-	-
24	F37 16RD/LB (EXCEPT BASE)	FUSED B(+)
25	F22 20WT/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
26	L60 20TN	RIGHT TURN SIGNAL
27	F45 20YL/RD	FUSED IGNITION SWITCH OUTPUT (START)
28	V55 16TN/RD	WIPER PARK SWITCH SENSE
29	-	-
30	-	-
31	F72 16RD/YL	FUSED B(+)
32	M1 20PK/RD	FUSED B(+)
33	V55 16TN/RD (GAS)	WIPER PARK SWITCH SENSE
34	-	-
35	-	-
36	A146 12OR/WT	FUSED B(+)
37	-	-
38	L34 18RD/OR	FUSED RIGHT HIGH BEAM OUTPUT
39	L43 18VT	FUSED LEFT LOW BEAM OUTPUT
40	-	-
41	-	-
42	F20 18DB/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
43	F12 20DB/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)
44	-	-
45	A146 12OR/WT	FUSED B(+)
46	-	-
47	F32 20PK/DB	FUSED B(+)
48	-	-
49	L44 18VT/RD	FUSED RIGHT LOW BEAM OUTPUT
50	L33 18RD	FUSED LEFT HIGH BEAM OUTPUT
51	-	-
52	F60 14RD/WT (EXCEPT BASE)	FUSED B(+)



JUNCTION BLOCK C2 (RHD)

JUNCTION BLOCK C2 (RHD) - BLACK 52 WAY

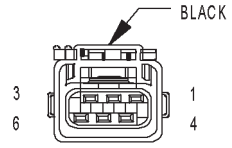
CAV	CIRCUIT	FUNCTION
1	X3 22BK/RD	HORN RELAY CONTROL
2	-	-
3	L39 20LB	FOG LAMP RELAY OUTPUT
4	-	-
5	L61 20TN/LG	LEFT TURN SIGNAL
6	-	-
7	-	-
8	V6 16DB	FUSED IGNITION SWITCH OUTPUT (RUN-ACC)
9	V6 16DB (GAS)	FUSED IGNITION SWITCH OUTPUT (RUN-ACC)
10	L62 20BR/RD	RIGHT TURN SIGNAL
11	F991 20OR/DB (GAS)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
12	L39 20LB	FOG LAMP RELAY OUTPUT
13	-	-
14	-	-
15	V16 22VT	-
16	-	-
17	-	-
18	-	-
19	-	-
20	L7 20BK/YL	PARK LAMP RELAY OUTPUT
21	L7 18BK/YL	PARK LAMP RELAY OUTPUT
22	-	-
23	-	-
24	F37 16RD/LB	FUSED B(+)
25	F22 18WT/TN	FUSED IGNITION SWITCH OUTPUT (RUN)
26	L60 20TN	RIGHT TURN SIGNAL
27	F45 20YL/RD	FUSED IGNITION SWITCH OUTPUT (START)
28	V55 16TN/RD	WIPER PARK SWITCH SENSE
29	-	-
30	-	-
31	-	-
32	M1 20PK/RD	FUSED B(+)
33	V55 16TN/RD (GAS)	WIPER PARK SWITCH SENSE
34	-	-
35	-	-
36	A146 12OR/WT	FUSED B(+)
37	-	-
38	L34 18RD/OR	FUSED RIGHT HIGH BEAM OUTPUT
39	L43 18VT	FUSED LEFT LOW BEAM OUTPUT
40	-	-
41	-	-
42	F20 18DB/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
43	F12 20DB/WT (GAS)	FUSED IGNITION SWITCH OUTPUT (RUN-START)
44	-	-
45	A146 12OR/WT	FUSED B(+)
46	-	-
47	F32 20PK/DB	FUSED B(+)
48	-	-
49	L44 18VT/RD	FUSED RIGHT LOW BEAM OUTPUT
50	L33 18RD	FUSED LEFT HIGH BEAM OUTPUT
51	-	-
52	F60 16RD/WT	FUSED B(+)



JUNCTION
BLOCK C3

JUNCTION BLOCK C3 - BLACK 52 WAY

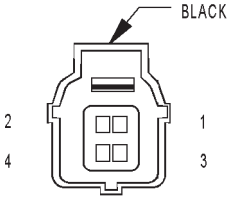
CAV	CIRCUIT	FUNCTION
1	F22 20WT/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
2	-	-
3	L60 20TN	RIGHT TURN SIGNAL
4	L302 20LB/YL	RIGHT TURN SWITCH SENSE
5	L61 20TN/LG	LEFT TURN SIGNAL
6	L91 20DB/PK	HAZARD SWITCH SENSE
7	-	-
8	L305 20LB/WT	LEFT TURN SWITCH SENSE
9	-	-
10	L309 20PK/LG	HIGH BEAM RELAY CONTROL
11	F23 18DB/YL	FUSED IGNITION SWITCH OUTPUT (RUN)
12	F22 20WT/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
13	-	-
14	F85 16VT/WT	FUSED B(+)
15	C79 20BK/WT	FUSED REAR WINDOW DEFOGGER RELAY OUTPUT
16	-	-
17	-	-
18	-	-
19	-	-
20	-	-
21	-	-
22	-	-
23	-	-
24	A31 12RD/BK	IGNITION SWITCH OUTPUT (RUN-ACC)
25	F60 16RD/WT	FUSED B(+)
26	-	-
27	A41 12YL	IGNITION SWITCH OUTPUT (START)
28	F14 20LG/YL	FUSED IGNITION SWITCH OUTPUT (RUN-START)
29	A22 12BK/OR	IGNITION SWITCH OUTPUT (RUN)
30	F991 18OR/DB	FUSED IGNITION SWITCH OUTPUT (RUN-START)
31	Z234 20BK	GROUND
32	F33 20PK/RD	FUSED B(+)
33	X12 16WT/RD	FUSED IGNITION SWITCH OUTPUT (RUN-ACC)
34	M1 20PK	FUSED B(+)
35	M1 20PK (AZC)	FUSED B(+)
36	A21 12DB	IGNITION SWITCH OUTPUT (RUN-START)
37	-	-
38	F70 20PK/BK	FUSED B(+)
39	X3 20GY/OR	HORN RELAY CONTROL
40	F30 16RD	FUSED CIGAR LIGHTER RELAY OUTPUT
41	F33 20PK/RD	FUSED B(+)
42	-	-
43	V23 20BR/PK	FUSED IGNITION SWITCH OUTPUT (RUN-ACC)
44	M1 20PK	FUSED B(+)
45	Z132 20BK/OR	GROUND
46	-	-
47	-	-
48	F70 20PK/BK	FUSED B(+)
49	-	-
50	G5 20DB/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)
51	G5 20DB/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)
52	F12 20DB/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)



LEFT REAR
LAMP ASSEMBLY

LEFT REAR LAMP ASSEMBLY - BLACK 6 WAY

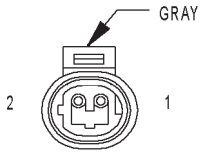
CAV	CIRCUIT	FUNCTION
1	L1 18VT/BK	BACK-UP LAMP FEED
2	L95 18DG/YL (BUILT-UP-EXPORT)	REAR FOG LAMP RELAY OUTPUT
3	L7 18BK/YL	PARK LAMP RELAY OUTPUT
4	L63 18DG/RD	LEFT TURN SIGNAL
5	Z150 18BK	GROUND
6	L50 18WT/TN	PRIMARY BRAKE SWITCH SIGNAL



LINE
PRESSURE
SENSOR
(4.7L)

LINE PRESSURE SENSOR (4.7L) - BLACK 4 WAY

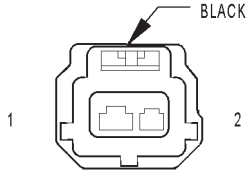
CAV	CIRCUIT	FUNCTION
1	Z114 14BK/LB	GROUND
2	T138 14GY/LB	5 VOLT SUPPLY
3	T130 14VT/TN	LINE PRESSURE SENSOR SIGNAL
4	-	-



OUTPUT
SPEED
SENSOR
(4.0L)

OUTPUT SPEED SENSOR (4.0L) - GRAY 2 WAY

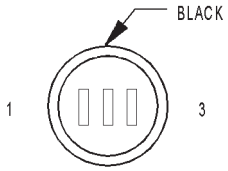
CAV	CIRCUIT	FUNCTION
1	T13 18DB/BK	SPEED SENSOR GROUND
2	T14 18LG/WT	OUTPUT SPEED SENSOR SIGNAL



OUTPUT
SPEED
SENSOR
(4.7L)

OUTPUT SPEED SENSOR (4.7L) - BLACK 2 WAY

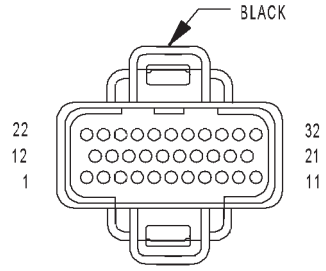
CAV	CIRCUIT	FUNCTION
1	T14 18LG/WT	OUTPUT SPEED SENSOR SIGNAL
2	T13 18DB/BK	SPEED SENSOR GROUND



PARK/NEUTRAL POSITION SWITCH (4.0L)

PARK/NEUTRAL POSITION SWITCH (4.0L) - BLACK 3 WAY

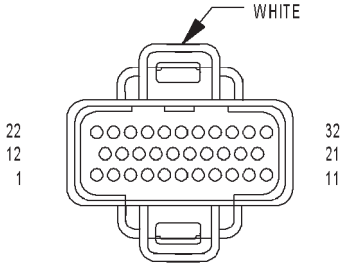
CAV	CIRCUIT	FUNCTION
1	L1 18VT/BK	BACK-UP LAMP FEED
2	T41 18BK/WT	PARK/NEUTRAL POSITION SWITCH SENSE
3	F22 18WT/PK	FUSED IGNITION SWITCH OUTPUT (RUN)



POWERTRAIN CONTROL MODULE C1 (GAS)

POWERTRAIN CONTROL MODULE C1 (GAS) - BLACK 32 WAY

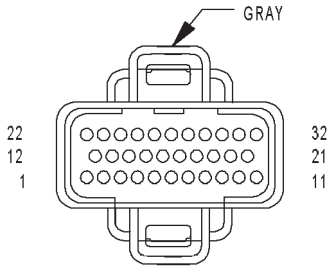
CAV	CIRCUIT	FUNCTION
1	K93 14TN/OR	COIL DRIVER NO. 3
2	F991 18OR/DB	FUSED IGNITION SWITCH OUTPUT (RUN-START)
3	K94 14TN/LG (4.7L)	COIL DRIVER NO. 4
4	K4 18BK/LB	SENSOR GROUND
5	K96 14TN/LB (4.7L)	COIL DRIVER NO. 6
6	T41 18BK/WT	PARK/NEUTRAL POSITION SWITCH SENSE
7	K91 14TN/RD	COIL DRIVER NO. 1
8	K24 18GY/BK	CRANKSHAFT POSITION SENSOR SIGNAL
9	K98 14LB/RD (4.7L)	COIL DRIVER NO. 8
10	K60 18YL/BK	IDLE AIR CONTROL NO. 2 DRIVER
11	K40 18BR/WT	IDLE AIR CONTROL NO. 3 DRIVER
12	-	-
13	-	-
14	K77 18LG/BK	TRANSFER CASE POSITION SENSOR INPUT
15	K21 18BK/RD	INTAKE AIR TEMPERATURE SENSOR SIGNAL
16	K2 18TN/BK	ENGINE COOLANT TEMPERATURE SENSOR SIGNAL
17	K7 18OR	5 VOLT SUPPLY
18	K44 18TN/YL	CAMSHAFT POSITION SENSOR SIGNAL
19	K39 18GY/BK	IDLE AIR CONTROL NO. 1 DRIVER
20	K59 18VT/BK	IDLE AIR CONTROL NO. 4 DRIVER
21	K95 14TN/DG (4.7L)	COIL DRIVER NO. 5
22	A7 14RD/BK	FUSED B(+)
23	K22 18OR/RD	THROTTLE POSITION SENSOR SIGNAL
24	K41 18BK/DG	OXYGEN SENSOR 1/1 SIGNAL
25	K141 18TN/WT	OXYGEN SENSOR 1/2 SIGNAL
26	K241 18LG/RD (EXCEPT 4.0L BUILT-UP-EXPORT)	OXYGEN SENSOR 2/1 SIGNAL
27	K1 18DG/RD	MAP SENSOR SIGNAL
28	-	-
29	K341 18TN/WT (4.0L EXCEPT BUILT-UP-EXPORT)	COIL DRIVER NO. 1
29	K341 18PK/WT (4.7L)	OXYGEN SENSOR 2/2 SIGNAL
30	-	-
31	Z82 14BK/WT	GROUND
32	Z81 14BK/TN	GROUND



POWERTRAIN CONTROL MODULE C2 (GAS)

POWERTRAIN CONTROL MODULE C2 (GAS) - WHITE 32 WAY

CAV	CIRCUIT	FUNCTION
1	T54 18VT (4.0L)	TRANSMISSION TEMPERATURE SENSOR SIGNAL
2	K26 18VT (4.7L)	FUEL INJECTOR NO. 7 DRIVER
3	-	-
4	K11 18WT/DB	FUEL INJECTOR NO. 1 DRIVER
5	K13 18YL/WT	FUEL INJECTOR NO. 3 DRIVER
6	K38 18GY	FUEL INJECTOR NO. 5 DRIVER
7	K97 14BR (4.7L)	COIL DRIVER NO. 7
8	K88 18PK (4.0L)	GOVERNOR PRESSURE SOLENOID CONTROL
9	K92 14TN/PK	COIL DRIVER NO. 2
10	K20 18DG	GENERATOR FIELD DRIVER
11	T20 18LB (4.0L)	TORQUE CONVERTER CLUTCH SOLENOID CONTROL
12	K58 18BR/DB	FUEL INJECTOR NO. 6 DRIVER
13	K28 18GY/LB (4.7L)	FUEL INJECTOR NO. 8 DRIVER
14	-	-
15	K12 18TN	FUEL INJECTOR NO. 2 DRIVER
16	K14 18LB/BR	FUEL INJECTOR NO. 4 DRIVER
17	K173 18LG	RADIATOR FAN RELAY CONTROL
18	-	-
19	C18 18DB	A/C PRESSURE SIGNAL
20	-	-
21	T60 18BR (4.0L)	3-4 SHIFT SOLENOID CONTROL
22	-	-
23	G60 18GY/YL	ENGINE OIL PRESSURE SENSOR SIGNAL
24	-	-
25	T13 18DB/BK (4.0L)	OUTPUT SPEED SENSOR GROUND
26	-	-
27	B22 18DG/YL	VEHICLE SPEED SENSOR SIGNAL
28	T14 18LG/WT (4.0L)	OUTPUT SPEED SENSOR SIGNAL
29	T25 18LG/RD (4.0L)	GOVERNOR PRESSURE SENSOR SIGNAL
30	K30 18PK/YL (4.0L)	TRANSMISSION CONTROL RELAY CONTROL
31	K6 18VT/BK	5 VOLT SUPPLY
32	-	-

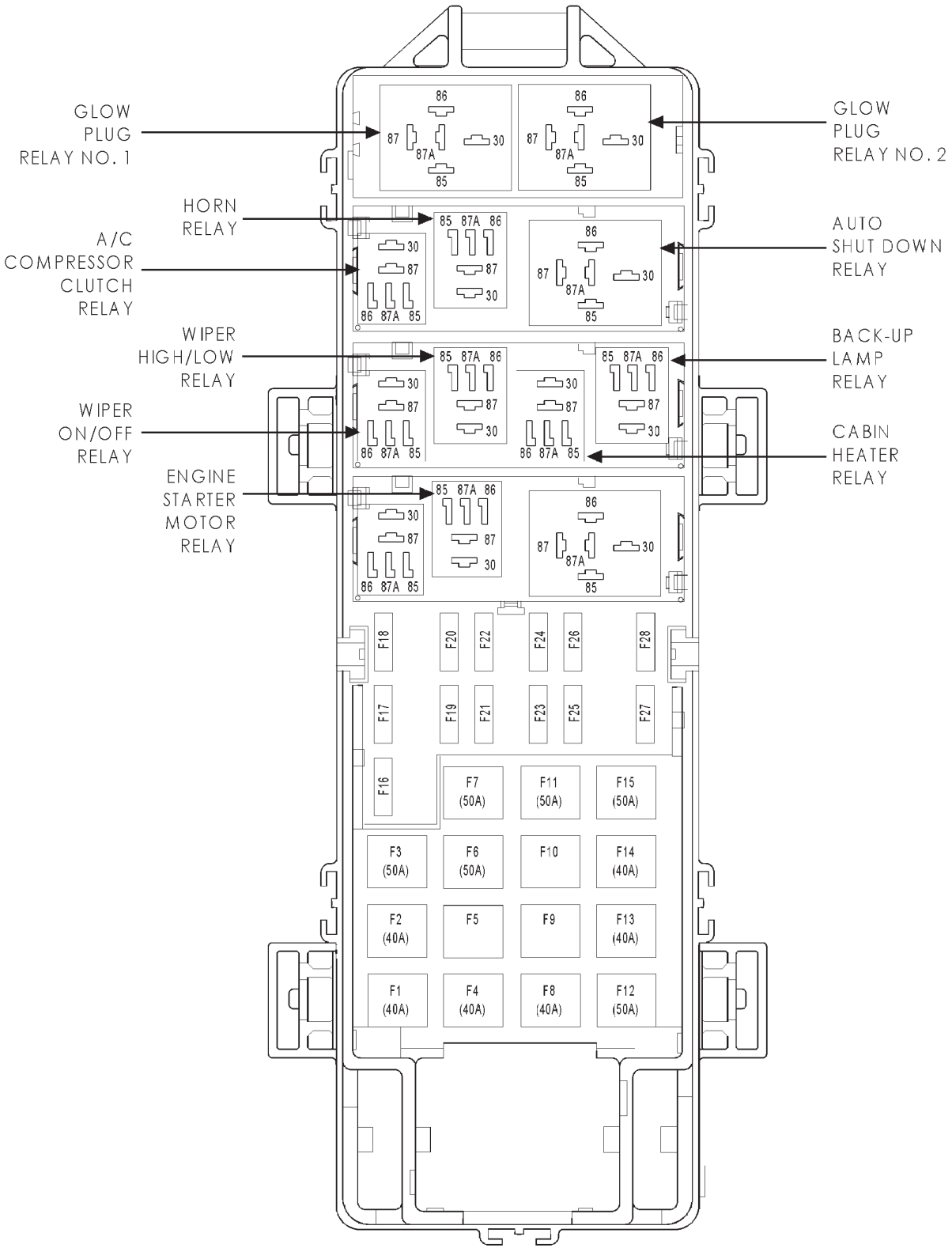


POWERTRAIN CONTROL MODULE C3 (GAS)

POWERTRAIN CONTROL MODULE C3 (GAS) - GRAY 32 WAY

CAV	CIRCUIT	FUNCTION
1	C13 18DB/OR	A/C COMPRESSOR CLUTCH RELAY CONTROL
2	-	-
3	K51 18DB/YL	AUTOMATIC SHUT DOWN RELAY CONTROL
4	V36 18TN/RD	SPEED CONTROL VACUUM SOLENOID CONTROL
5	V35 18LG/RD	SPEED CONTROL VENT SOLENOID CONTROL
6	-	-
7	K42 18DB/LG (4.7L HIGH OUTPUT)	KNOCK SENSOR SIGNAL
8	K99 18BR/OR	OXYGEN SENSOR 1/1 HEATER CONTROL
9	K512 18RD/YL (4.7L)	OXYGEN SENSOR DOWNSTREAM RELAY CONTROL
10	K106 18WT/DG (EXCEPT BUILT-UP-EXPORT)	LEAK DETECTION PUMP SOLENOID CONTROL
11	V32 18OR/DG	SPEED CONTROL SUPPLY
12	F42 18DG/LG	FUSED AUTO SHUT DOWN RELAY OUTPUT
13	T10 18YL/DG (4.7L RHD)	OVERDRIVE OFF SWITCH SENSE
13	T6 18OR/WT (4.0L LHD)	OVERDRIVE OFF SWITCH SENSE
13	T10 18DG/LG (4.7L LHD)	OVERDRIVE OFF SWITCH SENSE
13	T6 18OR/BK (4.0L RHD)	OVERDRIVE OFF SWITCH SENSE
14	K107 18OR/PK (EXCEPT BUILT-UP-EXPORT)	LEAK DETECTION PUMP SWITCH SENSE
15	K25 18VT/LG	BATTERY TEMPERATURE SENSOR SIGNAL
16	K299 18BR/WT	OXYGEN SENSOR 2/1 HEATER CONTROL
17	-	-
18	K142 18GY/BK (4.7L HIGH OUTPUT)	KNOCK SENSOR NO. 2 SIGNAL
19	K31 18BR	FUEL PUMP RELAY CONTROL
20	K52 18PK/BK	DUTY CYCLE EVAP/PURGE SOLENOID CONTROL
21	-	-
22	-	-
23	-	-
24	K29 18WT/PK	SECONDARY BRAKE SWITCH SIGNAL
25	K125 18WT/DB	GENERATOR SOURCE
26	K226 18LB/YL	FUEL LEVEL SENSOR SIGNAL
27	D21 18PK	SCI TRANSMIT
28	-	-
29	D32 18LG (LHD)	SCI RECEIVE
29	D32 18LG/DG (RHD)	SCI RECEIVE
30	D25 18VT/YL	PCI BUS
31	-	-
32	V37 18RD/LG	SPEED CONTROL SWITCH SIGNAL

POWER DISTRIBUTION CENTER (DIESEL)



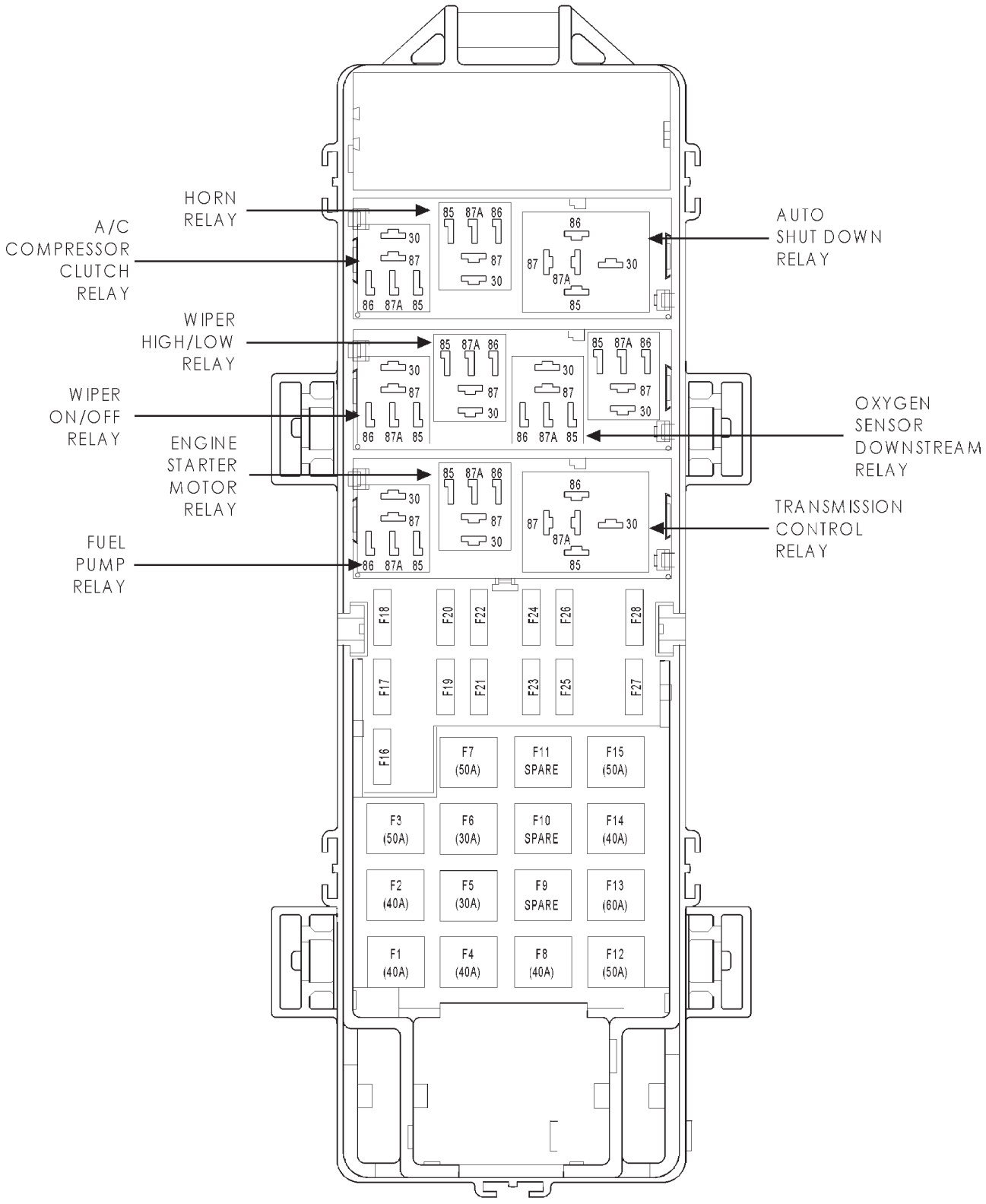
FUSES (DIESEL)

FUSE NO.	AMPS	FUSED CIRCUIT	FUNCTION
1	40A	C1 12DG	FUSED B(+)
2	40A	A149 12RD/TN	FUSED B(+)
3	50A	A145 10WT/RD	FUSED B(+)
4	40A	A10 12RD/DG	FUSED B(+)
5	-	-	-
6	50A	A105 10DB/RD	FUSED B(+)
7	50A	A147 10RD/GY	FUSED B(+)
8	40A	A1 12RD	FUSED B(+)
9	-	-	-
10	-	-	-
11	50A	A110 10VT/RD	FUSED B(+)
12	50A	A146 10OR/WT	FUSED B(+)
13	40A	A14 14RD/WT	FUSED B(+)
14	40A	A2 12PK/BK	FUSED B(+)
15	50A	A148 10PK/WT	FUSED B(+)
16	20A	F15 18DB/WT	FUSED AUTO SHUT DOWN RELAY OUTPUT
16	20A	F15 18 DB/WT	FUSED AUTO SHUT DOWN RELAY OUTPUT
17	-	-	-
18	15A	F62 18RD	FUSED B(+)
18	15A	F62 18RD	FUSED B(+)
19	-	-	-
20	-	-	-
21	15A	A17 14RD/BK	FUSED B(+)
22	10A	F300 18RD/BK	FUSED B(+)
23	15A	A80 18RD/LG	FUSED B(+)
24	-	-	-
25	20A	A20 12RD/DB	FUSED B(+)
26	20A	F142 14OR/DG	FUSED AUTO SHUT DOWN RELAY OUTPUT
27	20A	A148 16LG/RD	FUSED B(+)
28	-	-	-

BACK-UP LAMP RELAY (DIESEL)

CAV	CIRCUIT	FUNCTION
30	F22 18WT/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
85	F22 18WT/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
85	F22 18WT/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
86	T2 18TN/BK	BACK-UP LAMP RELAY CONTROL
87	L1 18VT/BK	BACK-UP LAMP FEED
87A	-	-

POWER DISTRIBUTION CENTER (GAS)

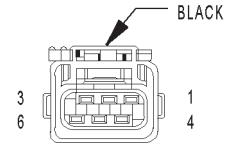


FUSES (GAS)

FUSE NO.	AMPS	FUSED CIRCUIT	FUNCTION
1	40A	C1 12DG	FUSED B(+)
2	40A	A149 12RD/TN	FUSED B(+)
3	50A	A145 10WT/RD	FUSED B(+)
4	40A	A10 12RD/DG	FUSED B(+)
5	30A	A30 14RD/WT	FUSED B(+)
5	30A	A30 14RD/WT (4.7L)	FUSED B(+)
6	30A	A14 14RD/DG	FUSED B(+)
7	50A	A147 10RD/GY	FUSED B(+)
8	40A	A1 12RD	FUSED B(+)
9	-	-	-
10	-	-	-
11	-	-	-
12	50A	A146 10OR/WT	FUSED B(+)
13	-	-	-
14	40A	A2 12PK/BK	FUSED B(+)
15	50A	A148 10PK/WT	FUSED B(+)
16	15A	F142 18OR/DG	FUSED AUTO SHUT DOWN RELAY OUTPUT
16	15A	F142 18OR/DG	FUSED AUTO SHUT DOWN RELAY OUTPUT
17	-	-	-
18	15A	F62 18RD	FUSED B(+)
18	15A	F62 18RD	FUSED B(+)
19	10A	A7 14RD/BK	FUSED B(+)
20	-	-	-
21	15A	A17 18RD/BK	FUSED B(+)
22	-	-	-
23	-	-	-
24	20A	A62 16VT/LB	FUSED B(+)
25	20A	A20 12RD/DB	FUSED B(+)
26	15A	F42 18DG/LG	FUSED AUTO SHUT DOWN RELAY OUTPUT
26	15A	F42 18DG/LG	FUSED AUTO SHUT DOWN RELAY OUTPUT
27	20A	A148 16LG/RD	FUSED B(+)
28	15A	T15 18YL/BR(4.0L)	FUSED TRANSMISSION CONTROL RELAY OUTPUT

TRANSMISSION CONTROL RELAY (GAS)

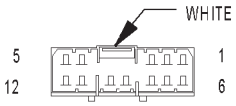
CAV	CIRCUIT	FUNCTION
30	A30 14RD/WT	FUSED B(+)
85	K125 18WT/DB (4.0L)	GENERATOR SOURCE
85	Z307 18BK (4.7L)	GROUND
86	K30 20PK (RHD)	TRANSMISSION CONTROL RELAY CONTROL
86	K30 20PK/YL (LHD)	TRANSMISSION CONTROL RELAY CONTROL
87	T16 14RD	TRANSMISSION CONTROL RELAY OUTPUT
87A	-	-



RIGHT REAR
LAMP ASSEMBLY

RIGHT REAR LAMP ASSEMBLY - BLACK 6 WAY

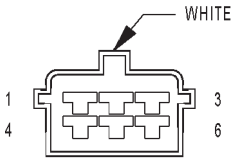
CAV	CIRCUIT	FUNCTION
1	L1 18VT/BK	BACK-UP LAMP FEED
2	L95 18DG/YL (BUILT-UP-EXPORT)	REAR FOG LAMP RELAY OUTPUT
3	L7 18BK/YL	PARK LAMP RELAY OUTPUT
4	L62 18BR/RD	RIGHT TURN SIGNAL
5	Z151 18BK	GROUND
6	L50 18WT/TN	PRIMARY BRAKE SWITCH SIGNAL



SHIFTER
ASSEMBLY
(C201 DIESEL)

SHIFTER ASSEMBLY (C201 DIESEL) - WHITE 12 WAY

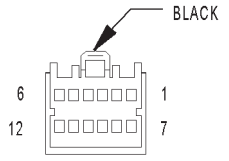
CAV	CIRCUIT	FUNCTION
1	-	-
2	-	-
3	-	-
4	K2 20WT/PK	SECONDARY BRAKE SWITCH SIGNAL
5	D25 20RD	PCI BUS
6	-	-
7	D21 20PK	SCI TRANSMIT
8	F12 20DB/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)
9	T2 20TN/BK	BACK-UP LAMP RELAY CONTROL
10	Z234 20WT	GROUND
11	T41 20BK/WT	PARK/NEUTRAL POSITION SWITCH SENSE
12	F991 20OR/DB	FUSED IGNITION SWITCH OUTPUT (RUN-START)



SHIFTER
ASSEMBLY
(GAS)

SHIFTER ASSEMBLY (GAS) - WHITE 6 WAY

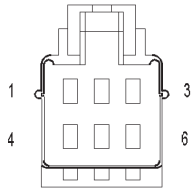
CAV	CIRCUIT	FUNCTION
1	E2 20OR	PANEL LAMPS DRIVER
2	Z234 18BK	GROUND
3	T6 18OR/WT	OVERDRIVE OFF SWITCH SENSE
4	Z300 18BK	GROUND
5	F12 20DB/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)
6	K29 18WT/PK	SECONDARY BRAKE SWITCH SIGNAL



SHIFTER
ASSEMBLY C1
(DIESEL)

SHIFTER ASSEMBLY C1 (DIESEL) - BLACK 12 WAY

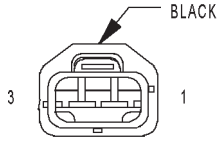
CAV	CIRCUIT	FUNCTION
1	F991 20OR/DB	FUSED IGNITION SWITCH OUTPUT (RUN-START)
2	F991 20OR/DB	FUSED IGNITION SWITCH OUTPUT (RUN-START)
3	F991 20OR/DB	FUSED IGNITION SWITCH OUTPUT (RUN-START)
4	T2 20TN/BK	BACK-UP LAMP RELAY CONTROL
5	D25 20OR	PCI BUS
6	W0 20DB/WT	SHIFTER C1 SENSE
7	W1 20VT/WT	SHIFTER C2 SENSE
8	W2 20VT	SHIFTER C3 SENSE
9	W3 20BK	SHIFTER C4 SENSE
10	W4 20PK/OR	SHIFTER C5 SENSE
11	Z234 20WT	GROUND
12	Z234 20WT	GROUND



SHIFTER ASSEMBLY C2 (DIESEL)

SHIFTER ASSEMBLY C2 (DIESEL) - 6 WAY

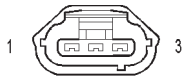
CAV	CIRCUIT	FUNCTION
1	-	-
2	-	-
3	F12 20DB/WT	FUSED IGNITION SWITCH OUTPUT (RUN-START)
4	K2 20WT/PK	SECONDARY BRAKE SWITCH SIGNAL
5	F991 20OR/DB	FUSED IGNITION SWITCH OUTPUT (RUN-START)
6	Y1 20DB/PK	PARK LOCKOUT SOLENOID CONTROL



THROTTLE POSITION SENSOR (4.0L)

THROTTLE POSITION SENSOR (4.0L) - BLACK 3 WAY

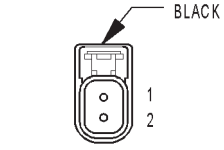
CAV	CIRCUIT	FUNCTION
1	K7 18OR	5 VOLT SUPPLY
2	K4 18BK/LB	SENSOR GROUND
3	K22 18OR/RD	THROTTLE POSITION SENSOR SIGNAL



THROTTLE POSITION SENSOR (4.7L)

THROTTLE POSITION SENSOR (4.7L) - 3 WAY

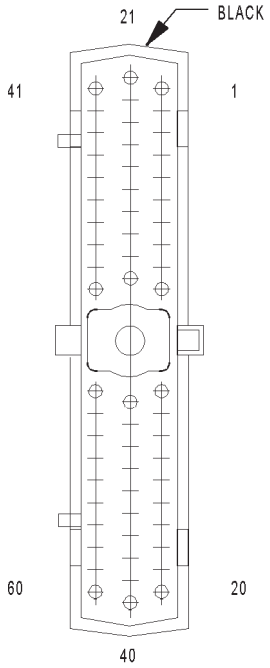
CAV	CIRCUIT	FUNCTION
1	K7 18OR	5 VOLT SUPPLY
2	K22 18OR/RD	THROTTLE POSITION SENSOR SIGNAL
3	K4 18BK/LB	SENSOR GROUND



TRANSFER CASE POSITION SENSOR

TRANSFER CASE POSITION SENSOR - BLACK 2 WAY

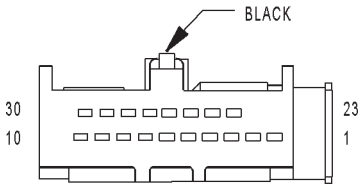
CAV	CIRCUIT	FUNCTION
1	K77 20BR/WT (DIESEL)	TRANSFER CASE POSITION SENSOR SIGNAL
1	K77 18LG/BK (GAS)	TRANSFER CASE POSITION SENSOR SIGNAL
2	K4 20BK/LB (DIESEL)	SENSOR GROUND
2	K4 18BK/LB (GAS)	SENSOR GROUND



TRANSMISSION CONTROL MODULE (4.7L)

TRANSMISSION CONTROL MODULE (4.7L) - BLACK 60 WAY

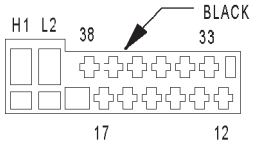
CAV	CIRCUIT	FUNCTION
1	T1 18LG/BK	TRS T1 SENSE
2	T2 18TN/BK	TRS T2 SENSE
3	T3 18VT	TRS T3 SENSE
4	-	-
5	-	-
6	K24 18GY/BK	CRANKSHAFT POSITION SENSOR SIGNAL
7	D21 18PK	SCI TRANSMIT
8	F45 18YL/RD	FUSED IGNITION SWITCH OUTPUT (START)
9	T9 18OR/BK	OVERDRIVE PRESSURE SWITCH SENSE
10	T10 18YL/DG	TORQUE MANAGEMENT REQUEST SENSE
11	F991 18OR/DB	FUSED IGNITION SWITCH OUTPUT (RUN-START)
12	K22 18OR/RD	THROTTLE POSITION SENSOR SIGNAL
13	T13 18DB/BK	SPEED SENSOR GROUND
14	T14 18LG/WT	OUTPUT SPEED SENSOR SIGNAL
15	K30 18PK/YL	TRANSMISSION CONTROL RELAY CONTROL
16	T16 14RD	TRANSMISSION CONTROL RELAY OUTPUT
17	T16 14RD	TRANSMISSION CONTROL RELAY OUTPUT
18	T118 18YL/DB	PRESSURE CONTROL SOLENOID CONTROL
19	T119 18WT/DB	2C SOLENOID CONTROL
20	T120 18LG	LR SOLENOID CONTROL
21	-	-
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
29	T29 18GY	UNDERDRIVE PRESSURE SWITCH SENSE
30	T130 14VT/TN	LINE PRESSURE SENSOR SIGNAL
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-
36	T16 14RD	TRANSMISSION CONTROL RELAY OUTPUT
37	Z113 14BK/WT	GROUND
38	T138 14GY/LB	5 VOLT SUPPLY
39	Z112 14BK/YL	GROUND
40	T140 18VT/LG	MS SOLENOID CONTROL
41	T41 18WT	TRS T41 SENSE
42	T42 18VT/WT	TRS T42 SENSE
43	D25 18YL/VT	PCI BUS
44	-	-
45	-	-
46	D20 18LG	SCI RECEIVE
47	T147 18LB	2C PRESSURE SWITCH SENSE
48	T48 18DB	4C PRESSURE SWITCH SENSE
49	T6 18VT/WT	OVERDRIVE OFF SWITCH SENSE
50	T150 18BR/LB	LR PRESSURE SWITCH SENSE
51	K4 18BK/LB	SENSOR GROUND
52	T52 18RD/BK	INPUT SPEED SENSOR SIGNAL
53	Z114 14BK/LG	GROUND
54	T54 18VT	TRANSMISSION TEMPERATURE SENSOR SIGNAL
55	T59 18PK	UNDERDRIVE SOLENOID CONTROL
56	A30 14RD/WT	FUSED B(+)
57	Z12 14BK/TN	GROUND
58	-	-
59	T159 18DG/WT	4C SOLENOID CONTROL
60	T60 18BR	OVERDRIVE SOLENOID CONTROL



TRANSMISSION CONTROL MODULE C1 (DIESEL)

TRANSMISSION CONTROL MODULE C1 (DIESEL) - BLACK 18 WAY

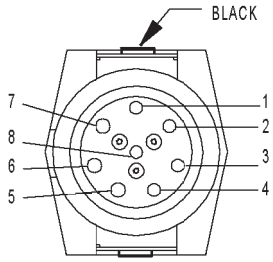
CAV	CIRCUIT	FUNCTION
1	D21 20PK	SCI TRANSMIT
2	-	-
3	W4 20PK/OR	SHIFTER C5 SENSE
4	Y1 20DB/PK	PARK LOCKOUT SOLENOID CONTROL
5	-	-
6	-	-
7	T41 20BK/WT	PARK/NEUTRAL POSITION SWITCH SENSE
8	-	-
9	-	-
10	-	-
23	-	-
24	-	-
25	W0 20DB/WT	SHIFTER C1 SENSE
26	W1 20VT/WT	SHIFTER C2 SENSE
27	W2 20VT	SHIFTER C3 SENSE
28	W3 20BK	SHIFTER C4 SENSE
29	F991 20OR/DB	FUSED IGNITION SWITCH OUTPUT (RUN-START)
30	Z234 20WT	GROUND



TRANSMISSION CONTROL MODULE C2 (DIESEL)

TRANSMISSION CONTROL MODULE C2 (DIESEL) - BLACK 14 WAY

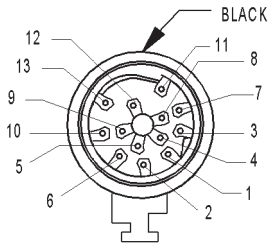
CAV	CIRCUIT	FUNCTION
12	T52 18RD/BK	N2 INPUT SPEED SENSOR
13	T39 18GY/LB	SENSOR SUPPLY VOLTAGE
14	T60 18BR	1-2/4-5 SOLENOID CONTROL
15	T159 18DG/WT	3-4 SOLENOID CONTROL
16	T119 18WT/DB	2-3 SOLENOID CONTROL
17	T120 18LG	TCC SOLENOID CONTROL
33	T13 18DB/BK	SENSOR GROUND
34	T54 18VT	TEMP SENSOR - P/N SWITCH
35	T14 18LG/WT	N3 INPUT SPEED SENSOR
36	T591 18YL/DB	MODULATION PRESSURE SOLENOID CONTROL
37	T118 18YL/DB	SHIFT PRESSURE SOLENOID CONTROL
38	T16 18RD	SOLENOID SUPPLY VOLTAGE
H1	D52 18LG/WT	CAN C BUS(+)
L2	D51 18DG/WT	CAN C BUS(-)



TRANSMISSION SOLENOID (4.0L)

TRANSMISSION SOLENOID (4.0L) - BLACK 8 WAY

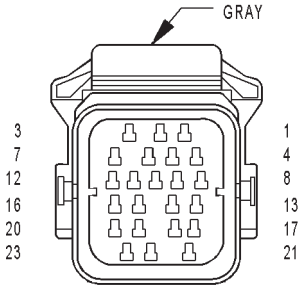
CAV	CIRCUIT	FUNCTION
1	T15 18LG	FUSED TRANSMISSION CONTROL RELAY OUTPUT
2	K6 18VT/BK	5 VOLT SUPPLY
3	K4 18BK/LB	SENSOR GROUND
4	T25 18LG/RD	GOVERNOR PRESSURE SENSOR SIGNAL
5	K88 18PK	GOVERNOR PRESSURE SOLENOID CONTROL
6	T60 18BR	3-4 SHIFT SOLENOID CONTROL
7	T20 18LB	TORQUE CONVERTER CLUTCH SOLENOID CONTROL
8	T54 18VT	TRANSMISSION TEMPERATURE SENSOR SIGNAL



TRANSMISSION SOLENOID ASSEMBLY (DIESEL)

TRANSMISSION SOLENOID ASSEMBLY (DIESEL) - BLACK 13 WAY

CAV	CIRCUIT	FUNCTION
1	T14 18LG/WT	N3 INPUT SPEED SENSOR
2	T591 18YL/DB	MODULATION PRESSURE SOLENOID CONTROL
3	T52 18RD/BK	N2 INPUT SPEED SENSOR SIGNAL
4	T54 18VT	TEMP SENSOR - P/N SWITCH
5	-	-
6	T16 18RD	SOLENOID SUPPLY VOLTAGE
7	T39 18GY/LB	SENSOR SUPPLY VOLTAGE
8	T119 18WT/DB	2-3 SOLENOID CONTROL
9	T159 18DG/WT	3-4 SOLENOID CONTROL
10	T118 18YL/DB	SHIFT PRESSURE SOLENOID CONTROL
11	T120 18LG	TCC SOLENOID CONTROL
12	T13 18DB/BK	SENSOR GROUND
13	T60 18BR	1-2/4-5 SOLENOID CONTROL



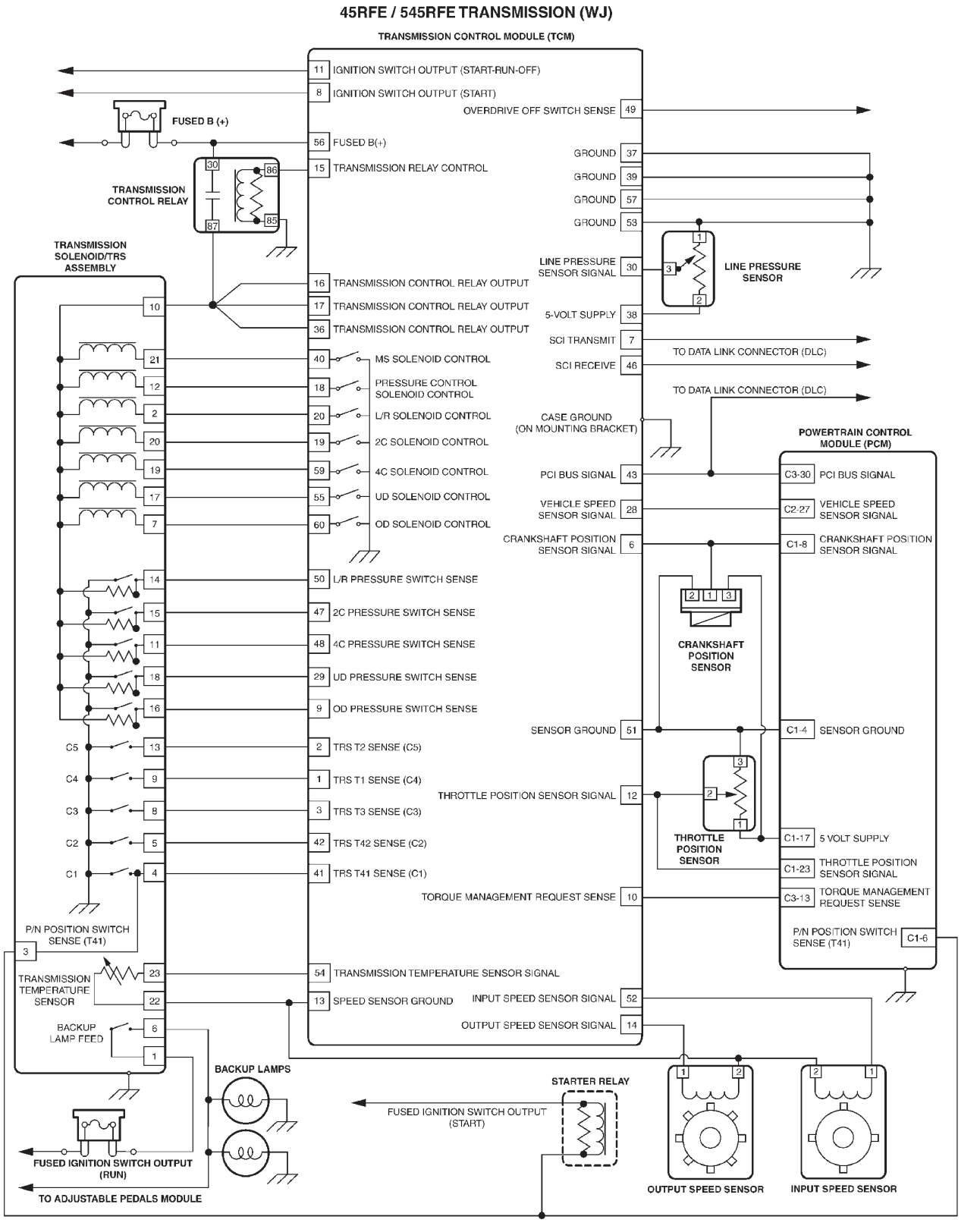
TRANSMISSION SOLENOID/ TRS ASSEMBLY (4.7L)

TRANSMISSION SOLENOID/TRS ASSEMBLY (4.7L) - GRAY 23 WAY

CAV	CIRCUIT	FUNCTION
1	F22 18WT/PK	FUSED IGNITION SWITCH OUTPUT (RUN)
2	T120 18LG	LR SOLENOID CONTROL
3	T41 18BK/WT	PARK/NEUTRAL POSITION SWITCH SENSE (T41)
4	T41 18WT	TRS T41 SENSE
5	T42 18VT/WT	TRS T42 SENSE
6	L1 18VT/BK	BACK-UP LAMP FEED
7	T60 18BR	OVERDRIVE SOLENOID CONTROL
8	T3 18VT	TRS T3 SENSE
9	T1 18LG/BK	TRS T1 SENSE
10	T16 14RD	TRANSMISSION CONTROL RELAY OUTPUT
11	T48 18DB	4C PRESSURE SWITCH SENSE
12	T118 18YL/DB	PRESSURE CONTROL SOLENOID CONTROL
13	T2 18TN/BK	TRS T2 SENSE
14	T150 18BR/LB	LR PRESSURE SWITCH SENSE
15	T147 18LB	2C PRESSURE SWITCH SENSE
16	T9 18OR/BK	OVERDRIVE PRESSURE SWITCH SENSE
17	T59 18PK	UNDERDRIVE SOLENOID CONTROL
18	T29 18GY	UNDERDRIVE PRESSURE SWITCH SENSE
19	T159 18DG/WT	4C SOLENOID CONTROL
20	T119 18WT/DB	2C SOLENOID CONTROL
21	T140 18VT/LG	MS SOLENOID CONTROL
22	T13 18DB/BK	SPEED SENSOR GROUND
23	T54 18VT	TRANSMISSION TEMPERATURE SENSOR SIGNAL

10.0 SCHEMATIC DIAGRAMS

10.1 TRANSMISSION SCHEMATIC DIAGRAM



NOTES

11.0 CHARTS AND GRAPHS

11.1 PRESSURE SWITCH STATES

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

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11.2 SHIFT LEVER ERROR CODES

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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11.3 TRANSMISSION RANGE SENSOR STATES

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	OPEN	OPEN	OPEN	OPEN	OPEN	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	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN	OPEN	OPEN	OPEN	OPEN

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