

2002 AUTOMATIC TRANSMISSIONS

45RFE & 545RFE Diagnosis - Except Next Generation Controller

APPLICATION

NOTE: For 2002 1/2 Chrysler models equipped with new control module (referred to as "Next Generation Controller"), see **45RFE DIAGNOSIS - NEXT GENERATION CONTROLLER** article.

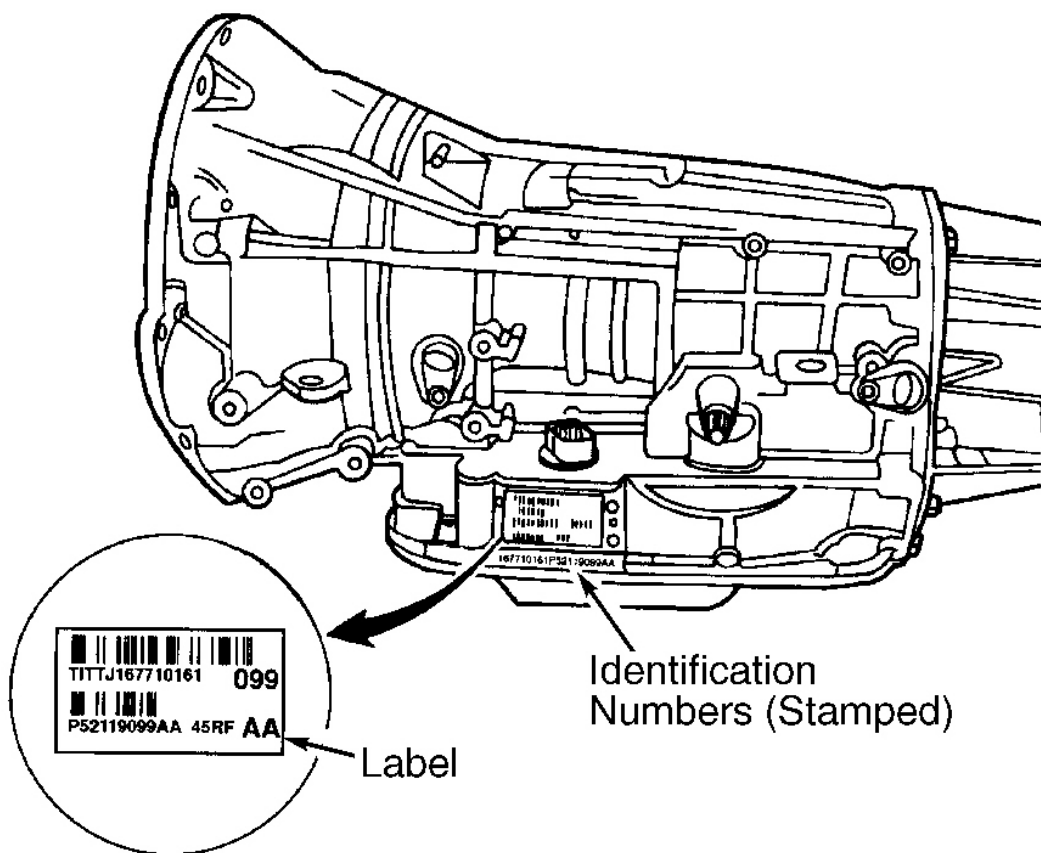
WARNING: Vehicle may be equipped with Supplemental Restraint System (SRS). When servicing vehicle, use care to avoid accidental air bag deployment. SRS-related components may be located in steering column, center console, instrument panel and lower panel on instrument panel. Do not use electrical test equipment on or near these circuits. If necessary, deactivate SRS before servicing components. See **AIR BAG DEACTIVATION PROCEDURES** article in **GENERAL INFORMATION**.

TRANSMISSION APPLICATION

Application	Transmission Model
Dodge	
Dakota & Durango (4.7L)	45RFE
Ram Pickup 1500 (3.7L & 4.7L)	45RFE
Jeep	
Grand Cherokee (4.7L)	545RFE
Liberty (3.7L)	45RFE

IDENTIFICATION

Transmission identification numbers are stamped on left side of transmission case, near oil pan flange. See **Fig. 1**. Identification numbers may be required when ordering replacement components. Transmission components may not be interchangeable. Identification number is required to ensure proper component application.



G99A52696

Fig. 1: Locating Transmission Identification Numbers
 Courtesy of DAIMLERCHRYSLER CORP.

DESCRIPTION & OPERATION

INTRODUCTION

The 45RFE and 545RFE automatic transmissions are electronically controlled and includes a lock-up torque converter, 6 clutch packs, and a dual stage oil pump. With the addition of a 3rd planetary gear set, one reverse and 5 or 6 forward gear ratios are possible. The 45RFE is considered a 4-speed transmission with 5 forward gear ratios. The 545RFE transmission is considered a 5-speed transmission with 6 forward gear ratios. On both transmissions, the 5th gear ratio is actually an alternate 2nd gear ratio known as "2nd prime" and is created by the addition of the 3rd planetary. The primary 2nd gear ratio fits between 1st and 3rd gear ratios for normal through-gear accelerations. The alternate 2nd gear ratio (2nd prime) allows smoother 4-2 kickdowns at high speeds to provide 2nd gear passing performance over a wider cruising range. By implementing a TCM software change, the 545RFE automatic transmission uses an additional overdrive ratio (4th prime used above 52 MPH) to provide greater fuel economy and smoother performance at highway speeds. Both transmissions are contained in a one-piece aluminum case.

NOTE: If battery is disconnected or voltage supply to Transmission Control Module

PMZ

(TCM) is lost, TCM must relearn shift characteristics. It may be necessary to perform shift quality quick-learn procedure so TCM can relearn shift characteristics. See SHIFT QUALITY QUICK-LEARN PROCEDURE under PROGRAMMING.

ELECTRONIC CONTROL SYSTEM

The electronic control system consists of TCM, Transmission Range Sensor (TRS), input and output speed sensors, line pressure sensor, transmission temperature sensor, 5 pressure switches and 7 solenoids. Each clutch has a corresponding solenoid and pressure switch, except for reverse clutch, which is controlled by the manual valve. The remaining 2 solenoids are Multi-Select (MS) solenoid and Pressure Control Solenoid (PCS). The PCS controls line pressure. The MS solenoid is used to control Park/Reverse, Neutral/Reverse shifts and Overdrive (OD) clutch when gearshift lever is in "D" position.

TCM uses input information to control line pressure and solenoids. TCM has 7 shift schedules based on transmission fluid temperature to extend transmission life. If TCM senses a problem, it stores a Diagnostic Trouble Code (DTC). Some DTCs will cause transmission to go into limp-in or default mode. See **LIMP-IN MODE**. If malfunction goes away after DTC is stored in TCM memory, TCM will erase DTC after ignition has been cycled at least 40 times. DTCs are classified as either hard codes, one trip failures or intermittent codes.

Hard Codes

All repeatable DTCs are called hard codes. Hard code indicates a failure exists every time TCM monitors the system or component.

One Trip Failure Codes

A one trip failure code, when read from TCM, is a hard code has not matured to the full 5 minutes. This applies only to codes that will set after 5 minutes of substituted gear operation.

Intermittent Codes

An intermittent code is an intermittently occurring DTC and is most likely caused by defective wiring, connections or hydraulic malfunction. Intermittent code indicates a failure does not exist every time TCM monitors the system or component. Intermittent codes must be checked under conditions in which they would be set.

NOTE: A reset counter located on Chrysler's Diagnostic Readout Box (DRB) scan tool, indicates number of engine starts since DTC was set. This aids in determining if DTC is hard or intermittent. If reset counter shows less than 3 engine starts, the code is usually a hard code. If reset counter shows 3 or more engine starts, an intermittent code exists.

Starts Since Set Counter

For most recent code (Code 1), the Starts Since Set counter counts number of times vehicle has been started since code was last set. Counter will count up to 255 starts. This counter only applies to most recent code if there is more than one code. When there are no DTCs stored in memory, DRB-III scan tool will display "NO DTC'S PRESENT" and starts since set counter will show "STARTS SINCE CLEAR = XXX". The

number of starts helps determine if DTC is a hard or intermittent code. If counter shows less than 3 engine starts, it indicates a hard code. If counter shows 3 or more engine starts, an intermittent code exists.

LIMP-IN MODE

The TCM monitors transmission for electrical or internal problems. If TCM senses a transmission failure and a DTC is set, in some cases, transmission will enter limp-in mode. See **RETRIEVING DIAGNOSTIC TROUBLE CODES** under SELF-DIAGNOSTIC SYSTEM. The transmission control system has 3 different limp-in modes, "I" Immediate Shutdown, "O" Orderly Shutdown and "L" Logical Shutdown with Recovery. When transmission is in a limp-in mode, Chrysler's Diagnostic Readout Box (DRB) scan tool will flash Red LED.

"I" Immediate Shutdown

The TCM de-energizes the transmission control relay which then de-energizes the solenoid assembly. This causes transmission to default immediately to 3rd gear if gearshift lever is in "D" position or 2nd gear if gearshift lever is in "2" or "L" positions. Park, Neutral and Reverse gears still function.

"O" Orderly Shutdown

If TCM senses a transmission failure that does not require immediate shutdown, transmission will maintain the current gear. Transmission control relay will remain energized until de-energizing it will not over speed engine. When a reasonable speed is reached, transmission control relay will be de-energized. This causes transmission to default immediately to 3rd gear if gearshift lever is in "D" position or 2nd gear if gearshift lever is in "2" or "L" positions. Park, Neutral and Reverse gears still function.

"L" Logical Shutdown With Recovery

The TCM does not de-energize the transmission control relay. Transmission will use 1st and 3rd gears while in "D" and will use 2nd while in "2" or "L". All transmission operations in this mode will be at preset line pressure (open loop). Transmission will resume normal operation (recovery) if cause goes away. Recovery is permitted 3 times in a given key cycle. If cause reoccurs a 4th time, mode "L" will be maintained.

SOLENOID ASSEMBLY

Solenoid assembly is controlled by the TCM. The TCM provides voltage to transmission control relay, causing contacts to close which supplies voltage to solenoid assembly. Solenoid assembly, consisting of 7 electric solenoids, controls transmission hydraulic circuits. The TCM completes the ground circuit, operating solenoid for proper hydraulic circuit control.

Low-reverse (LR), Overdrive (OD), Underdrive (UD), 2nd clutch (2C) and 4th clutch (4C) pressure switches are located in the solenoid assembly. Pressure switches are monitored by the TCM to indicate whether pressure is present in a specified hydraulic circuit. Pressure switches must operate in correct status with each gear. See **PRESSURE SWITCH OPERATION** table. The TCM uses this information to verify solenoid assembly operation and to determine what gear transmission is in.

PRESSURE SWITCH OPERATION

Gear & Pressure Switch	Switch Status
Reverse	
LR	Open

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller

2C	Open
4C	Open
UD	Open
OD	Open
Neutral	
LR	Closed
2C	Open
4C	Open
UD	Open
OD	Open
1st Gear	
LR	Closed
2C	Open
4C	Open
UD	Closed
OD	Open
2nd Gear	
LR	Open
2C	Closed
4C	Open
UD	Closed
OD	Open
2nd Gear Prime	
LR	Open
2C	Open
4C	Closed
UD	Closed
OD	Open
3rd Gear	
LR	Open
2C	Open
4C	Open
UD	Closed
OD	Closed
4th Gear	
LR	Open
2C	Closed
4C	Closed
UD	Open
OD	Closed
4th Gear Prime (545RFE)	
LR	Open
2C	Open
4C	Open

PMZ

12 апреля 2010 г. 11:40:28

Page 5

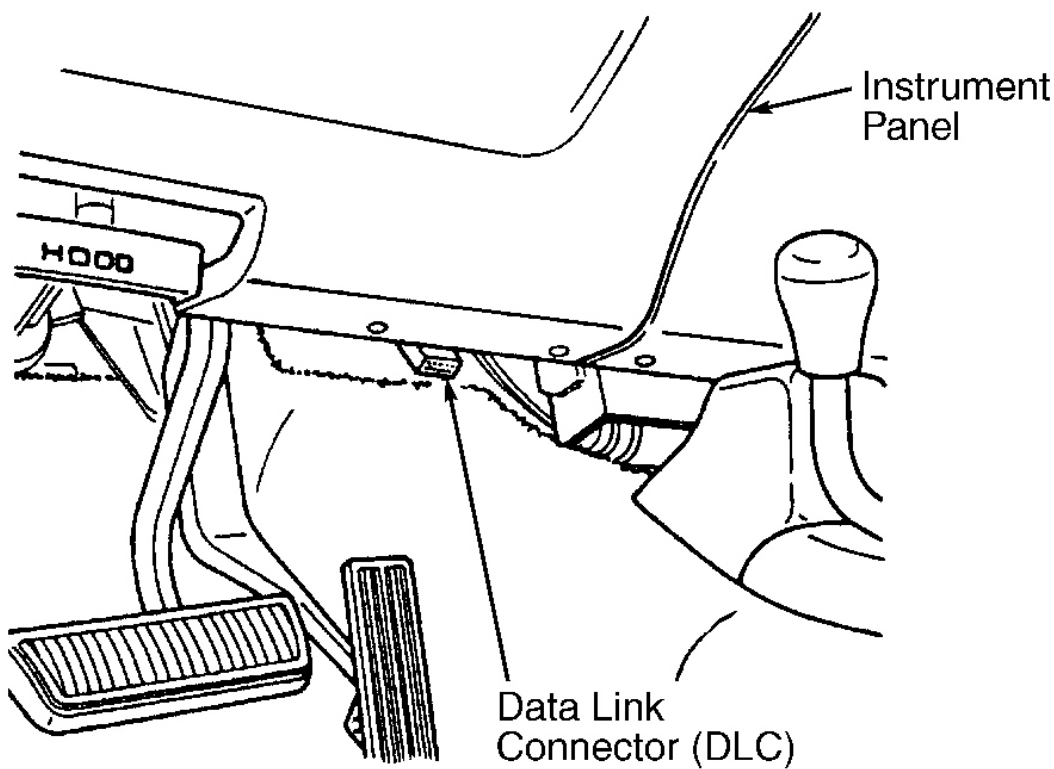
© 2005 Mitchell Repair Information Company, LLC.

UD	Open
OD	Closed

SHIFT INTERLOCK SYSTEM

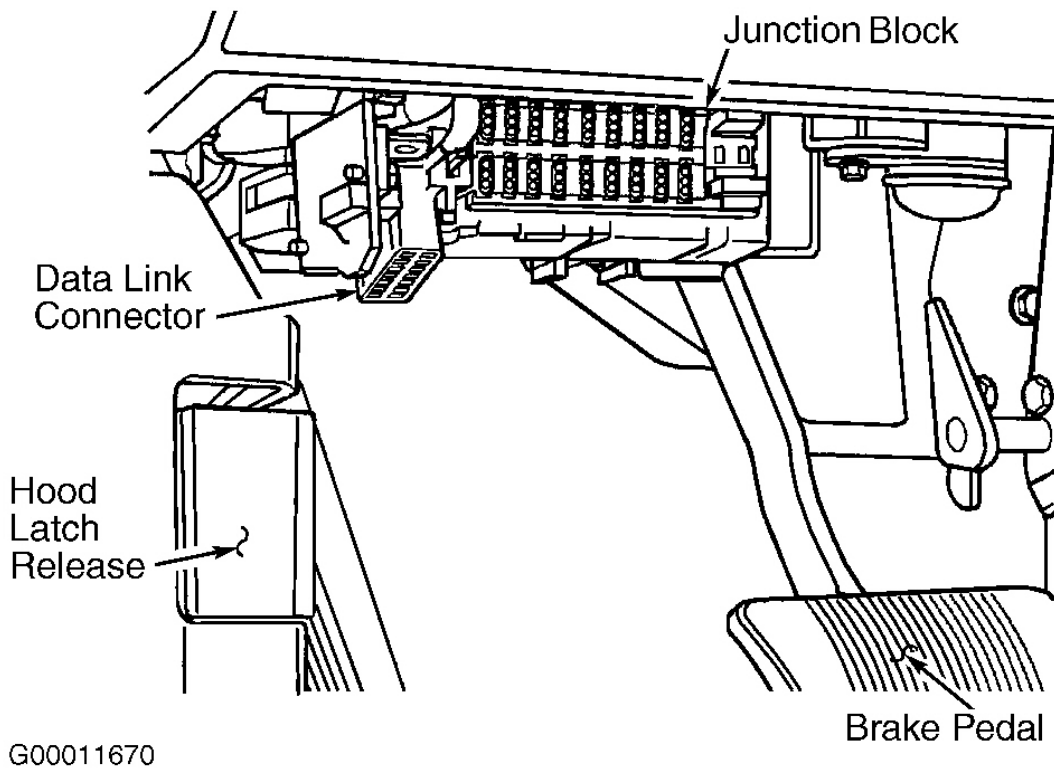
NOTE: For system description and repair information, see appropriate **SHIFT INTERLOCK SYSTEMS** article.

COMPONENT LOCATIONS



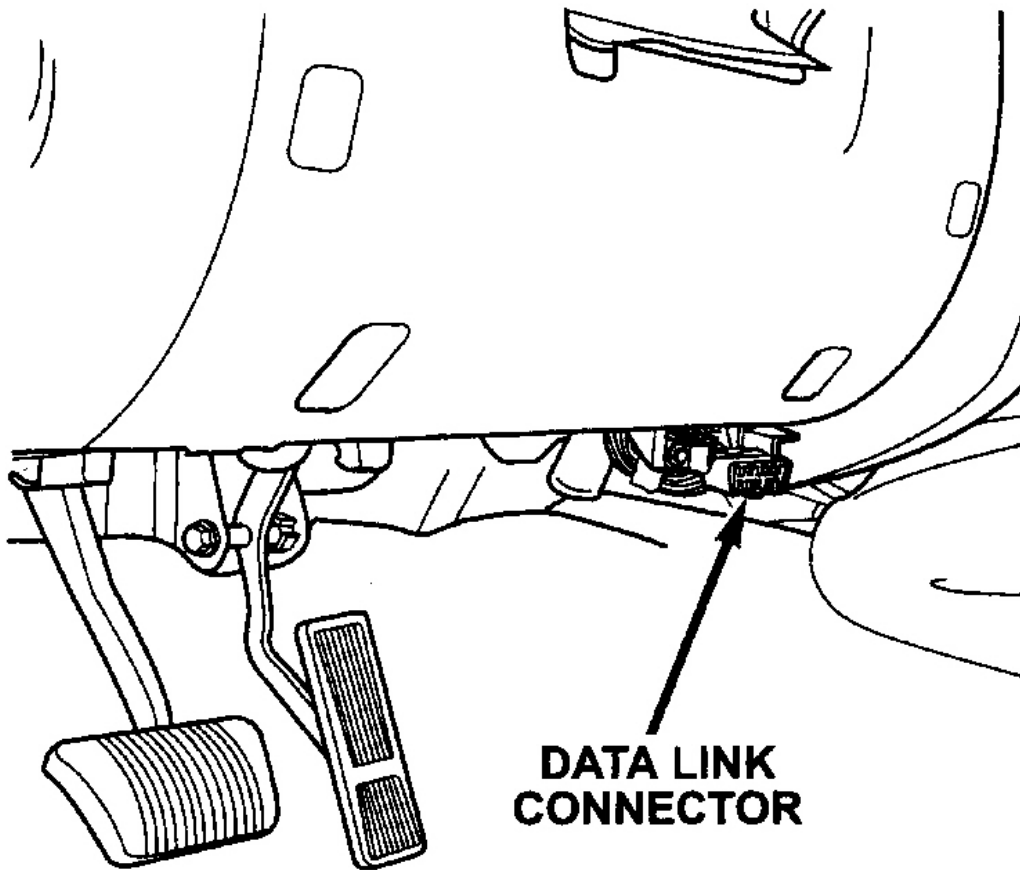
G00009719

Fig. 2: Locating Data Link Connector (Dakota, Durango & Ram Pickup 1500)
 Courtesy of DAIMLERCHRYSLER CORPORATION



G00011670

Fig. 3: Locating Data Link Connector (Jeep Grand Cherokee)
Courtesy of DAIMLERCHRYSLER CORPORATION



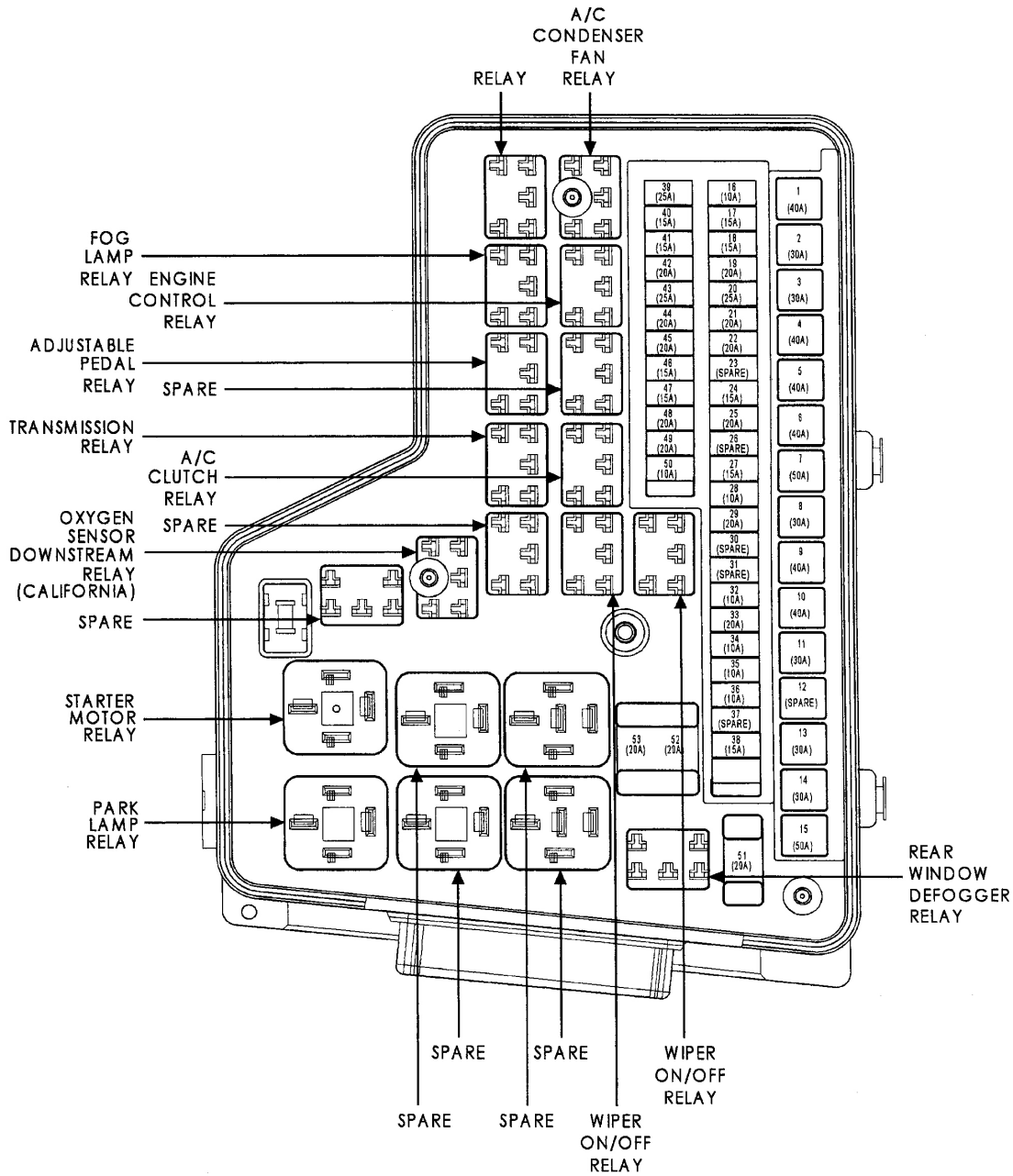
G00072511

Fig. 4: Locating Data Link Connector (Jeep Liberty)
Courtesy of DAIMLERCHRYSLER CORPORATION

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller

INTEGRATED POWER MODULE

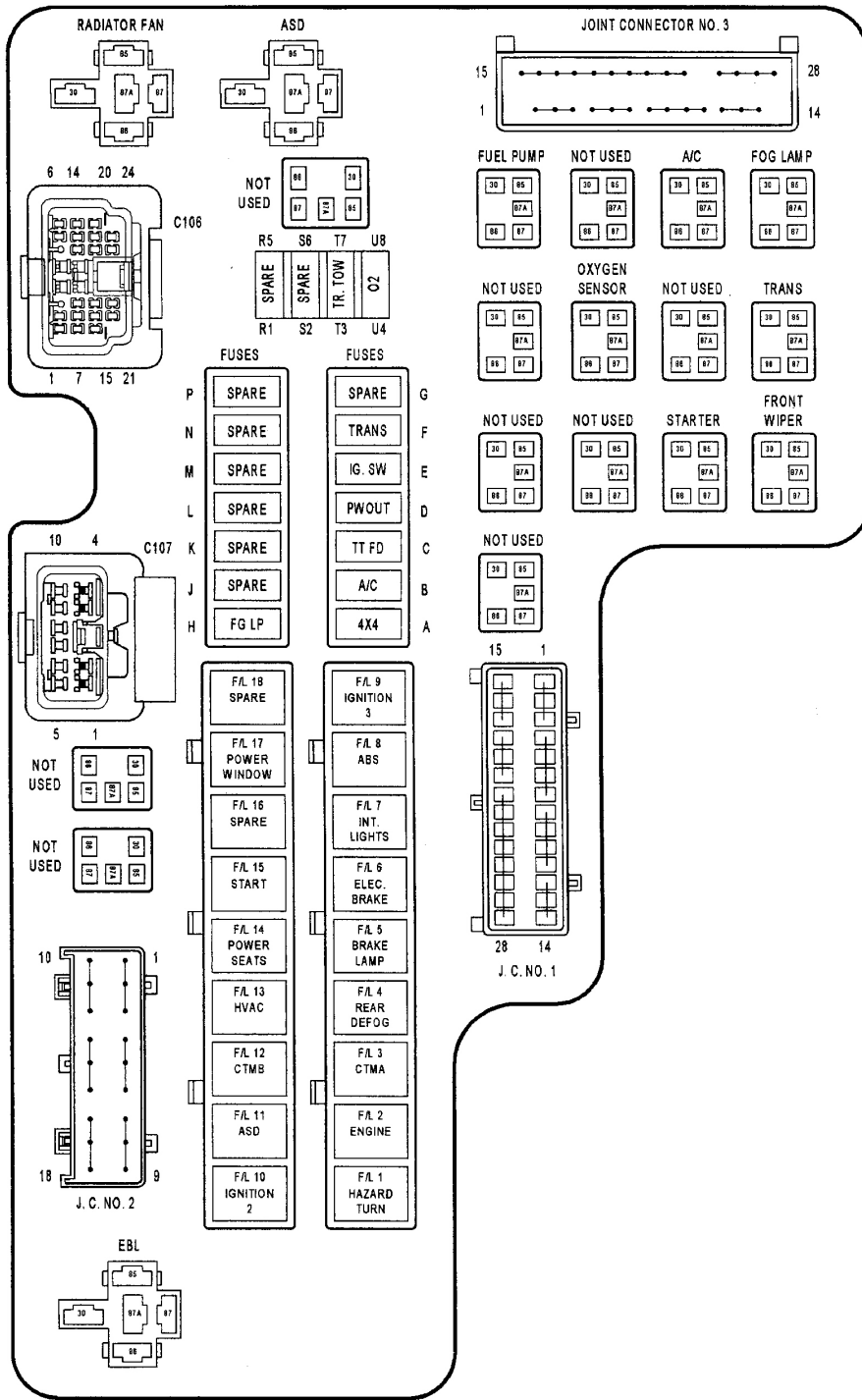


G00080266

Fig. 5: Identifying Fuses & Relays In Integrated Power Module - Ram Pickup 1500
 Courtesy of DAIMLERCHRYSLER CORPORATION

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller

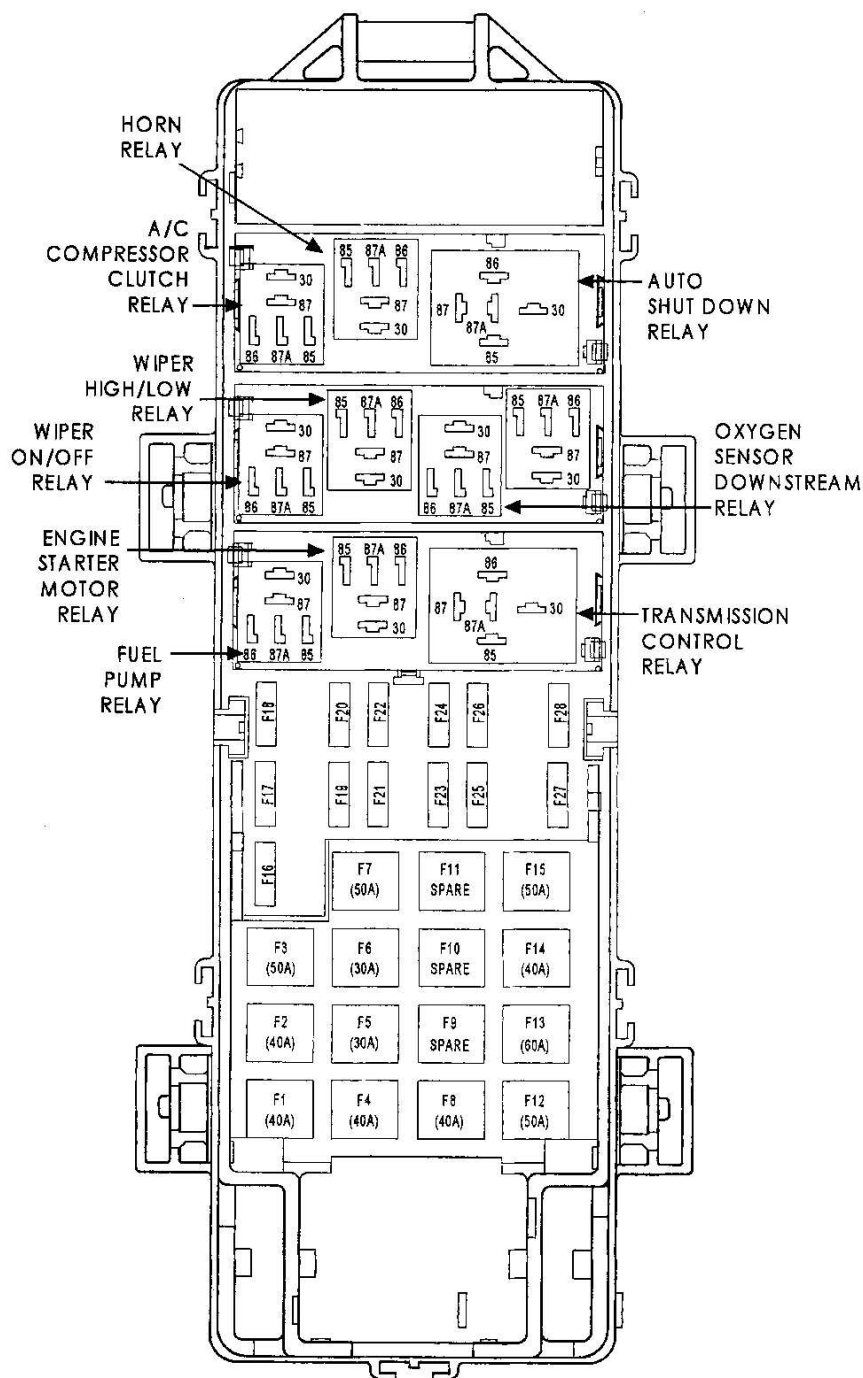


G00072512

Fig. 6: Identifying Fuses & Relays In Power Distribution Center - Dakota & Durango
 Courtesy of DAIMLERCHRYSLER CORPORATION

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller

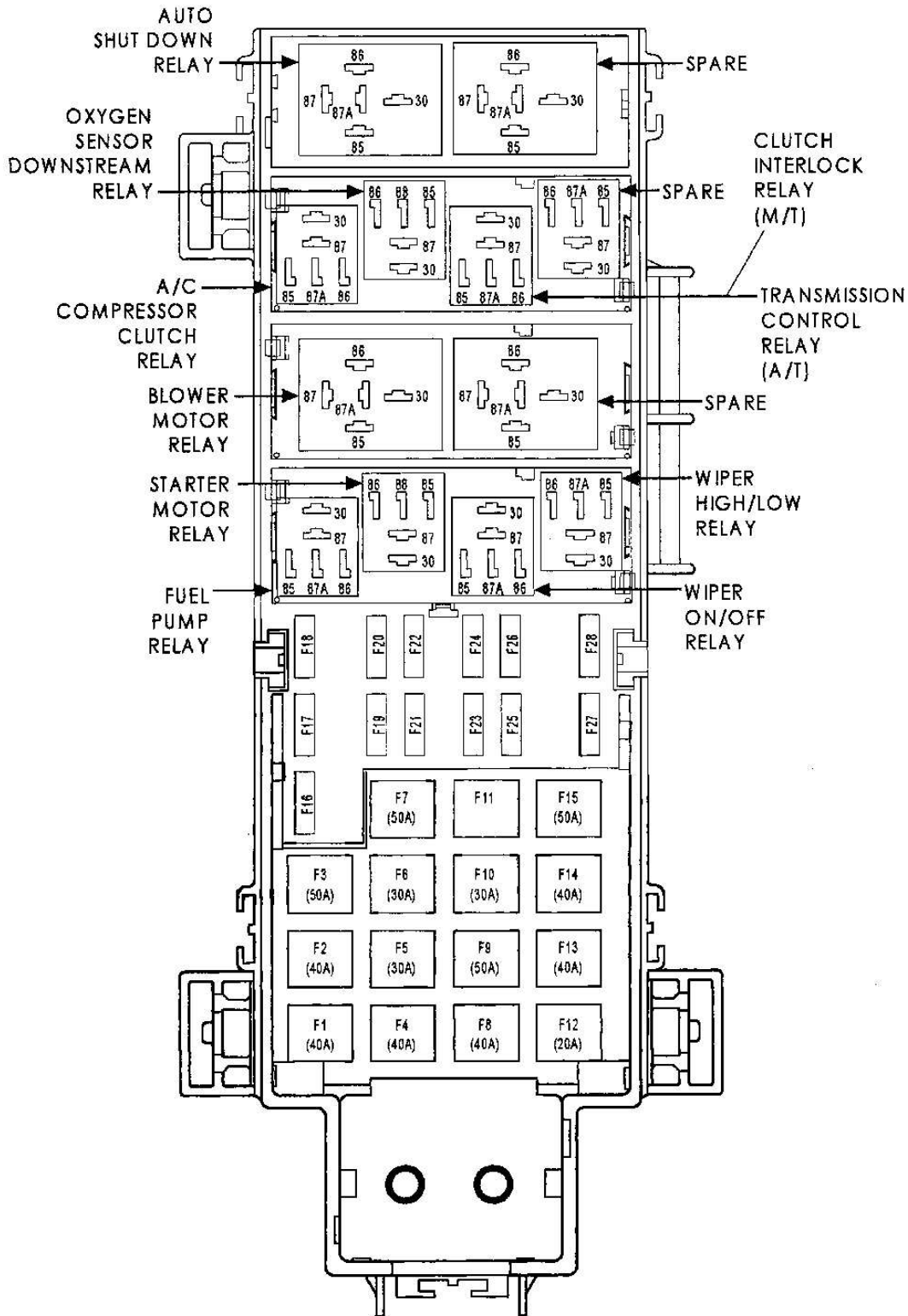


G00072513

Fig. 7: Identifying Fuses & Relays In Power Distribution Center - Jeep Grand Cherokee
 Courtesy of DAIMLERCHRYSLER CORPORATION

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller



G00072514

Fig. 8: Identifying Fuses & Relays In Power Distribution Center (PDC) - Jeep Liberty
 Courtesy of DAIMLERCHRYSLER CORPORATION

PMZ

12 апреля 2010 г. 11:40:28

Page 12

© 2005 Mitchell Repair Information Company, LLC.

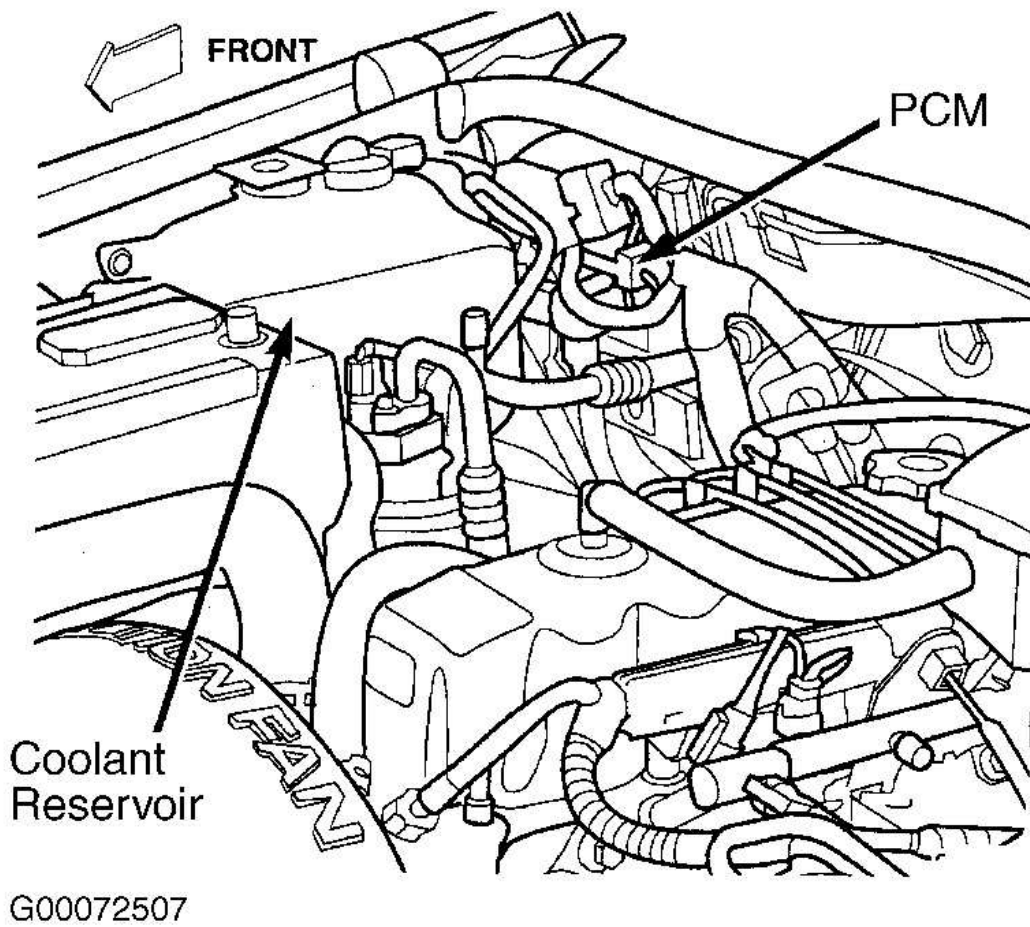
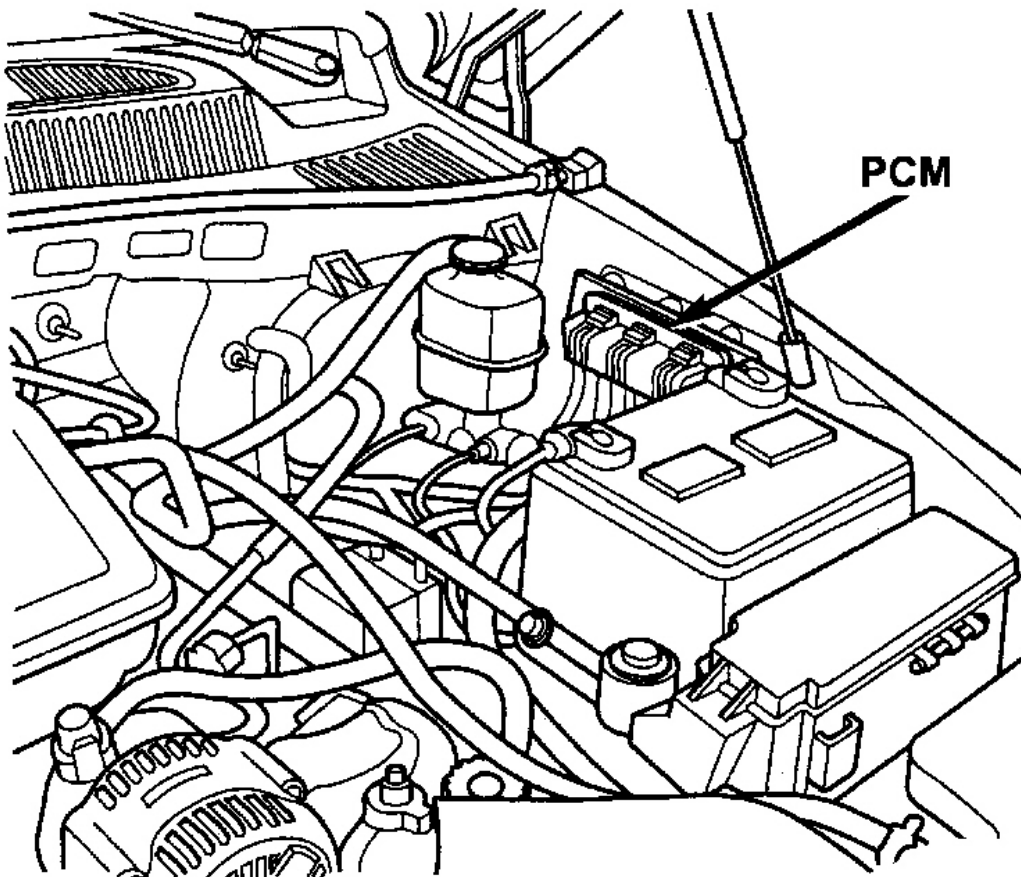
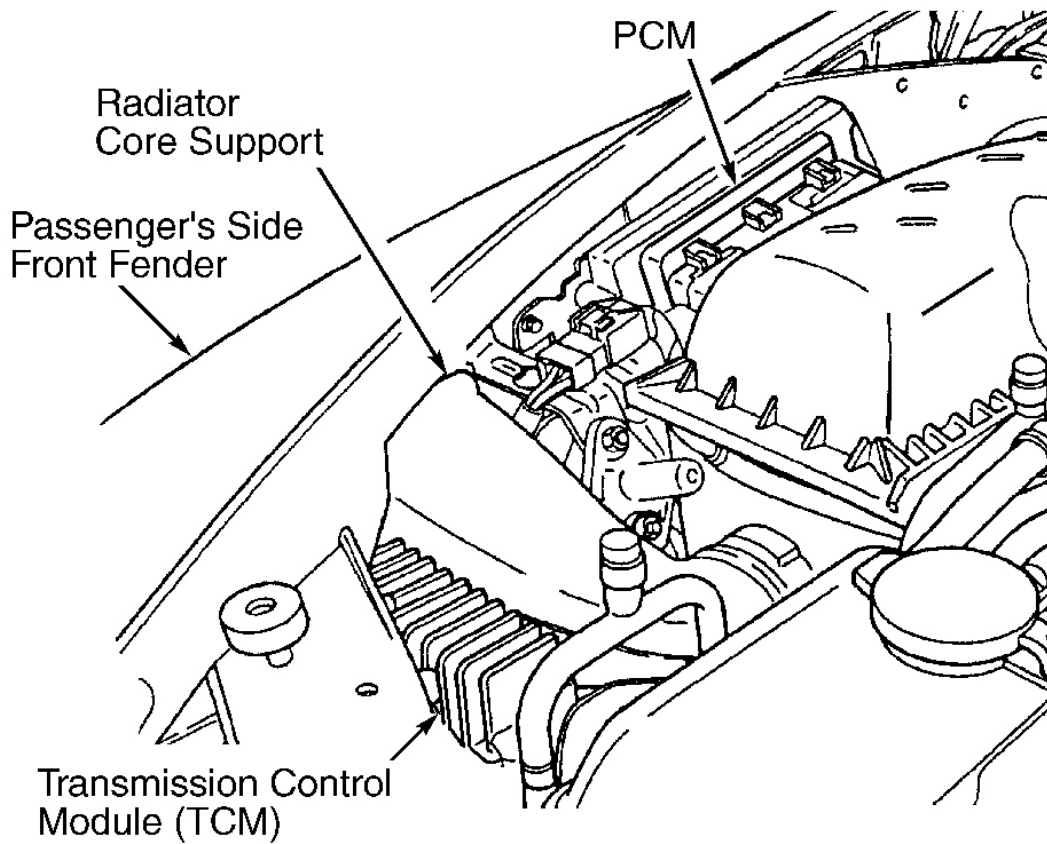


Fig. 9: Locating PCM (Jeep Grand Cherokee)
Courtesy of DAIMLERCHRYSLER CORPORATION



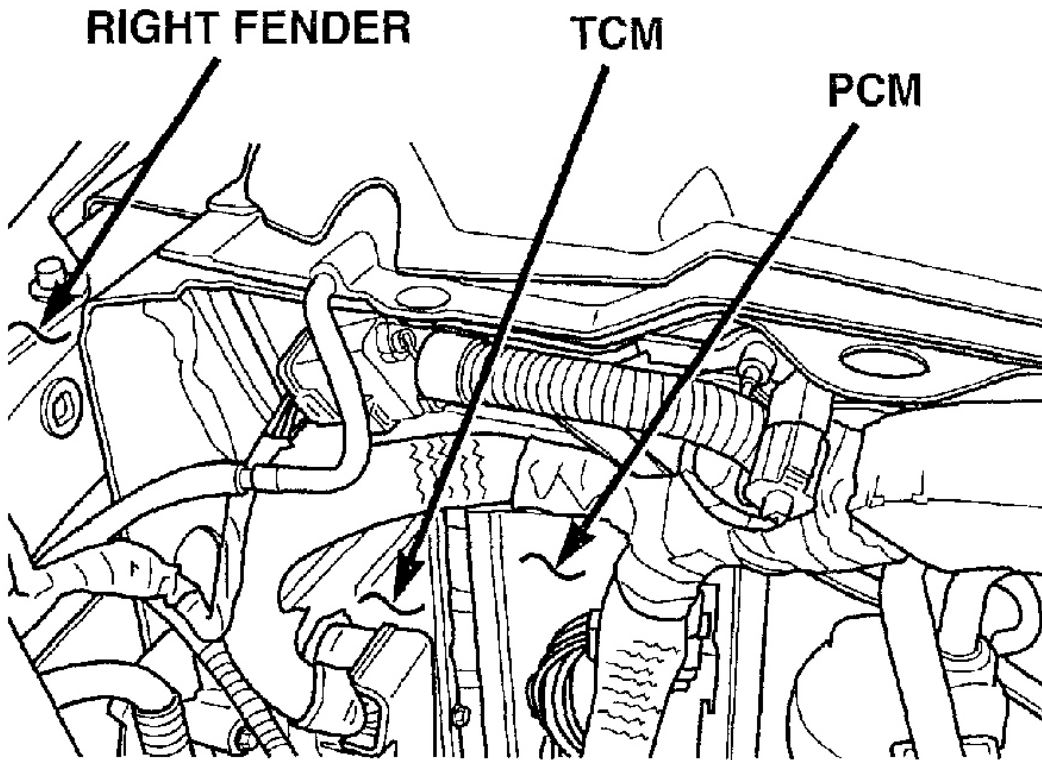
G00072508

Fig. 10: Locating PCM (Jeep Liberty)
Courtesy of DAIMLERCHRYSLER CORPORATION



G00015615

Fig. 11: Locating PCM & TCM (Dakota & Durango - 4.7L)
Courtesy of DAIMLERCHRYSLER CORPORATION



G00090440

Fig. 12: Locating PCM & TCM (Ram Pickup 1500)
Courtesy of DAIMLERCHRYSLER CORPORATION

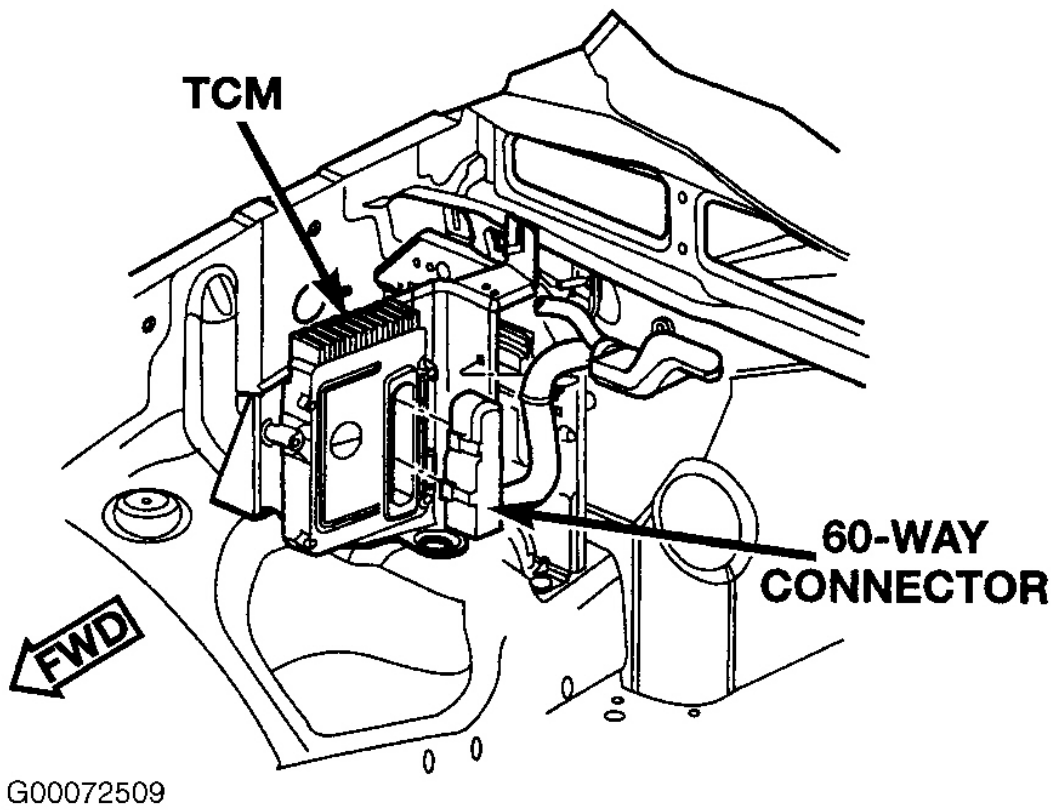
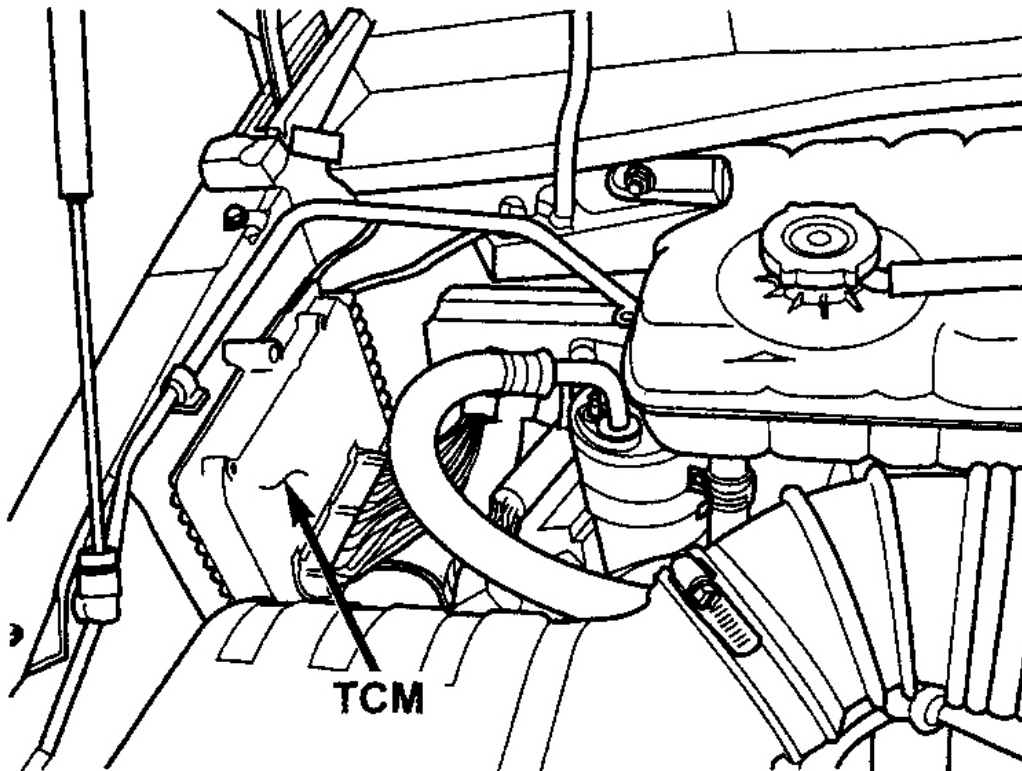


Fig. 13: Locating TCM (Jeep Grand Cherokee)
Courtesy of DAIMLERCHRYSLER CORPORATION



G00072510

Fig. 14: Locating TCM (Jeep Liberty)

Courtesy of DAIMLERCHRYSLER CORPORATION

PROGRAMMING

TRANSMISSION QUICK-LEARN PROCEDURE

The transmission quick-learn procedure allows transmission control system to reset itself and provide the best possible transmission operation. The quick-learn procedure should be performed if any of the following procedures are performed:

- Transmission Replacement
- TCM Replacement
- Solenoid Pack Replacement
- Clutch Plate And/Or Seal Replacement
- Valve Body Reconditioning Or Replacement

The quick-learn procedure requires the use of DRB-III scan tool. See **SHIFT QUALITY QUICK-LEARN PROCEDURE** .

SHIFT QUALITY QUICK-LEARN PROCEDURE

Overview

This procedure quickly optimizes shift quality. Procedure must be performed after disconnecting battery or loss of voltage supply to TCM, replacing TCM, transmission internal components, solenoid assembly or torque converter. DRB-III scan tool with proper cartridge must be used to perform shift quality quick-learn procedure.

The following conditions must be met when performing shift quality quick-learn procedure: oil temperature must be greater than 60°F (16°C), brakes must be applied when indicated, engine speed greater than 500 RPM, throttle angle less than 3 degrees, gearshift lever must be in Neutral and moved only when indicated, gearshift lever must remain in Overdrive as indicated until DRB-III indicates procedure is completed.

It is imperative that vehicle be shifted into OD with engine running and ensure fluid level is correct. This will purge air in clutch circuits to prevent erroneous clutch volume values, which could cause poor initial shift quality.

If unused replacement TCM is installed on vehicle with engine at normal operating temperature, shift quality quick-learn procedure will cause TCM to indicate a cold oil temperature. Oil temperature must be monitored with DRB-III. If oil temperature is less than 60°F (16°C), allow engine to idle until oil temperature is greater than 60°F (16°C). If oil temperature is greater than 200°F (94°C), allow transmission to cool until oil temperature is less than 200°F (94°C).

Quick-Learn Procedure

Connect DRB-III scan tool to DLC. Using proper cartridge and DRB-III manufacturer's instructions, move through program to enter 45RFE or 545RFE menu. Start vehicle. Select TRANSMISSION, and then MISCELLANEOUS functions. Apply brakes. Select QUICK-LEARN function. Follow manufacturer's instructions displayed on DRB-III. After quick-learn procedure is completed, perform **DRIVE LEARN PROCEDURE**.

DRIVE LEARN PROCEDURE

NOTE: Using DRB-III, perform the following procedures based on customer complaint or if symptom exists.

Procedure To Learn A Smooth 1st Neutral To Drive Shift

NOTE: Transmission fluid temperature must be between 80-110°F (27-43°C).

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 Clutch Volume Index (CVI).

1. Start vehicle only when the engine and ignition have been off for at least 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.

Procedure To Learn A Smooth Neutral To Drive Garage Shift

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

NOTE: The transmission fluid temperature must be between 80-110°F (27-43°C) to learn the UD CVI. Additional learning occurs at temperatures as low as 0°F (-17°C) and as high as 200°F (94°C). This procedure may be performed at any temperature that experiences poor shift quality. Although the UD CVI may not change, shift quality should improve.

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 Clutch Volume Index (CVI).

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

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

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

Use the following steps to have the TCM learn the 1st 2-3 shift OD Clutch Volume Index (CVI).

1. With the 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 DRB-III 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 & 3-4 Upshift

NOTE: Transmission fluid temperature must be above 110°F (43°C).

PMZ

12 апреля 2010 г. 11:40:29

Page 20

© 2005 Mitchell Repair Information Company, LLC.

Use the following steps to have the TCM learn the OD and 4C Clutch Volume Index (CVIs).

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 & Part Throttle 4-3 Kickdown

NOTE: Transmission fluid temperature must be above 110°F (43°C).

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

1. At a vehicle speed between 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 & 3-2 Kickdown

NOTE: Transmission fluid temperature must be above 110°F (43°C).

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

1. With a vehicle speed below 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

NOTE: Transmission fluid temperature must be above 110°F (43°C).

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

1. With the vehicle speed around 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

NOTE: Transmission fluid temperature must be above 110°F (43°C).

Perform the following shifts. 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

NOTE: Transmission fluid temperature must be above 110°F (43°C).

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

1. Accelerate the vehicle through 55 MPH at a steady 10-15 degree throttle opening and perform multiple 4-5 upshifts.
2. Repeat step 1 until the 4-5 shift becomes smooth and the 2C(A) CVI becomes 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

TROUBLE SHOOTING

NOTE: Any diagnosis should begin with confirming the customer's complaint. If possible, road test vehicle first, and note transmission performance for future reference during diagnosis.

PRELIMINARY INSPECTION

NOTE: Verify the customer's complaint with a test drive under the conditions the problem reportedly occurred. Before checking transmission electronic control system, perform a careful and complete visual inspection. Most transmission control problems result from mechanical breakdowns or poor electrical connections.

Ensure battery is fully charged. Check engine coolant level. Ensure transmission fluid level is correct and fluid condition is okay (not contaminated or aerated). Ensure shift cable or linkage is properly adjusted. Visually inspect all electrical wiring, looking for chafed, stretched, cut or pinched wiring. Check TCM, sensors and switches for physical damage. Ensure all electrical connections at transmission switches/sensors, TCM, solenoid assembly and transmission control relay are clean and properly installed.

Repair as necessary. After repairs are complete, always perform **TRANSMISSION VERIFICATION TEST VER-1** under DIAGNOSTIC TESTS. If no problems are found during preliminary inspection, or if driveability concerns still remain, diagnose electronic control system. See **TEST EQUIPMENT HOOK-UP** and **RETRIEVING DIAGNOSTIC TROUBLE CODES** under SELF-DIAGNOSTIC SYSTEM.

SYMPTOM DIAGNOSIS

NOTE: For diagnosis of symptoms related to mechanical failures, see **CLUTCH APPLICATIONS** . For diagnosis of symptoms related to electronic failures, see **SYMPTOM TESTS** .

NOTE: Perform the appropriate preliminary diagnostic steps according to present condition of the vehicle.

Vehicle Is Drivable

1. Using scan tool, check for transmission-related Diagnostic Trouble Codes (DTCs). Repair as necessary.
2. Check transmission fluid level and condition.
3. Adjust gearshift cable if complaint is related to delayed, erratic or harsh shifts.

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller

4. Road test vehicle and note transmission upshifts, downshifts and engagement. See **ROAD TEST** under PERFORMANCE TESTS.
5. If complaint is related to sluggish acceleration, or if abnormal throttle angle is needed to maintain normal speeds with a properly tuned engine, torque converter may be at fault.
6. Test hydraulic pressures if shifting problems occurred during road test. See **HYDRAULIC PRESSURE TESTS** under PERFORMANCE TESTS.
7. Perform air pressure tests to check clutch operation. See **CLUTCH AIR PRESSURE TESTS** under PERFORMANCE TESTS.

Vehicle Is Disabled

1. Check transmission fluid level and condition. Check for broken or disconnected gearshift cable. Check for leaking oil cooler lines, or for loose or missing pressure test port plugs.
2. Raise and support vehicle. Start engine, shift transmission into gear, and note the following:
 - If drive shaft rotates, but wheels do not, repair axle shafts or differential as necessary.
 - If drive shaft does not rotate and transmission is noisy, turn engine off. Remove transmission oil pan and check for debris. See appropriate **SERVICING** article in AUTOMATIC TRANSMISSIONS. Overhaul as necessary. See appropriate **OVERHAUL** article. If no debris is found, remove transmission and check for damaged drive plate, torque converter, oil pump or input shaft. See appropriate **REMOVAL & INSTALLATION** article in AUTOMATIC TRANSMISSIONS. Repair as necessary.
 - If drive shaft does not rotate and transmission is not noisy, test hydraulic pressures to determine if problem is hydraulic or mechanical. See **HYDRAULIC PRESSURE TESTS** under PERFORMANCE TESTS.

CLUTCH APPLICATIONS

CLUTCH APPLICATIONS

Gearshift Lever Position	Elements In Use
"D" (Overdrive)	
1st Gear	Underdrive Clutch, ⁽¹⁾ Low/Reverse Clutch & Overrunning Clutch
2nd Gear (Primary)	Underdrive Clutch & 2nd Clutch
2nd Gear (Prime)	Underdrive Clutch & 4th Clutch
3rd Gear	Underdrive Clutch & Overdrive Clutch
4th Gear	Overdrive Clutch & 4th Clutch
4th Gear (Prime - 545RFE)	Overdrive Clutch & 2nd Clutch
Limp-In	Underdrive Clutch & Overdrive Clutch
"2" (Second)	
1st Gear	Underdrive Clutch, ⁽¹⁾ Low/Reverse Clutch & Overrunning Clutch
2nd Gear	Underdrive Clutch & 2nd Clutch
Limp-In	Underdrive Clutch & 2nd Clutch
"1" (Low) 1st Gear	Underdrive Clutch, Low/Reverse Clutch & Overrunning Clutch
"R" (Reverse)	Reverse Clutch & Low/Reverse Clutch

PMZ

12 апреля 2010 г. 11:40:29

Page 23

© 2005 Mitchell Repair Information Company, LLC.

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller

"N" (Neutral)	Low/Reverse Clutch
"P" (Park)	Low/Reverse Clutch
(1) Low/reverse clutch is in use only when output shaft speed is less than 150 RPM.	

PERFORMANCE TESTS

ROAD TEST

1. Ensure transmission fluid level is correct and gearshift linkage is properly adjusted. See appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**. Add ATF and adjust gearshift linkage as necessary.
2. Ensure all DTCs have been resolved (engine or transmission related). If engine-related DTCs are present, see appropriate **SELF-DIAGNOSTICS** article in **ENGINE PERFORMANCE**.
3. Road test vehicle and operate transmission in all gear ranges. Observe engine performance during road test. A poorly tuned engine will not allow an accurate analysis of transmission operation.
4. During road test, note transmission shift schedules. See **SHIFT SCHEDULES**. The TCM selects a variety of shift schedules depending on gearshift lever position, throttle position, engine load, fluid temperature and software level.
5. Check for slippage and shift variations. Note if shifts are harsh, spongy, delayed or early. Slipping in any gear usually indicates clutch or overrunning clutch problems. A slipping clutch in a particular gear can usually be identified by noting transmission operation in other gear ranges and comparing internal components used. See **CLUTCH APPLICATIONS** under **TROUBLE SHOOTING**.
6. Problem area may be detected by determining which components are applied. By selecting another gear range that does not use these clutches, the clutch that is slipping can be determined. See **CLUTCH APPLICATIONS** under **TROUBLE SHOOTING**.
7. Process of elimination can be used to detect slipping components and confirm proper operation of good components. Although a road test analysis can usually diagnose slipping components, the actual malfunction however, usually cannot be decided.
8. Practically any condition can be caused by leaking hydraulic circuits or sticking valve body components. Transmission failure may be determined by performing hydraulic pressure tests along with clutch air pressure tests. See **HYDRAULIC PRESSURE TESTS** and/or **CLUTCH AIR PRESSURE TESTS**.

SHIFT SCHEDULES

Extreme Cold, Oil Temperature Less Than -16°F (-27°C)

Under extreme cold conditions, transmission operation is limited to Park, Reverse, Neutral and 1st and 3rd gears. With gearshift lever in Manual "2" or "L", transmission operation is limited to 2nd gear only. Electronically Modulated Converter Clutch (EMCC) operation is prevented.

Super Cold, Oil Temperature Between -12°F (-24°C) & 10°F (-12°C)

Transmission operation with delayed 2-3 upshift, delayed 3-4 upshift and early 4-3, 3-2 or 2-1 coastdown shift. High speed 4-2, 3-2 and 2-1 kickdown shifts are prevented. Shifts at high throttle openings will be early. EMCC operation is prevented.

Cold, Oil Temperature Between 10°F (-12°C) & 36°F (2°C)

Shift schedule is same as super cold, except that 2-3 upshifts are not delayed.

Warm, Oil Temperature Between 40°F (4°C) & 80°F (27°C)

All upshifts, kickdowns and coastdowns are normal. EMCC operation is prevented.

Hot, Oil Temperature Between 80°F (27°C) & 240°F (116°C)

All upshifts, kickdowns and coastdowns are normal. EMCC operation is normal.

Overheat, Oil Temperature Greater Than 240°F (116°C), Or Engine Coolant Temperature Greater Than 244°F (118°C)

Transmission operation with delayed 2-3 upshifts and delayed 3-4 upshifts. Full EMCC operation in 3rd gear at vehicle speeds of 30-48 MPH. Partial EMCC operation in 3rd gear at vehicle speeds of 27-31 MPH.

Super Overheat, Oil Temperature Greater Than 260°F (126°C)

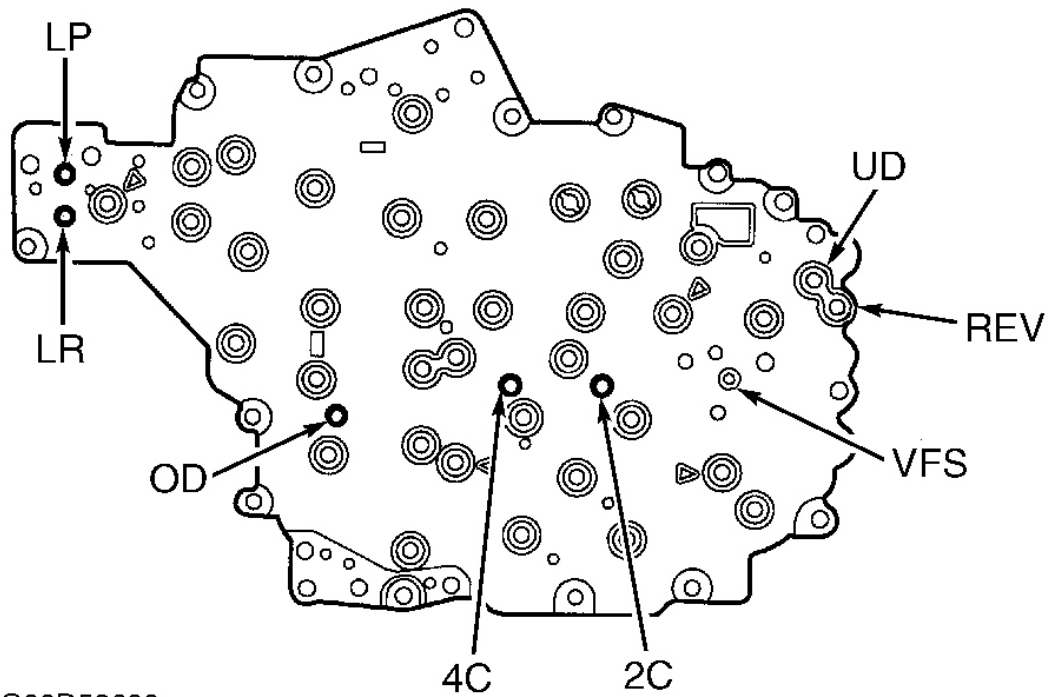
Transmission operation with delayed 2-3 upshifts and delayed 3-4 upshifts. Partial EMCC operation in 2nd gear at vehicle speeds above 22 MPH. The torque converter will not unlock during vehicle speeds greater than 22 MPH unless throttle angle is less than 4 degrees or if a wide open throttle 2nd partial EMCC to 1st kickdown is made. For example, at 50 MPH a 4th full EMCC to 3rd full EMCC shift will be made during a part throttle kickdown or a 4th full EMCC to 2nd partial EMCC shift will be made at wide open throttle.

HYDRAULIC PRESSURE TESTS

CAUTION: A 300 psi (21 kg/cm²) pressure gauge is required for pressure checks where hydraulic pressures exceed 100 psi (7 kg/cm²).

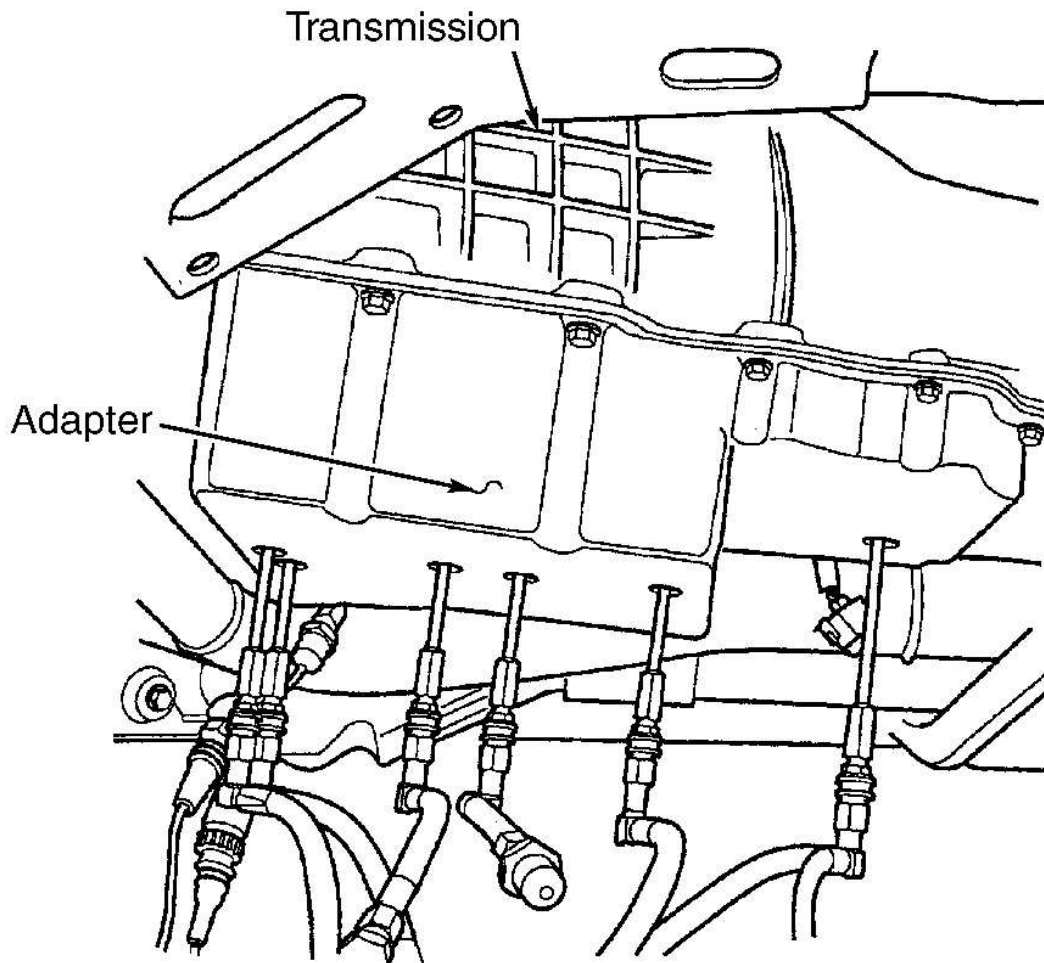
Test Preparation

1. Raise and support vehicle. Remove transmission oil pan. See appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. Remove pressure test port plugs from valve body. See **Fig. 15**. Install Valve Body Pressure Tap Adapter (8258). See **Fig. 16**.
2. Remove line pressure sensor (also referred to as line pressure transducer) from right rear side of transmission case. See **Fig. 17**. Install Line Pressure Adapter (8259). Reinstall line pressure sensor and install appropriate pressure test gauge.
3. Remove torque converter pressure test port plugs from right side of transmission case. See **Fig. 17**. Install appropriate pressure test gauge.
4. Lower vehicle and refill transmission to proper level. See appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. Install scan tool following scan tool manufacturer's instructions. Install tachometer. Start engine and allow engine and transmission to reach normal operating temperature. Raise and support vehicle, allowing wheels to rotate freely.



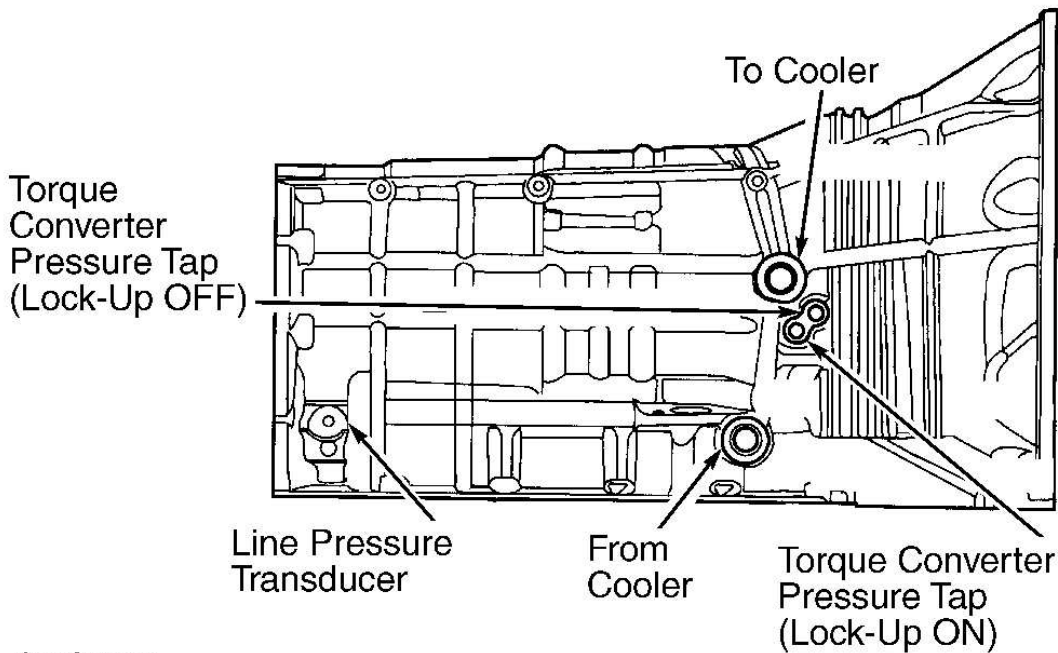
G99D52699

Fig. 15: Locating & Identifying Valve Body Pressure Taps
Courtesy of DAIMLERCHRYSLER CORP.



G00045728

Fig. 16: Installing Valve Body Pressure Tap Adapter
Courtesy of DAIMLERCHRYSLER CORP.



G99C52698

Fig. 17: Identifying Oil Cooler Line Fittings & Torque Converter Pressure Taps
 Courtesy of DAIMLERCHRYSLER CORP.

Test Procedure

NOTE: All pressure readings should be taken with engine speed at 1500 RPM.

1. Check transmission for proper operation in each gear position in question. If a specific element is in question, check pressure readings in at least 2 gear positions employing that same element. See **CLUTCH APPLICATIONS** under TROUBLE SHOOTING.
2. Using scan tool, compare line pressure readings to pressure readings displayed on gauge connected to line pressure sensor test port. This will determine accuracy of transmission electronic control system.
3. Record all pressure readings and compare with manufacturer's specifications. See **HYDRAULIC PRESSURE SPECIFICATIONS** . If hydraulic pressures are not to specification, ensure electronic control system is not at fault. Repair as necessary.
4. If electronic control system is operating properly, internal hydraulic or mechanical problems may be present. To help determine area of fault, air check each clutch. See **CLUTCH AIR PRESSURE TESTS** .

HYDRAULIC PRESSURE SPECIFICATIONS

HYDRAULIC PRESSURE SPECIFICATIONS

Condition	(1) Specification (psi)
Park & Neutral	
Line	35-165

PMZ

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller

TCC Off	35-118
TCC On	15-80
Reverse	
Line	45-250
TCC Off	40-118
TCC On	40-75
Reverse Block ⁽²⁾	
Line	45-250
TCC Off	40-118
TCC On	35-75
First Gear	
Line	35-165
TCC Off	35-118
TCC On	15-80
Second Gear & Second Gear Prime ⁽³⁾	
Line	35-165
TCC Off	35-118
TCC On	15-80
Second Gear & Second Gear Prime ⁽⁴⁾	
Line	35-165
TCC Off	0
TCC On	35-80
Direct Gear ⁽³⁾	
Line	35-165
TCC Off	35-118
TCC On	15-80
Direct Gear ⁽⁴⁾	
Line	35-165
TCC Off	0
TCC On	35-80
Fourth & Fifth Gear	
Line	35-165
TCC Off	35-118
TCC On	15-80
Manual Low, Autostick 1st & Manual Second Gear	
Line	35-165
TCC Off	35-118
TCC On	15-80

(1) Record all pressures with engine speed at 1500 RPM.

(2) Shift to Reverse with vehicle speed over 8 MPH.

(3) Without EMCC.

With EMCC.

PMZ

(4)

HYDRAULIC PRESSURE ADJUSTMENTS

NOTE: Transmission hydraulic pressures are controlled by Transmission Control Module (TCM) based on inputs from various sensors, and therefore cannot be adjusted. If hydraulic pressures are not within specifications, the transmission electronic control system may be at fault, or an internal hydraulic or mechanical problem may be present.

CLUTCH AIR PRESSURE TESTS

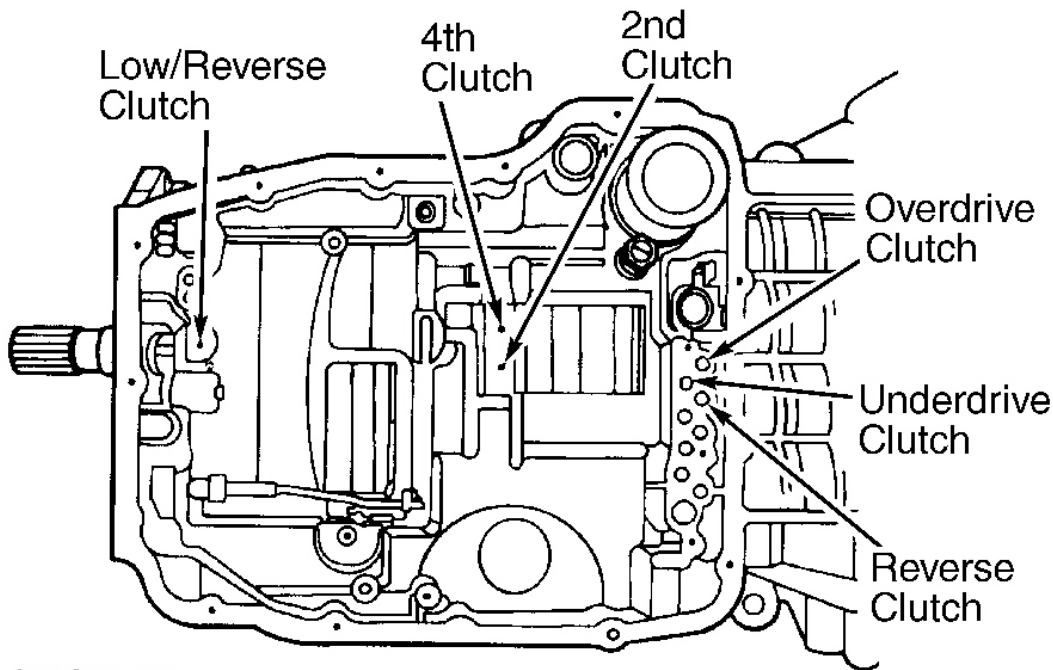
Test Preparation

Remove valve body. See REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.

CAUTION: Ensure air supply is free of all dirt and moisture.

Test Procedure

Apply 30 psi (2.1 kg/cm²) of air pressure to each test passage. See **Fig. 18**. If clutch is functioning properly, a soft thump should be heard as clutch is applied. Clutch application can also be felt by touching the appropriate element while applying air pressure. As air pressure is released, clutch should also release. By comparing road test, hydraulic pressure test and clutch air pressure test information, area of fault may be closely identified.



G99G52700

Fig. 18: Locating & Identifying Air Pressure Test Passages
 Courtesy of DAIMLERCHRYSLER CORP.

TORQUE CONVERTER DIAGNOSIS

CAUTION: The torque converter is a sealed, welded unit that is not repairable and is serviced as an assembly. The torque converter must be replaced if a transmission failure results in large amounts of metal or fiber contamination in the transmission fluid.

NOTE: Stall speed test procedures are not available.

SELF-DIAGNOSTIC SYSTEM

NOTE: Self-diagnostic tests are written specifically for Chrysler's Diagnostic Readout Box-III (DRB-III) scan tool. A generic scan tool may be used, but may not be capable of performing all necessary test functions.

TEST EQUIPMENT HOOK-UP

Generic Scan Tool & DVOM

Self-diagnostic tests are written specifically for Chrysler's Diagnostic Readout Box-III (DRB-III) scan tool. The DRB-III has a built-in DVOM function. A generic scan tool may be used, but may not be capable of performing all necessary test functions. If DRB-III test procedures require resistance or voltage to be

measured using scan tool in ohmmeter or voltmeter mode, perform the following:

- Connect DVOM ground lead to DLC connector terminal No. 4, and positive lead to terminal specified in test procedure.

DRB Scan Tool

Refer to DRB-III scan tool instructions to retrieve and clear DTCs, and when performing other scan tool functions. DRB-III scan tool is grounded through DLC connector terminal No. 4. Only one volt/ohmmeter test lead is required to measure voltage or resistance. DRB-III scan tool volt/ohmmeter mode should only be used when specified by test procedure.

Test Light

Many of the following testing procedures call for use of test light instead of DVOM to indicate voltage on a circuit. Manufacturer recommends test light with a minimum resistance of 25 ohms to load circuit. Always compare brightness of test light once connected to specified circuit with that of direct connection to battery voltage. A dim light could indicate a poor connection or high resistance in circuit.

Miller Transmission Simulator (8333)

Transmission simulator is an electronic device that simulates electronic functions of 45RFE and 545RFE transmission. Use of simulator can aid in determining if an internal transaxle problem exists or if malfunction is caused by faulty wiring harness or TCM. Simulator will not diagnose mechanical failures.

Ensure ignition switch is in LOCK position before installing simulator. Follow manufacturer's instructions to operate unit. Since simulator receives power from transmission relay output circuit, simulator will not operate in limp-in mode (relay open). Limp-in condition indicates problem with wiring or TCM.

RETRIEVING DIAGNOSTIC TROUBLE CODES

NOTE: If MIL does not illuminate for 3 seconds and then go off, bulb may be defective, or problem may exist on PCI Bus circuit between PCM and instrument cluster. If problem exists with PCI Bus circuit, problem may be displayed when using scan tool to retrieve DTCs.

NOTE: Ensure battery is fully charged before proceeding with test.

1. Attempt to start engine. Turn ignition off. DTCs can only be retrieved using scan tool. Connect scan tool to DLC. DLC is located below instrument panel, near steering column.
2. Turn ignition on, engine off. Using scan tool manufacturer's instructions, read and record DTC (generic scan tool) or DTC message (DRB-III scan tool), and freeze frame data.
3. If scan tool displays NO RESPONSE, see **NO RESPONSE FROM TCM**. If scan tool does not display NO RESPONSE, go to next step.
4. If scan tool will not power up, check for loose cable connections or faulty cable. If cable connections and cable are okay, check voltage on DLC power terminal. See appropriate WIRING DIAGRAMS article in ENGINE PERFORMANCE. Voltage should be at least 11 volts. If voltage is not as specified, check wiring circuit and necessary fuses.
5. If scan tool displays USER-REQUESTED COLD BOOT ERROR or USER-REQUESTED WARM

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller

BOOT ERROR, or any other error message, record entire displayed error message and follow scan tool manufacturer's instructions for information on correcting error.

6. If scan tool displays BUS FAILURE (indicating scan tool or BUS circuit failure), diagnose and repair as necessary. See appropriate BODY CONTROL MODULES article in ACCESSORIES & EQUIPMENT.
7. Check for and repair any PCM-related DTCs which could cause transmission complaints. Any misfire, Engine Coolant Temperature (ECT) sensor and Throttle Position (TP) sensor-related faults can result in a transmission complaint. Repair as necessary. If problem is still present, attempt diagnosis by symptom. See **SYMPTOM DIAGNOSIS** under TROUBLE SHOOTING.
8. If no PCM-related DTCs are present, retrieve TCM-related DTCs following scan tool manufacturer's instructions. Identify DTCs if any are displayed. If TCM-related DTCs are present, see **DIAGNOSTIC TROUBLE CODE IDENTIFICATION** . If no TCM-related DTCs are present, attempt diagnosis by symptom. See **SYMPTOM TESTS** .

DIAGNOSTIC TROUBLE CODE IDENTIFICATION

DIAGNOSTIC TROUBLE CODES & MESSAGES

Generic Scan Tool Code ⁽¹⁾	DRB-III Scan Tool Message	Limp-In Mode/MIL On
P0120	THROTTLE POSITION SENSOR SIGNAL CIRCUIT	No/No
P0218	HIGH TEMPERATURE OPERATION ACTIVATED	No/No
P0604	INTERNAL TCM	Yes/Yes
P0605	INTERNAL TCM	Yes/Yes
P0613	INTERNAL TCM	Yes/Yes
P0706	CHECK SHIFTER SIGNAL	No/No
P0715	INPUT SPEED SENSOR ERROR	Yes/Yes
P0720	OUTPUT SPEED SENSOR ERROR	Yes/Yes
P0725	ENGINE SPEED SENSOR CIRCUIT	Yes/Yes
P0731	GEAR RATIO ERROR IN 1ST	Yes/Yes
P0732	GEAR RATIO ERROR IN 2ND	Yes/Yes
P0733	GEAR RATIO ERROR IN 3RD	Yes/Yes
P0734	GEAR RATIO ERROR IN 4TH	Yes/Yes
P0735	GEAR RATIO ERROR IN 4TH PRIME (545RFE)	Yes/Yes
P0736	GEAR RATIO ERROR IN REVERSE	Yes/Yes
P0740	TORQUE CONVERTER CLUTCH CONTROL CIRCUIT	No/Yes
P0750	LR SOLENOID CIRCUIT	Yes/Yes
P0755	2C SOLENOID CIRCUIT	Yes/Yes
P0760	OD SOLENOID CIRCUIT	Yes/Yes
P0765	UD SOLENOID CIRCUIT	Yes/Yes
P0770	4C SOLENOID CIRCUIT	Yes/Yes
P0841	LR PRESSURE SWITCH SENSE CIRCUIT	Yes/Yes
P0845	2C HYDRAULIC PRESSURE TEST FAILURE	Yes/Yes
P0846	2C PRESSURE SWITCH SENSE CIRCUIT	Yes/Yes
P0867	LINE PRESSURE FAULT	No/No
P0868	LINE PRESSURE LOW	No/No

PMZ

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller

P0869	LINE PRESSURE HIGH	No/No
P0870	OD HYDRAULIC PRESSURE TEST FAILURE	Yes/Yes
P0871	OD PRESSURE SWITCH SENSE CIRCUIT	Yes/Yes
P0875	UD HYDRAULIC PRESSURE TEST FAILURE	Yes/Yes
P0876	UD PRESSURE SWITCH SENSE CIRCUIT	Yes/Yes
P0884	POWER UP AT SPEED	No/No
P0888	RELAY OUTPUT ALWAYS OFF	Yes/Yes
P0890	SWITCHED BATTERY	Yes/Yes
P0891	TRANSMISSION RELAY ALWAYS ON	Yes/Yes
P0932	LINE PRESSURE SENSOR FAULT	No/No
P0944	LOSS OF PRIME	No/No
P0987	4C HYDRAULIC PRESSURE TEST FAILURE	Yes/Yes
P0988	4C PRESSURE SWITCH SENSE CIRCUIT	Yes/Yes
P1684	BATTERY WAS DISCONNECTED	No/No
P1694	BUS COMMUNICATION WITH PCM	No/No
P1715	RESTRICTED PORT IN T3 RANGE	No/No
P1736	GEAR RATIO ERROR IN 2ND PRIME	Yes/Yes
P1775	SOLENOID SWITCH VALVE LATCHED IN TCC POSITION	No/Yes
P1776	SOLENOID SWITCH VALVE LATCHED IN LR POSITION	Yes/Yes
P1790	FAULT IMMEDIATELY AFTER SHIFT	No/No
P1793	TRD LINK COMMUNICATION ERROR	No/No
P1794	SPEED SENSOR GROUND ERROR	Yes/Yes
P1799	CALCULATED OIL TEMP IN USE	No/No
P1899	P/N PERFORMANCE (45RFE)	No/No
P2700	INADEQUATE ELEMENT VOLUME LR	No/No
P2701	INADEQUATE ELEMENT VOLUME 2C	No/No
P2702	INADEQUATE ELEMENT VOLUME OD	No/No
P2703	INADEQUATE ELEMENT VOLUME UD	No/No
P2704	INADEQUATE ELEMENT VOLUME 4C	No/No
P2706	MS SOLENOID CIRCUIT	Yes/Yes

(1) For diagnostic procedures, see **DIAGNOSTIC TESTS** .

NO RESPONSE FROM TCM

Possible Cause

TCM communication errors will result from the following conditions:

- Open in fused B+ circuit to TCM.
- Open in fused ignition switch output (RUN/ST) circuit.
- Open in fused ignition switch output (START) circuit.
- Open ground circuit.

PMZ

12 апреля 2010 г. 11:40:30

Page 34

© 2005 Mitchell Repair Information Company, LLC.

- Other BUS problems.
- Open PCI BUS circuit.
- Faulty TCM.

Diagnostic Procedure

NOTE: After any repair is made or component is replaced, perform **TRANSMISSION VERIFICATION TEST VER-1** under **DIAGNOSTIC TESTS**.

NOTE: When testing B+, output and ground circuits with a test light, ensure test light illuminates brightly. Compare test light brightness of circuits to brightness of test light when connected to direct battery voltage. If circuits do not illuminate with same brightness as direct battery voltage, circuit must be repaired.

1. Turn ignition switch to ON position. Using scan tool, attempt to communicate with air bag control module, body control module or central timer module. If scan tool was able to communicate with either module, go to next step. If scan tool was not able to communicate with either module, diagnose communication concern. See appropriate BODY CONTROL MODULES article in ACCESSORIES & EQUIPMENT.
2. Turn ignition switch to LOCK position. Disconnect TCM harness connector. On Dodge Dakota and Durango, TCM is located at right front corner of engine compartment, mounted to radiator support. See **Fig. 11** . On all other models, TCM is located at right rear corner of engine compartment, mounted to inner fender. See **Fig. 12** , **Fig. 13** and **Fig. 14** . On all models, turn ignition on. Using test light connected to ground, probe fused ignition switch output (RUN/START) circuit at TCM harness connector terminal No. 11. If test light illuminates, go to next step. If test light does not illuminate, repair open circuit.
3. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Turn ignition switch to START position. Using test light connected to ground, probe fused ignition switch output (START) circuit at TCM harness connector terminal No. 8. If test light illuminates, turn ignition off. Reinstall starter relay and go to next step. If test light does not illuminate, repair open circuit.
4. Using a test light connected to ground, probe fused B+ circuit at TCM harness connector terminal No. 56. If test light illuminates, go to next step. If test light does not illuminate, repair open circuit.
5. Using test light connected to battery positive terminal, probe all 4 ground circuits at TCM harness connector. See **WIRING DIAGRAMS** . If test light illuminates at all ground circuits, go to next step. If test light does not illuminate at all ground circuits, repair open circuit. Check main ground connection to engine block and/or chassis. Repair as necessary.

NOTE: Ensure there is PCI Bus communication with other modules on vehicle before proceeding. If communication does not exist, diagnose communication concern. See appropriate BODY CONTROL MODULES article in ACCESSORIES & EQUIPMENT and repair as necessary. Manufacturer recommends using Scope Input Cable (CH7058) and Cable-To-Probe Adapter (CH7062) with Red and Black test leads in the following test.

6. Ensure TCM harness connector is disconnected. Connect scope input cable to channel one connector

PMZ

on DRB-III. Attach Red and Black test leads and adapter to scope input cable. Using DRB-III, select Pep Module Tools. Select lab scope. Select Live Data. Select 12-volt square wave. Press F2 for scope. Press F2 and use down arrow to set voltage range to 20 volts. Set probe to x10. Press F2 again when completed. Connect Black test lead to chassis ground. Connect Red test lead to PCM Bus circuit at TCM harness connector terminal No. 43. Turn ignition on. Observe voltage display on DRB lab scope. If voltage pulses from zero to about 7.5 volts, replace TCM. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION. If voltage does not pulse from zero to about 7.5 volts, repair open PCI Bus circuit.

CLEARING DIAGNOSTIC TROUBLE CODES

After repairs are performed, use scan tool and manufacturer's instructions to clear or erase DTC from TCM memory.

NOTE: If malfunction goes away after DTC is stored in TCM memory, TCM will erase DTC after ignition has been cycled at least 40 times.

DIAGNOSTIC TESTS

INTRODUCTION

CAUTION: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. A diagnostic test procedure may instruct the technician to replace a particular component, or the complete transmission assembly as required per current warranty policy. **ALWAYS** verify vehicle warranty status before performing repairs.

NOTE: Diagnostic tests are written specifically for Chrysler's Diagnostic Readout Box-III (DRB-III) scan tool. If using a generic scan tool, ensure scan tool is OBD-II certified. A generic scan tool may not be capable of performing all necessary test functions.

NOTE: All models except Ram Pickup 1500 use a Power Distribution Center (PDC). Ram Pickup 1500 uses an Integrated Power Module (IPM) in place of the PDC.

NOTE: See **TEST EQUIPMENT HOOK-UP** under **SELF-DIAGNOSTIC SYSTEM** for additional information used in the following tests. All connector references in the following tests apply to harness connectors unless otherwise specified.

NOTE: After any repair is made or component is replaced, perform **TRANSMISSION VERIFICATION TEST VER-1** , unless otherwise noted.

For engine-related DTCs, see appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. These DTCs pertain to engine performance and must be repaired first, as engine performance and related component signals will affect transmission operation and diagnosis. For non-electrical testing and mechanical overhaul procedures, see appropriate OVERHAUL article. For electronic component testing and

diagnostic procedures, use scan tool to retrieve DTCs and diagnose system. See **RETRIEVING DIAGNOSTIC TROUBLE CODES** under SELF-DIAGNOSTIC SYSTEM. To aid in connector identification during testing, see **CONNECTOR IDENTIFICATION** .

PRE-DIAGNOSTIC CHECKS

NOTE: Always perform the following checks prior to performing DTC testing.

Check transmission fluid level and condition at normal operating temperature. See appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**. Check transmission for damage or leaks. Repair as needed. Ensure battery is fully charged. Using scan tool, check for engine-related DTCs. Repair all engine-related DTCs prior to diagnosing transmission malfunction. Using scan tool, check for transmission-related DTCs. Repair all transmission and one trip failure codes as necessary. Diagnose one trip failure codes as hard codes. Inspect wiring and connectors and repair as necessary. Using scan tool, perform **SHIFT LEVER POSITION TEST**. If test does not pass, see **DTC P0706: CHECK SHIFTER SIGNAL** . For gear ratio DTCs, record all Clutch Volume Index (CVI) information. CVI represents the volume of fluid needed to compress a clutch pack. TCM determines CVI's by monitoring how long it takes for a gear change to occur. Most DTCs set at engine start up, but some DTCs must be set by driving vehicle.

Verify flash level of TCM. Some problems are corrected by software upgrades to transmission and engine systems. Check for applicable Technical Service Bulletins (TSB).

DTC P0120: THROTTLE POSITION SENSOR SIGNAL CIRCUIT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0120 will set if throttle angle is out of range or changes abruptly (faster than throttle body motion could occur). TCM will use a calculated throttle angle supplied by PCM over communication bus circuit. If communication bus circuit is unavailable, TCM will use a default throttle angle of 24 degrees for key start in which DTC was set. Transmission will try to use the TP sensor signal again on next key start. Vehicle may experience extremely erratic shifting just prior to setting DTC. Transmission may "hunt" between gears.

Possible Cause

The following items may be area of concern:

- Related TP sensor DTCs present.
- Erratic TP sensor voltage change.
- Faulty TCM.
- Open in sensor ground circuit to TCM.
- Intermittent wiring and connector problems.

- Open in TP sensor signal circuit to TCM.

Diagnostic Procedure

1. Using scan tool, check for PCM DTCs. If PCM DTCs P0121, P0122 or P0123 are set, diagnose and repair as necessary. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. If no PCM DTCs are set, go to next step.
2. Using scan tool, check TP sensor angle value. If TP sensor angle value is less than 6 degrees or greater than 120 degrees, go to next step. If TP sensor angle value is not less than 6 degrees or greater than 120 degrees, go to step 6 .
3. Turn ignition off. Disconnect TCM and TP sensor harness connectors. Measure resistance of TP sensor ground circuit between TP sensor harness connector terminal No. 3 and TCM harness connector terminal No. 51. See **WIRING DIAGRAMS** . If resistance is less than 5 ohms, go to next step. If resistance is 5 ohms or greater, repair open circuit.
4. Measure resistance of TP sensor signal circuit between TP sensor harness connector terminal No. 2 and TCM harness connector terminal No. 12. See **WIRING DIAGRAMS** . If resistance is less than 5 ohms, go to next step. If resistance is 5 ohms or greater, repair open circuit.
5. If no other potential causes for DTC P0120 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
6. Turn ignition on. Using scan tool, monitor TP sensor voltage while slowly opening and closing throttle. If voltage change is smooth, go to next step. If voltage change is not smooth, replace TP sensor. See appropriate REMOVAL, OVERHAUL & INSTALLATION article in ENGINE PERFORMANCE.
7. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Pay particular attention to condition of circuits at points where spliced to engine circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0218: HIGH TEMPERATURE OPERATION ACTIVATED

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0218 will set when overheat shift schedule is activated at 240°F (116°C).

Possible Cause

The following items may be area of concern:

- Transmission oil cooler plugged.
- High temperature operations activated.

- Engine cooling system malfunction.
- Incorrect fluid level.

Diagnostic Procedure

1. Perform oil pump volume check. See appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. Repair clogged oil cooler as necessary. If oil cooler flow check passes, go to next step.
2. Perform engine cooling system diagnosis. If engine cooling system is not functioning properly, repair as necessary. If engine cooling system is functioning properly, go to next step.

NOTE: **Ensure transmission fluid is at normal operating temperature. Check and adjust fluid level as necessary. Fluid level may not show on dipstick if transmission temperature is less than 50°F (100°C), even though transmission has an adequate fluid level.**

3. Ensure engine and transmission is at normal operating temperature, and transmission fluid is at proper level. See appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. Adjust as necessary and retest. If fluid level is okay, go to next step.
4. This DTC is an informational code to aid in diagnosis of shift quality complaints. The DTC indicates transmission has been operating in overheat shift schedule. Customer driving conditions may indicate a need for an additional transmission oil cooler. Repair as necessary.

P0604: INTERNAL TCM

NOTE: **Always perform TRANSMISSION VERIFICATION TEST VER-1 after repair is completed.**

NOTE: **The TCM is reporting internal errors and must be replaced. See TRANSMISSION CONTROL MODULE under REMOVAL & INSTALLATION.**

P0605: INTERNAL TCM

NOTE: **Always perform TRANSMISSION VERIFICATION TEST VER-1 after repair is completed.**

NOTE: **The TCM is reporting internal errors and must be replaced. See TRANSMISSION CONTROL MODULE under REMOVAL & INSTALLATION.**

P0613: INTERNAL TCM

NOTE: **For circuit reference, see CONNECTOR IDENTIFICATION and/or WIRING DIAGRAMS .**

NOTE: **Always perform TRANSMISSION VERIFICATION TEST VER-1 after repair is completed.**

Circuit Description

The TCM is reporting internal errors.

Diagnostic Procedure

NOTE: When testing ground circuits with a test light, ensure test light illuminates brightly. Compare test light brightness of circuits to brightness of test light when connected to direct battery voltage. If circuits do not illuminate with same brightness as direct battery voltage, circuit must be repaired.

1. Turn ignition switch to LOCK position. Disconnect TCM harness connector. Using test light connected to positive battery terminal, probe all 4 ground circuits at TCM harness connector. See **WIRING DIAGRAMS** . If test light illuminates at all circuits, go to next step. If test light does not illuminate at all circuits, repair open ground circuit(s) as necessary. Check main ground connection to engine block or chassis. Repair as necessary.
2. The TCM has an internal problem and must be replaced. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.

DTC P0706: CHECK SHIFTER SIGNAL

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0706 will set if an invalid PRNDL code occurs 3 times in one key start and lasts for more than .1 second.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Transmission Range Sensor (TRS) sense circuits shorted to ground, shorted to voltage, or open.
- Defective internal TCM TRS sense circuits.
- Faulty TRS.
- Shift linkage out of adjustment.

Diagnostic Procedure

1. Using scan tool, perform SHIFT LEVER POSITION TEST. If test passes, go to next step. If test fails with an error code, go to step 3 . If test fails without an error code, go to step 26 .
2. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a

guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

NOTE: When DRB-III requests the OD OFF button be depressed, use OD OFF button in vehicle, or shift lever position test will fail and DTC P0613 will set.

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

3. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Perform SHIFT LEVER POSITION TEST. When scan tool instructs to place gearshift lever in a particular position, do so using transmission simulator. The LED for gear position in question must be illuminated before selecting ENTER on scan tool. If test passes, go to next step. If test does not pass, go to step 5 .
4. Repair internal transmission problem. See appropriate OVERHAUL article. Replace solenoid/TRS assembly. See appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
5. Using scan tool, monitor TRS sense circuits C1-C5 while moving gearshift lever from "P" position to "L" position, pausing momentarily in each gear position. If TRS T1 sense circuit (C4) does not change state, go to next step. If TRS T2 sense circuit (C5) does not change state, go to step 10 . If TRS T3 sense circuit (C3) does not change state, go to step 14 . If TRS T41 sense circuit (C1) does not change state, go to step 18 . If TRS T42 sense circuit (C2) does not change state, go to step 22 .
6. Turn ignition off. Remove transmission simulator. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of TRS T1 sense circuit between TCM harness connector terminal No. 1 and solenoid/TRS assembly harness connector terminal No. 9. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
7. Measure resistance between ground and TRS T1 sense circuit at TCM harness connector terminal No. 1. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
8. Turn ignition on. Measure voltage between ground and TRS T1 sense circuit at TCM harness connector terminal No. 1. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
9. If no other potential causes for DTC P0706 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. Turn ignition off. Disconnect transmission simulator. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of TRS T2 sense circuit between TCM harness connector terminal No. 2 and solenoid/TRS assembly harness connector terminal No. 13. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
11. Measure resistance between ground and TRS T2 sense circuit at TCM harness connector terminal No. 2. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
12. Turn ignition on. Measure voltage between ground and TRS T2 sense circuit at TCM harness connector terminal No. 2. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.

13. If no other potential causes for DTC P0706 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
14. Turn ignition off. Disconnect transmission simulator. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of TRS T3 sense circuit between TCM harness connector terminal No. 3 and solenoid/TRS assembly harness connector terminal No. 8. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
15. Measure resistance between ground and TRS T3 sense circuit at TCM harness connector terminal No. 3. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
16. Turn ignition on. Measure voltage between ground and TRS T3 sense circuit at TCM harness connector terminal No. 3. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
17. If no other potential causes for DTC P0706 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
18. Turn ignition off. Disconnect transmission simulator. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of TRS T41 sense circuit between TCM harness connector terminal No. 41 and solenoid/TRS assembly harness connector terminal No. 4. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
19. Measure resistance between ground and TRS T41 sense circuit at TCM harness connector terminal No. 41. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
20. Turn ignition on. Measure voltage between ground and TRS T41 sense circuit at TCM harness connector terminal No. 41. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
21. If no other potential causes for DTC P0706 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
22. Turn ignition off. Disconnect transmission simulator. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of TRS T42 sense circuit between TCM harness connector terminal No. 42 and solenoid/TRS assembly harness connector terminal No. 5. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
23. Measure resistance between ground and TRS T42 sense circuit at TCM harness connector terminal No. 42. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
24. Turn ignition on. Measure voltage between ground and TRS T42 sense circuit at TCM harness connector terminal No. 42. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
25. If no other potential causes for DTC P0706 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
26. Check and adjust gearshift linkage. See ADJUSTMENTS in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.

P0715: INPUT SPEED SENSOR ERROR

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING**

PMZ

DIAGRAMS .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS .**

Circuit Description

DTC P0715 will set if an excessive change in input RPM has been detected in any gear. Transmission system will default to logical shutdown (without recovery) routine after 5 minutes of substituted gear operation or if 3 gear ratio error events occur in a given key start. This DTC may take up to 5 minutes of detection before MIL is illuminated.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Faulty input speed sensor.
- Input speed sensor circuits shorted to ground, shorted to voltage or open.
- Faulty TCM.

Diagnostic Procedure

1. Place gearshift lever in "P" position and start engine. Using scan tool, monitor input speed sensor value. If value is less than 400 RPM, go to next step. If value is 400 RPM or greater, go to step 10 .

NOTE: Failure to remove starter relay can cause a **NO RESPONSE FROM TCM condition.**

2. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Using transmission simulator, turn rotary knob to middle (1000/3000) position. Turn INPUT/OUTPUT switch on. Using scan tool, monitor input and output speed sensor values. If input speed sensor value is 2950-3050 RPM and output speed sensor value is 950-1050 RPM, replace input speed sensor. See **INPUT/OUTPUT SPEED SENSORS** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. If speed sensor values are not as specified, go to next step.
3. Turn ignition switch to LOCK position. Disconnect TCM harness connector. Disconnect input speed sensor harness connector. Measure resistance of input speed sensor signal circuit between TCM harness connector terminal No. 52 and appropriate input speed sensor harness connector terminal. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
4. Measure resistance of input speed sensor ground circuit between TCM harness connector terminal No. 13 and appropriate input speed sensor harness connector terminal. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
5. Measure resistance between ground and input speed sensor signal circuit at appropriate sensor harness connector terminal. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is

5 ohms or greater, go to next step.

6. Measure resistance between ground and input speed sensor ground circuit at appropriate sensor harness connector terminal. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
7. Turn ignition switch to LOCK position. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and input speed sensor signal circuit at TCM harness connector terminal No. 52. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
8. Leave fused jumper wire connected between fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) at transmission control relay connector. See **WIRING DIAGRAMS** . Measure voltage between ground and input speed sensor ground circuit at TCM harness connector terminal No. 13. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
9. If no other potential causes for DTC P0715 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0720: OUTPUT SPEED SENSOR ERROR

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0720 will set if an excessive change in output RPM has been detected in any gear. Transmission system will default to logical shutdown (without recovery) routine after 5 minutes of substituted gear operation or if 3 gear ratio error events occur in a given key start. This DTC may take up to 5 minutes of detection before MIL is illuminated.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Faulty output speed sensor.
- Output speed sensor circuits shorted to ground, shorted to voltage or open.
- Faulty TCM.

Diagnostic Procedure

1. Place gearshift lever in "P" position and start engine. Raise and support drive wheels. Place gearshift lever in "D" position and release brake. Using scan tool, monitor output speed sensor value. If value is less than 100 RPM, go to next step. If value is 100 RPM or greater, go to step 10 .

NOTE: **Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.**

2. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Using transmission simulator, turn rotary knob to middle (1000/3000) position. Turn INPUT/OUTPUT switch on. Using scan tool, monitor input and output speed sensor values. If input speed sensor value is 2950-3050 RPM and output speed sensor value is 950-1050 RPM, replace output speed sensor. See **INPUT/OUTPUT SPEED SENSORS** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. If speed sensor values are not as specified, go to next step.
3. Turn ignition switch to LOCK position. Disconnect TCM harness connector. Disconnect output speed sensor harness connector. Measure resistance of output speed sensor signal circuit between TCM harness connector terminal No. 14 and appropriate output speed sensor connector terminal. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
4. Measure resistance of output speed sensor ground circuit between TCM harness connector terminal No. 13 and appropriate output speed sensor connector terminal. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
5. Measure resistance between ground and output speed sensor signal circuit at appropriate sensor harness connector terminal. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
6. Measure resistance between ground and output speed sensor ground circuit at appropriate sensor harness connector terminal. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
7. Turn ignition switch to LOCK position. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and output speed sensor signal circuit at TCM harness connector terminal No. 14. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
8. Leave fused jumper wire connected between fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) at transmission control relay connector. See **WIRING DIAGRAMS** . Measure voltage between ground and output speed sensor ground circuit at TCM harness connector terminal No. 13. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
9. If no other potential causes for DTC P0720 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0725: ENGINE SPEED SENSOR CIRCUIT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0725 will set when engine speed sensed by TCM is less than 400 RPM for 2 seconds with engine running (as reported by PCM over communication bus). Transmission will default to logical shutdown routine. This DTC may take up to 5 minutes of detection before MIL is illuminated.

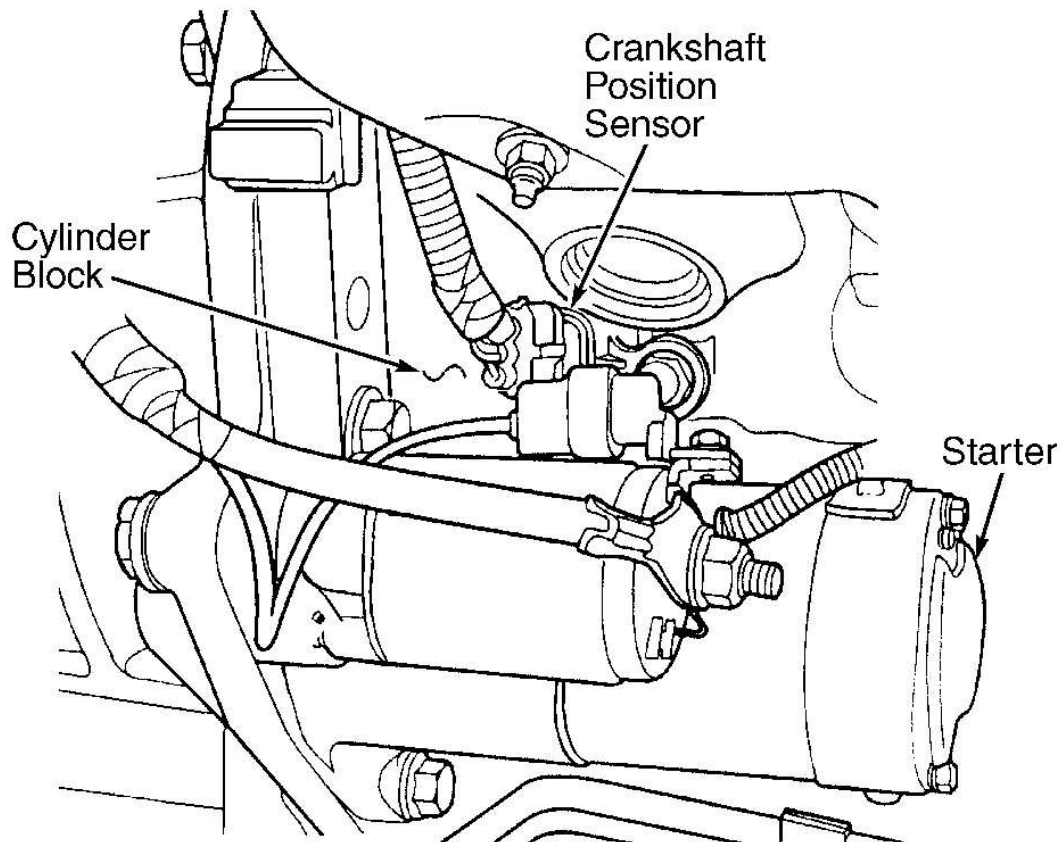
Possible Cause

The following items may be area of concern:

- Open in sensor ground circuit to TCM.
- Intermittent wiring or connector problem.
- Open in Crankshaft Position (CKP) sensor signal circuit to TCM.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check for PCM DTCs. If DTCs P0320, P1391 or P1398 are present, diagnose as necessary. See appropriate DTC test in appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. If no PCM DTCs are present, go to next step.
2. Using scan tool under engine mode in sensors, read and record engine RPM. Using scan tool under transmission mode in sensors, read and record engine RPM. Compare readings. If readings are within 50 RPM of each other, go to step 6 . If readings are not within 50 RPM of each other, go to next step.
3. Turn ignition off. Disconnect TCM and CKP sensor harness connectors. CKP sensor is located above starter. See **Fig. 19** . Measure resistance of sensor ground circuit between TCM harness connector terminal No. 51 and CKP sensor harness connector terminal No. 2. CKP sensor ground circuit is spliced into TP sensor ground circuit (terminal No. 3). See **WIRING DIAGRAMS** . If resistance is less than 5 ohms, go to next step. If resistance is 5 ohms or greater, repair open circuit. Pay particular attention to condition of circuits at points where spliced to TCM.



G00015607

Fig. 19: Locating Crankshaft Position Sensor (4.7L)
 Courtesy of DAIMLERCHRYSLER CORP.

4. Measure resistance of CKP sensor signal circuit between TCM harness connector terminal No. 6 and CKP sensor harness connector terminal No. 1. If resistance is less than 5 ohms, go to next step. If resistance is 5 ohms or greater, repair open circuit. Pay particular attention to condition of circuits at points where spliced to TCM.
5. If no other potential causes for DTC P0725 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
6. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS**. Wiggle wires while checking for shorted and open circuits. Pay particular attention to condition of circuits at points where spliced to engine circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0731: GEAR RATIO ERROR IN 1ST

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS**.

NOTE: Always perform TRANSMISSION VERIFICATION TEST VER-1 after repair is completed. Ensure PRE-DIAGNOSTIC CHECKS has been performed before proceeding with following procedure. See PRE-DIAGNOSTIC CHECKS .

Circuit Description

DTC P0731 will set if ratio of input RPM to output RPM does not match current gear ratio. Transmission system will default to logical shutdown (without recovery) routine after 5 minutes of substituted gear operation or if 3 gear ratio error events occur in a given key start. This DTC may take up to 5 minutes of detection before MIL is illuminated.

Possible Cause

The following items may be area of concern:

- Defective transmission.
- Other transmission-related DTCs are present.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0944, P0715, P0720, P1794, P0867, P0932, P0868 or P0869 are also present, diagnose these DTCs first in the order listed. If no other transmission-related DTCs are present, go to next step.
2. Using scan tool, perform 1ST GEAR CLUTCH test. Increase throttle angle or TP sensor degrees to 30 degrees for no more than a few seconds. Do not overheat transmission. If test passes (input speed remains at zero), go to next step. If test does not pass, go to step 4 .

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

3. Conditions necessary to set DTC are not present at this time. Check gearshift lever adjustment and adjust if necessary. See ADJUSTMENTS in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. Intermittent gear ratio DTCs can be set by problems with input and output speed sensor circuits. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See WIRING DIAGRAMS . Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Perform wiggle test using Transmission Simulator (8333). Repair as necessary. Gear ratio DTCs can also be set under extreme temperature conditions. This is usually caused by an internal transmission problem. Ask customer if problem is only experienced under extreme hot or cold conditions. Repair as necessary.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

4. Repair transmission as necessary. See appropriate OVERHAUL article. If line pressure DTCs were present along with DTC P0731, ensure to inspect oil pump and pressure control solenoid. If DTC P0876 and/or P0875 were present in addition to DTC P0731, replace solenoid pack in addition to necessary internal parts. See TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC

TRANSMISSIONS.

DTC P0732: GEAR RATIO ERROR IN 2ND

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS**.

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS**.

Circuit Description

DTC P0732 will set if ratio of input RPM to output RPM does not match current gear ratio. Transmission system will default to logical shutdown (without recovery) routine after 5 minutes of substituted gear operation or if 3 gear ratio error events occur in a given key start. This DTC may take up to 5 minutes of detection before MIL is illuminated.

Possible Cause

The following items may be area of concern:

- Defective transmission.
- Other transmission-related DTCs are present.
- Pressure switch related DTCs are present.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0944, P0715, P0720, P1794, P0867, P0932, P0868 or P0869 are also present, diagnose these DTCs first in the order listed. If no other transmission-related DTCs are present, go to next step.
2. Using scan tool, perform 2ND GEAR CLUTCH test. Increase throttle angle or TP sensor degrees to 30 degrees for no more than a few seconds. Do not overheat transmission. If test passes (input speed remains at zero), go to next step. If test does not pass, go to step 4.

NOTE: Failure to remove starter relay can cause a **NO RESPONSE FROM TCM condition**.

3. Conditions necessary to set DTC are not present at this time. Check gearshift lever adjustment and adjust if necessary. See **ADJUSTMENTS** in appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**. Intermittent gear ratio DTCs can be set by problems with input and output speed sensor circuits. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS**. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8**. Perform wiggle test using Transmission Simulator (8333). Repair as necessary. Gear ratio DTCs can also be set under extreme temperature conditions. This is usually caused by an internal transmission problem. Ask customer if problem is only experienced under extreme hot or cold conditions. Repair as necessary.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to

performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

- Using scan tool, check for other transmission-related DTCs. If DTC P0845 and/or P0846 are also present, solenoid/TRS assembly is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. If no other transmission-related DTCs are present, go to next step.
- Repair transmission as necessary. See appropriate OVERHAUL article. If line pressure DTCs were present along with DTC P0732, ensure to inspect oil pump and pressure control solenoid. If DTC P0845 and/or P0846 were present in addition to DTC P0732, replace solenoid pack in addition to necessary internal parts. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.

DTC P0733: GEAR RATIO ERROR IN 3RD

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0733 will set if ratio of input RPM to output RPM does not match current gear ratio. Transmission system will default to logical shutdown (without recovery) routine after 5 minutes of substituted gear operation or if 3 gear ratio error events occur in a given key start. This DTC may take up to 5 minutes of detection before MIL is illuminated.

Possible Cause

The following items may be area of concern:

- Defective transmission.
- Other transmission-related DTCs are present.
- Pressure switch related DTCs are present.

Diagnostic Procedure

- Using scan tool, check for other transmission-related DTCs. If DTCs P0944, P0715, P0720, P1794, P0867, P0932, P0868 or P0869 are also present, diagnose these DTCs first in the order listed. If no other transmission-related DTCs are present, go to next step.
- Using scan tool, perform 3RD GEAR CLUTCH test. Increase throttle angle or TP sensor degrees to 30 degrees for no more than a few seconds. Do not overheat transmission. If test passes (input speed remains at zero), go to next step. If test does not pass, go to step 4 .

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

3. Conditions necessary to set DTC are not present at this time. Check gearshift lever adjustment and adjust if necessary. See ADJUSTMENTS in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. Intermittent gear ratio DTCs can be set by problems with input and output speed sensor circuits. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Perform wiggle test using Transmission Simulator (8333). Repair as necessary. Gear ratio DTCs can also be set under extreme temperature conditions. This is usually caused by an internal transmission problem. Ask customer if problem is only experienced under extreme hot or cold conditions. Repair as necessary.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

4. Using scan tool, check for other transmission-related DTCs. If DTC P0870 and/or P0871 are also present, solenoid/TRS assembly is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. If no other transmission-related DTCs are present, go to next step.
5. Repair transmission as necessary. See appropriate OVERHAUL article. If line pressure DTCs were present along with DTC P0733, ensure to inspect oil pump and pressure control solenoid. If DTC P0870 and/or P0871 were present in addition to DTC P0733, replace solenoid pack in addition to necessary internal parts. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.

DTC P0734: GEAR RATIO ERROR IN 4TH

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0734 will set if ratio of input RPM to output RPM does not match current gear ratio. Transmission system will default to logical shutdown (without recovery) routine after 5 minutes of substituted gear operation or if 3 gear ratio error events occur in a given key start. This DTC may take up to 5 minutes of detection before MIL is illuminated.

Possible Cause

The following items may be area of concern:

PMZ	
-----	--

12 апреля 2010 г. 11:40:32	Page 51	© 2005 Mitchell Repair Information Company, LLC.
----------------------------	---------	--

- Defective transmission.
- Other transmission-related DTCs are present.
- Pressure switch-related DTCs are present.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0944, P0715, P0720, P1794, P0867, P0932, P0868 or P0869 are also present, diagnose these DTCs first in the order listed. If no other transmission-related DTCs are present, go to next step.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

2. Using scan tool, check for other transmission-related DTCs. If DTC P0987 and/or P0988 are also present, solenoid/TRS assembly is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. If no other transmission-related DTCs are present, go to next step.
3. Repair transmission as necessary. See appropriate OVERHAUL article. If line pressure DTCs were present along with DTC P0734, ensure to inspect oil pump and pressure control solenoid. If DTC P0987 and/or P0988 were present in addition to DTC P0734, replace solenoid pack in addition to necessary internal parts. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.

DTC P0735: GEAR RATIO ERROR IN 4TH PRIME (545RFE)

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS**.

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS**.

Circuit Description

DTC P0735 will set if ratio of input RPM to output RPM does not match current gear ratio. Transmission system will default to logical shutdown (without recovery) routine after 5 minutes of substituted gear operation or if 3 gear ratio error events occur in a given key start. This DTC may take up to 5 minutes of detection before MIL is illuminated.

Possible Cause

The following items may be area of concern:

- Other transmission-related DTCs are present.
- Intermittent gear ratio errors.

- Defective transmission.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0944, P0715, P0720, P1794, P0867, P0932, P0868 or P0869 are also present, diagnose these DTCs first in the order listed. If no other transmission-related DTCs are present, go to next step.
2. Using scan tool, perform 2nd GEAR CLUTCH and 3rd GEAR CLUTCH tests. The 2nd and 3rd gear clutch must be tested to verify 4th prime operation. Increase throttle angle to 30 degrees for no more than a few seconds for each gear tested. Do not overheat transmission. If both tests passed (input speed remains at zero), go to next step. If test does not pass, go to step 4 .

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

3. Conditions necessary to set DTC are not present at this time. Check gearshift lever adjustment and adjust if necessary. See ADJUSTMENTS in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. Intermittent gear ratio DTCs can be set by problems with input and output speed sensor circuits, and/or sensor ground circuits. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 - Fig. 8** . Perform wiggle test using Transmission Simulator (8333). Repair as necessary. Gear ratio DTCs can also be set under extreme temperature conditions. This is usually caused by an internal transmission problem. Ask customer if problem is only experienced under extreme hot or cold conditions. Repair as necessary.
4. Repair transmission as necessary. See appropriate OVERHAUL article. If line pressure DTCs were present along with DTC P0735, ensure to inspect oil pump and pressure control solenoid.

DTC P0736: GEAR RATIO ERROR IN REVERSE

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0736 will set if ratio of input RPM to output RPM does not match current gear ratio. Transmission system will default to logical shutdown (without recovery) routine after 5 minutes of substituted gear operation or if 3 gear ratio error events occur in a given key start. This DTC may take up to 5 minutes of detection before MIL is illuminated.

Possible Cause

The following items may be area of concern:

- Defective transmission.

- Other transmission-related DTCs are present.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0944, P0715, P0720, P1794, P0867, P0932, P0868 or P0869 are also present, diagnose these DTCs first in the order listed. If no other transmission-related DTCs are present, go to next step.
2. Using scan tool, perform REVERSE GEAR CLUTCH test. Increase throttle angle to 30 degrees for no more than a few seconds. Do not overheat transmission. If test passes (input speed remains at zero), go to next step. If test does not pass, go to step 4 .

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

3. Conditions necessary to set DTC are not present at this time. Check gearshift lever adjustment and adjust if necessary. See ADJUSTMENTS in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. Intermittent gear ratio DTCs can be set by problems with input and output speed sensor circuits. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Perform wiggle test using Transmission Simulator (8333). Repair as necessary. Gear ratio DTCs can also be set under extreme temperature conditions. This is usually caused by an internal transmission problem. Ask customer if problem is only experienced under extreme hot or cold conditions. Repair as necessary.
4. Repair transmission as necessary. See appropriate OVERHAUL article. If line pressure DTCs were present along with DTC P0736, ensure to inspect oil pump and pressure control solenoid.

DTC P0740: TORQUE CONVERTER CLUTCH CONTROL CIRCUIT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **POWERTRAIN VERIFICATION TEST VER-5** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0740 will set when engine speed cannot be pulled within 60 RPM of input speed with transmission in EMCC and input speed greater than 1750 RPM with TCC/LR solenoid at maximum duty cycle. DTC P0740 will also set if transmission is in FEMCC and engine slips torque converter clutch more than 100 RPM for 10 seconds. This DTC may take up to 5 minutes of detection before MIL is illuminated.

Possible Cause

The following items may be area of concern:

- Low/reverse solenoid inoperative.
- DTC P0750 is present.

- Internal transmission problem (TCC out of range).
- Incorrect fluid level.
- Intermittent wiring or connector problem.

Diagnostic Procedure

1. Using scan tool, check for transmission-related DTCs. If DTC P0750 is also present, see **DTC P0750: LR SOLENOID CIRCUIT** . If DTC P0750 is not present, go to next step.
2. Using scan tool, read, record, and then erase DTCs. Drive vehicle until it reaches normal operating temperature. Perform the following 3 times: drive vehicle at 50 MPH and allow 4th gear to engage for at least 10 seconds. Close throttle, and then tip back in until throttle angle is 25-29 degrees. Start procedure over if throttle angle reaches more than 30 degrees. If TCC engaged during any of the 3 attempts, go to next step. If TCC did not engage during any of the 3 attempts, go to step 4 .
3. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

NOTE: **Ensure transmission fluid is at normal operating temperature. Check and adjust fluid level as necessary. Fluid level may not show on dipstick if transmission temperature is less than 50°F (100°C), even though transmission has an adequate fluid level.**

4. Check transmission fluid level with transmission at normal operating temperature. See appropriate **SERVICING** article in AUTOMATIC TRANSMISSIONS. Fill if necessary and repair cause of low fluid level. If fluid level is okay, go to next step.

NOTE: **Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.**

5. Using scan tool, check for transmission-related DTCs. If DTCs P0841 and P1775 are also present, solenoid/TRS assembly is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate **SERVICING** article in AUTOMATIC TRANSMISSIONS. If no other transmission-related DTCs are present, go to next step.
6. Repair transmission as necessary and replace torque converter. See appropriate **OVERHAUL** article. Ensure to inspect oil pump and replace if necessary. If oil pump is okay, replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate **SERVICING** article in AUTOMATIC TRANSMISSIONS.

DTC P0750: LR SOLENOID CIRCUIT

NOTE: **For circuit reference, see CONNECTOR IDENTIFICATION and/or WIRING DIAGRAMS .**

NOTE: **Always perform TRANSMISSION VERIFICATION TEST VER-1 after repair is**

PMZ

12 апреля 2010 г. 11:40:32

Page 55

© 2005 Mitchell Repair Information Company, LLC.

completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0750 will set if 3 consecutive solenoid continuity tests fail, or one test fails if run in response to a gear ratio or pressure switch error. Transmission system will default to immediate shutdown routine.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Related relay DTCs are present.
- Open in transmission control relay output circuit.
- LR solenoid control circuit shorted to ground, shorted to voltage or open.
- Inoperative LR solenoid.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0888, P0890 or P0891 are also present, see **DTC P0888: RELAY OUTPUT ALWAYS OFF** , **DTC P0890: SWITCHED BATTERY** or **DTC P0891: TRANSMISSION RELAY ALWAYS ON** . If no other transmission-related DTCs are present, go to next step.
2. Using scan tool, check STARTS SINCE SET counter for DTC P0750. If counter is set at zero, go to next step. If counter is not set at zero, go to step 10 .

NOTE: **Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.**

3. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Monitor LR solenoid LED on simulator while actuating LR solenoid with scan tool. If LR solenoid LED on simulator blinks, go to next step. If LED does not blink, go to step 5 .

NOTE: **Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.**

4. If no other potential causes for DTC P0750 remain, solenoid/TRS assembly is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
5. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of LR solenoid control circuit between TCM harness connector terminal No. 20 and solenoid/TRS assembly harness connector terminal No. 2. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less,

go to next step.

NOTE: When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.

6. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate, or does not illuminate brightly, repair circuit for open or high resistance in transmission control relay output circuit.
7. Turn ignition switch to LOCK position. Measure resistance between ground and LR solenoid control circuit at TCM harness connector terminal No. 20. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
8. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and LR solenoid control circuit at TCM harness connector terminal No. 20. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
9. If no other potential causes for DTC P0750 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0755: 2C SOLENOID CIRCUIT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0755 will set if 3 consecutive solenoid continuity tests fail, or one test fails if run in response to a gear ratio or pressure switch error. Transmission system will default to immediate shutdown routine.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.

- Related relay DTCs are present.
- Open in transmission control relay output circuit.
- 2C solenoid control circuit shorted to ground, shorted to voltage or open.
- Inoperative 2C solenoid.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0888, P0890 or P0891 are also present, see **DTC P0888: RELAY OUTPUT ALWAYS OFF** , **DTC P0890: SWITCHED BATTERY** or **DTC P0891: TRANSMISSION RELAY ALWAYS ON** . If no other transmission-related DTCs are present, go to next step.
2. Using scan tool, check STARTS SINCE SET counter for DTC P0755. If counter is set at zero, go to next step. If counter is not set at zero, go to step 10 .

NOTE: **Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.**

3. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Monitor 2C solenoid LED on simulator while actuating 2C solenoid with scan tool. If 2C solenoid LED on simulator blinks, go to next step. If LED does not blink, go to step 5 .

NOTE: **Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.**

4. If no other potential causes for DTC P0755 remain, solenoid/TRS assembly is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
5. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of 2C solenoid control circuit between TCM harness connector terminal No. 19 and solenoid/TRS assembly harness connector terminal No. 20. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.

NOTE: **When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.**

6. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate, or does not illuminate brightly, repair circuit for open or high resistance in transmission control relay output circuit.

7. Turn ignition switch to LOCK position. Measure resistance between ground and 2C solenoid control circuit at TCM harness connector terminal No. 19. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
8. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and 2C solenoid control circuit at TCM harness connector terminal No. 19. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
9. If no other potential causes for DTC P0755 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0760: OD SOLENOID CIRCUIT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0760 will set if 3 consecutive solenoid continuity tests fail, or one test fails if run in response to a gear ratio or pressure switch error. Transmission system will default to immediate shutdown routine.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Related relay DTCs are present.
- Open in transmission control relay output circuit.
- OD solenoid control circuit shorted to ground, shorted to voltage or open.
- Inoperative OD solenoid.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0888, P0890 or P0891 are also present, see **DTC P0888: RELAY OUTPUT ALWAYS OFF** , **DTC P0890: SWITCHED BATTERY** or **DTC P0891: TRANSMISSION RELAY ALWAYS ON** . If no other transmission-related DTCs are present, go to next step.
2. Using scan tool, check STARTS SINCE SET counter for DTC P0760. If counter is set at zero, go to

PMZ	
-----	--

next step. If counter is not set at zero, go to step 10 .

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

- Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Monitor OD solenoid LED on simulator while actuating OD solenoid with scan tool. If OD solenoid LED on simulator blinks, go to next step. If LED does not blink, go to step 5 .

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

- If no other potential causes for DTC P0760 remain, solenoid/TRS assembly is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
- Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of OD solenoid control circuit between TCM harness connector terminal No. 60 and solenoid/TRS assembly harness connector terminal No. 7. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.

NOTE: When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.

- Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate, or does not illuminate brightly, repair circuit for open or high resistance in transmission control relay output circuit.
- Turn ignition switch to LOCK position. Measure resistance between ground and OD solenoid control circuit at TCM harness connector terminal No. 60. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
- Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and OD solenoid control circuit at TCM harness connector terminal No. 60. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
- If no other potential causes for DTC P0760 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
- Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If

circuits are okay, testing is complete.

DTC P0765: UD SOLENOID CIRCUIT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0765 will set if 3 consecutive solenoid continuity tests fail, or one test fails if performed in response to a gear ratio or pressure switch error. Transmission system will default to immediate shutdown routine.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Related relay DTCs are present.
- Open in transmission control relay output circuit.
- UD solenoid control circuit shorted to ground, shorted to voltage or open.
- Inoperative UD solenoid.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0888, P0890 or P0891 are also present, see **DTC P0888: RELAY OUTPUT ALWAYS OFF** , **DTC P0890: SWITCHED BATTERY** or **DTC P0891: TRANSMISSION RELAY ALWAYS ON** . If no other transmission-related DTCs are present, go to next step.
2. Using scan tool, check STARTS SINCE SET counter for DTC P0765. If counter is set at zero, go to next step. If counter is not set at zero, go to step 10 .

NOTE: Failure to remove starter relay can cause a **NO RESPONSE FROM TCM condition**.

3. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Monitor UD solenoid LED on simulator while actuating UD solenoid with scan tool. If UD solenoid LED on simulator blinks, go to next step. If LED does not blink, go to step 5 .

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

4. If no other potential causes for DTC P0765 remain, solenoid/TRS assembly is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
5. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of UD solenoid control circuit between TCM harness connector terminal No. 55 and solenoid/TRS assembly harness connector terminal No. 17. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.

NOTE: When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.

6. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate, or does not illuminate brightly, repair circuit for open or high resistance in transmission control relay output circuit.
7. Turn ignition switch to LOCK position. Measure resistance between ground and UD solenoid control circuit at TCM harness connector terminal No. 55. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
8. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and UD solenoid control circuit at TCM harness connector terminal No. 55. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
9. If no other potential causes for DTC P0765 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0770: 4C SOLENOID CIRCUIT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

PMZ	
-----	--

12 апреля 2010 г. 11:40:32	Page 62	© 2005 Mitchell Repair Information Company, LLC.
----------------------------	---------	--

DTC P0770 will set if 3 consecutive solenoid continuity tests fail, or one test fails if run in response to a gear ratio or pressure switch error. Transmission system will default to immediate shutdown routine.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Related relay DTCs are present.
- Open in transmission control relay output circuit.
- 4C solenoid control circuit shorted to ground, shorted to voltage or open.
- Inoperative 4C solenoid.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0888, P0890 or P0891 are also present, see **DTC P0888: RELAY OUTPUT ALWAYS OFF** , **DTC P0890: SWITCHED BATTERY** or **DTC P0891: TRANSMISSION RELAY ALWAYS ON** . If no other transmission-related DTCs are present, go to next step.
2. Using scan tool, check STARTS SINCE SET counter for DTC P0770. If counter is set at zero, go to next step. If counter is not set at zero, go to step 10 .

NOTE: **Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.**

3. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Monitor 4C solenoid LED on simulator while actuating 4C solenoid with scan tool. If 4C solenoid LED on simulator blinks, go to next step. If LED does not blink, go to step 5 .

NOTE: **Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.**

4. If no other potential causes for DTC P0770 remain, solenoid/TRS assembly is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
5. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of 4C solenoid control circuit between TCM harness connector terminal No. 59 and solenoid/TRS assembly harness connector terminal No. 19. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.

NOTE: **When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If**

circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.

6. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate, or does not illuminate brightly, repair circuit for open or high resistance in transmission control relay output circuit.
7. Turn ignition switch to LOCK position. Measure resistance between ground and 4C solenoid control circuit at TCM harness connector terminal No. 59. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
8. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and 4C solenoid control circuit at TCM harness connector terminal No. 59. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
9. If no other potential causes for DTC P0770 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0841: LR PRESSURE SWITCH SENSE CIRCUIT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0841 will set if one of the pressure switches are open or closed at wrong time for selected gear. Transmission system will default to immediate shutdown routine.

Possible Cause

The following items may be area of concern:

- Related relay DTCs present.
- Intermittent wiring and connector problems.
- Transmission control relay output circuit open.
- Pressure switch inoperative.
- LR pressure switch sense circuit open.

- LR pressure switch sense circuit shorted to ground.
- LR pressure switch sense circuit shorted to voltage.
- Faulty TCM.
- Loss of prime (DTC P0944 present).

Diagnostic Procedure

1. Using scan tool, check for transmission-related DTCs. If DTC P0944 is also present, see **DTC P0944: LOSS OF PRIME** . If DTC P0944 is not present, go to next step.
2. Using scan tool, check for other transmission-related DTCs. If DTCs P0888, P0890 or P0891 are present, repair those DTCs first. If no transmission-related DTCs are present, go to next step.
3. Using scan tool, check STARTS SINCE SET counter for DTC P0841. If STARTS SINCE SET counter is 2 or less, go to next step. If STARTS SINCE SET counter is not 2 or less, go to step 11 .

NOTE: **Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.**

4. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Place pressure switch selector on LR. Using scan tool, actuate LR pressure switch and monitor switch state. If switch state changes from OPEN to CLOSED while pressing button, go to next step. If switch state did not change while pressing button, go to step 6 .

NOTE: **Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.**

5. If no other potential causes for DTC P0841 remain, LR pressure switch in solenoid/TRS assembly is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
6. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of LR pressure switch sense circuit between TCM harness connector terminal No. 50 and solenoid/TRS assembly harness connector terminal No. 14. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.

NOTE: **When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.**

7. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate brightly, repair open or high resistance in transmission control relay output circuit. If fuse is open, ensure to check for a short to ground.

8. Turn ignition switch to LOCK position. Measure resistance between ground and LR pressure switch sense circuit at TCM harness connector terminal No. 50. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
9. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and LR pressure switch sense circuit at TCM harness connector terminal No. 50. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
10. If no other potential causes for DTC P0841 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
11. Conditions necessary to set DTC are not present at this time. Check for a sump filter not installed correctly or reverse carrier snap ring dislodged. Repair as necessary. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0845: 2C HYDRAULIC PRESSURE TEST FAILURE

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

After a shift into a forward gear and with engine speed greater than 1000 RPM, the TCM momentarily turns on element pressure to clutch circuits that don't have pressure to confirm the correct pressure switch closes. If pressure switch does not close 2 times, DTC P0845 will set.

Possible Cause

The following items may be area of concern:

- Open in transmission control relay output circuit.
- Other line pressure-related DTCs present.
- Excessive debris in oil pan.
- Intermittent wiring and connector problems.
- Internal transmission problem (2nd clutch pressure test).
- Other speed ratio and/or pressure switch DTCs present.
- 2nd clutch pressure switch sense circuit shorted to voltage, shorted to ground or open.
- Faulty line pressure sensor.
- Poor line pressure sensor connection.
- 5-volt supply circuit open or shorted to ground.

- Faulty TCM.
- Incorrect fluid level.

Diagnostic Procedure

1. Using scan tool, check for line pressure-related DTCs. If DTCs P0867, P0932, P0868, P0869 or P0944 are present, diagnose using appropriate test. If line pressure-related DTCs are not present, go to next step.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

2. Using scan tool, check for transmission-related DTCs P0732 and/or P0846. If any of these DTCs are present, replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. If DTCs P0732 and P0846 are not present, go to next step.
3. Ensure all harness connectors, wiring, oil cooler connections and fluid level are okay. Repair as necessary. Using scan tool, check STARTS SINCE SET counter. If counter displays 2 or less, go to next step. If counter does not display 2 or less, go to step 20 .
4. Start engine. Warm transmission to at least 180°F (82°C). Apply brakes. While monitoring line pressure with scan tool, move gearshift lever through each gear position and record line pressure reading. Allow line pressure to stabilize for at least 5 seconds in each gear. If pressure remains steady at 85-95 psi (6.0-6.7 kg/cm²) through entire procedure, go to next step. If pressure did not remain steady as specified, turn engine off and go to step 11 .
5. Turn ignition on. While monitoring actual line pressure with scan tool, firmly push line pressure sensor harness connector toward transmission. If actual line pressure changes to about 30 psi (2.1 kg/cm²), repair poor connection at line pressure sensor. If actual line pressure does not change, go to next step.

NOTE: All 3 scan tool line pressure readings should be steady and within 2 psi (.14 kg/cm²) of reading specified on transmission simulator.

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

6. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Select OFF position on INPUT/OUTPUT speed switch on simulator. Turn ignition on. While monitoring line pressure on scan tool, turn rotary knob on transmission simulator to all 3 line pressure positions. If line pressure remains steady while changing simulator knob position, go to next step. If line pressure does not remain steady while changing simulator knob position, go to step 10 .
7. Turn ignition switch to LOCK position. Disconnect TCM harness connector and line pressure sensor harness connector. Measure resistance of 5-volt supply circuit between TCM harness connector terminal No. 38 and line pressure sensor harness connector terminal No. 2. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.

8. Measure resistance between ground and 5-volt supply circuit at line pressure sensor harness connector terminal No. 2. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
9. If no other potential causes for DTC P0845 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. The TCM and wiring are functioning properly. Replace line pressure sensor. See **LINE PRESSURE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

11. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Place pressure switch selector on 2C. Monitor scan tool display while pressing switch test button and wiggling wire harness to TCM. If 2nd clutch pressure switch state changes to CLOSED and remains closed while wiggling wire harness, go to next step. If operation was not as specified, go to step 15 .

NOTE: Ensure transmission fluid is at normal operating temperature. Check and adjust fluid level as necessary. Fluid level may not show on dipstick if transmission temperature is less than 50°F (100°C), even though transmission has an adequate fluid level.

12. Ensure transmission is at normal operating temperature. Check fluid level. See appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. Fill as necessary and retest. If fluid level is okay, go to next step.
13. Remove transmission oil pan and inspect for excessive debris or contamination. See appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. Repair as necessary. If no debris is found, go to next step.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

14. Transmission has an internal problem and must be replaced or repaired. See appropriate OVERHAUL article. If repairing transmission, ensure to inspect valve body and replace or repair as necessary. If valve body is okay, replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
15. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of 2C pressure switch sense circuit between TCM harness connector terminal No. 47 and solenoid/TRS assembly harness connector terminal No. 15. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
16. Measure resistance between ground and 2C pressure switch sense circuit at solenoid/TRS assembly harness connector terminal No. 15. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.

NOTE: When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.

17. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate brightly, repair open or high resistance in transmission control relay output circuit. If fuse is open, ensure to check for a short to ground.
18. Turn ignition switch to LOCK position. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and 2C pressure switch sense circuit at TCM harness connector terminal No. 47. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
19. If no other potential causes for DTC P0845 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
20. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0846: 2C PRESSURE SWITCH SENSE CIRCUIT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0846 will set if 2C (2nd clutch) pressure switch is open or closed at the wrong time in a given gear. Transmission system will default to immediate shutdown routine.

Possible Cause

The following items may be area of concern:

- Transmission control relay-related DTCs present.
- Open in transmission control relay output circuit.
- Faulty pressure switch.
- Intermittent wiring and connector problems.
- 2nd clutch pressure switch sense circuit shorted to voltage, shorted to ground or open.

- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0888, P0890 or P0891 are present, perform appropriate diagnostic test. If no other transmission-related DTCs are present, go to next step.
2. Using scan tool, check STARTS SINCE SET counter. If counter displays 2 or less, go to next step. If counter does not display 2 or less, go to step 10 .

NOTE: **Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.**

3. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Place pressure switch selector on 2C. Using scan tool, monitor 2nd clutch pressure switch state while pressing pressure switch test button. If 2nd clutch pressure switch state changed while pressing button, go to next step. If pressure switch state does not change while pressing button, go to step 5 .

NOTE: **Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.**

4. If no other potential causes for DTC P0846 remain, 2nd clutch pressure switch is assumed to be faulty. Replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
5. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of 2C pressure switch sense circuit between TCM harness connector terminal No. 47 and solenoid/TRS assembly harness connector terminal No. 15. If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
6. Measure resistance between ground and 2C pressure switch sense circuit at solenoid/TRS assembly harness connector terminal No. 15. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.

NOTE: **When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.**

7. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate brightly, repair open or high resistance in transmission control relay output circuit. If fuse is open, ensure to check for a short to ground.
8. Turn ignition switch to LOCK position. Remove transmission control relay from Integrated Power

Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and 2C pressure switch sense circuit at TCM harness connector terminal No. 47. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.

9. If no other potential causes for DTC P0846 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. Conditions necessary to set DTC are not present at this time. Check for a sump filter not installed correctly or reverse carrier snap ring dislodged. Repair as necessary. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0867: LINE PRESSURE FAULT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

The TCM continuously monitors actual line pressure and compares it to the desired line pressure. If the difference between actual line pressure and desired line pressure is 10 psi (.7 kg/cm²) or greater, DTC P0867 will set. Transmission system will default to open loop line pressure control resulting in a fixed solenoid duty cycle. This duty cycle will change slightly depending on temperature and current gear.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Faulty wiring or connections.
- Other line pressure-related DTCs present.
- Internal transmission problem (line pressure out of range).
- Faulty TCM.
- Incorrect fluid level.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0932, P0868 or P0869 are present, diagnose these DTCs first in the order listed. See **DTC P0932: LINE PRESSURE SENSOR FAULT** , **DTC P0868: LINE PRESSURE LOW** or **DTC P0869: LINE PRESSURE HIGH** . If no other transmission-related DTCs are present, go to next step.
2. Place gearshift lever in "P" position and start engine. Apply brakes and place gearshift lever in

Reverse. Using scan tool, monitor transmission line pressure and target line pressure while slowly depressing throttle to about 15 degrees. If line pressure remains steady within 5 psi (.4 kg/cm²), go to step 8. If line pressure does not remain steady as specified, go to next step.

NOTE: Ensure transmission fluid is at normal operating temperature. Check and adjust fluid level as necessary. Fluid level may not show on dipstick if transmission temperature is less than 50°F (100°C), even though transmission has an adequate fluid level.

3. Ensure engine and transmission are at normal operating temperature, and transmission fluid is at proper level. See appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**. Adjust as necessary and retest. If fluid level is okay, go to next step.
4. While monitoring line pressure sensor voltage with scan tool, wiggle connector and wiring related to line pressure sensor and solenoid/TRS assembly. If voltage remains steady, go to next step. If voltage does not remain steady, repair connector or wiring as necessary.

NOTE: Failure to remove starter relay can cause a **NO RESPONSE FROM TCM** condition.

NOTE: All 3 scan tool line pressure readings should be steady and within 2 psi (.14 kg/cm²) of reading specified on transmission simulator.

5. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8**. Install Transmission Simulator (8333). Select OFF position on INPUT/OUTPUT speed switch on simulator. Turn ignition on. While monitoring line pressure sensor reading on scan tool, set rotary knob on transmission simulator at all 3 line pressure positions. If line pressure fluctuates up and down more than 10 psi (.7 kg/cm²) in any one position or in all positions, go to next step. If line pressure does not fluctuate more than 10 psi (.7 kg/cm²) in any position, go to step 7.
6. If no other potential causes for DTC P0867 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under **REMOVAL & INSTALLATION**.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

7. Transmission has an internal problem and must be replaced or repaired. See appropriate **OVERHAUL** article. Inspect oil pump and replace if necessary. If oil pump is okay, replace solenoid/TRS assembly (stuck pressure control solenoid). See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under **REMOVAL & INSTALLATION** in appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**.
8. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS**. Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0868: LINE PRESSURE LOW

NOTE: For circuit reference, see CONNECTOR IDENTIFICATION and/or WIRING DIAGRAMS .

NOTE: Always perform TRANSMISSION VERIFICATION TEST VER-1 after repair is completed. Ensure PRE-DIAGNOSTIC CHECKS has been performed before proceeding with following procedure. See PRE-DIAGNOSTIC CHECKS .

Circuit Description

The TCM continuously monitors actual line pressure and compares it to the desired line pressure. If actual line pressure is more than 10 psi (.7 kg/cm²) less than desired line pressure, DTC P0868 will set. Transmission system will default to open loop line pressure control resulting in a fixed solenoid duty cycle. This duty cycle will change slightly depending on temperature and current gear.

Possible Cause

The following items may be area of concern:

- Plugged filter.
- Other line pressure-related DTCs present.
- Intermittent wiring and connector problems.
- Sensor calibration out of limit.
- Internal transmission problem (line pressure low).
- Poor line pressure sensor connection.
- 5-volt supply circuit shorted to ground, shorted to voltage or open.
- Pressure control solenoid control circuit shorted to voltage.
- Faulty TCM.
- Incorrect fluid level.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTC P0932 is present, see **DTC P0932: LINE PRESSURE SENSOR FAULT** . If DTC P0932 is not present, go to next step.
2. Using scan tool, check STARTS SINCE SET counter for DTC P0868. If STARTS SINCE SET counter is 2 or less, go to next step. If STARTS SINCE SET counter is not 2 or less, go to step 13 .
3. Turn ignition on. While monitoring actual line pressure with scan tool, firmly push line pressure sensor harness connector toward transmission. If actual line pressure changes to about 30 psi (2.1 kg/cm²), repair poor connection at line pressure sensor. If actual line pressure does not change, go to next step.

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

NOTE: All 3 scan tool line pressure readings should be steady and within 2 psi (.14 kg/cm²) of reading specified on transmission simulator.

4. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Select OFF position on INPUT/OUTPUT speed switch on simulator. Turn ignition on. Using scan tool, monitor line pressure state while turning pressure switch selector on simulator to each of the 3 line pressure positions. If line pressure reads within 2 psi (.14 kg/cm²) in all 3 positions, go to next step. If line pressure does not read within 2 psi (.14 kg/cm²) in all 3 positions, go to step 8 .
5. Turn ignition off. Install Line Pressure Adapter (8259) and a 0-300 psi (0-21 kg/cm²) pressure gauge. Place gearshift lever in "P" position and start engine. Compare line pressure reading from scan tool with line pressure reading on pressure gauge. If pressure gauge reading is within 5 psi (.4 kg/cm²) of scan tool reading, go to next step. If pressure gauge reading is not within 5 psi (.4 kg/cm²) of scan tool reading, replace line pressure sensor. See **LINE PRESSURE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
6. Remove transmission oil pan and primary oil filter. See appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. Check for excessive debris in oil pan or a plugged filter. Ensure primary filter and/or "O" ring is not cracked or split. Repair as necessary. If no problems are found, refill transmission and go to next step.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

7. Transmission has an internal problem and must be replaced or repaired. See appropriate OVERHAUL article. Inspect oil pump and replace if necessary. If oil pump is okay, replace solenoid/TRS assembly (stuck pressure control solenoid). See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
8. Turn ignition switch to LOCK position. Disconnect TCM harness connector and line pressure sensor harness connector. Measure resistance of 5-volt supply circuit between TCM harness connector terminal No. 38 and line pressure sensor harness connector terminal No. 2. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
9. Measure resistance of 5-volt supply circuit between ground and line pressure sensor harness connector terminal No. 2. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
10. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage of 5-volt supply circuit at TCM harness connector terminal No. 38. If voltage is greater than 5.5 volts, repair circuit for short to voltage. If voltage is 5.5 volts or less, go to next step.
11. Leave fused jumper wire connected between fused B+ circuit (terminal No. 30) and transmission relay output circuit (terminal No. 87) at transmission control relay connector. Measure voltage of pressure control solenoid control circuit at TCM harness connector terminal No. 18. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, remove jumper wire and go to next step.
12. If no other potential causes for DTC P0868 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.

13. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0869: LINE PRESSURE HIGH

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

The TCM continuously monitors actual line pressure and compares it to the desired line pressure. If actual line pressure is more than 10 psi (.7 kg/cm²) greater than desired line pressure, DTC P0869 will set. Transmission system will default to open loop line pressure control resulting in a fixed solenoid duty cycle. This duty cycle will change slightly depending on temperature and current gear.

Possible Cause

The following items may be area of concern:

- Open in pressure control solenoid control circuit.
- Other line pressure-related DTCs present.
- Intermittent wiring and connector problems.
- Pressure control solenoid control circuit shorted to ground.
- Sensor calibration out of limit.
- Internal transmission problem (line pressure high).
- Poor line pressure sensor connection.
- 5-volt supply circuit shorted to ground or open.
- Faulty TCM.
- Incorrect fluid level.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTC P0932 is present, see **DTC P0932: LINE PRESSURE SENSOR FAULT** . If DTC P0932 is not present, go to next step.
2. Using scan tool, check STARTS SINCE SET counter for DTC P0869. If STARTS SINCE SET counter is 2 or less, go to next step. If STARTS SINCE SET counter is not 2 or less, go to step 12 .
3. Turn ignition on. While monitoring actual line pressure with scan tool, firmly push line pressure sensor harness connector toward transmission. If actual line pressure changes to about 30 psi (2.1 kg/cm²), repair poor connection at line pressure sensor. If actual line pressure does not change, go to next step.

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

NOTE: All 3 scan tool line pressure readings should be steady and within 2 psi (.14 kg/cm²) of reading specified on transmission simulator.

4. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8**. Install Transmission Simulator (8333). Select OFF position on INPUT/OUTPUT speed switch on simulator. Turn ignition on. Using scan tool, monitor line pressure state while turning pressure switch selector on simulator to each of the 3 line pressure positions. If line pressure reads within 2 psi (.14 kg/cm²) in all 3 positions, go to next step. If line pressure does not read within 2 psi (.14 kg/cm²) in all 3 positions, go to step 7.
5. Turn ignition off. Install Line Pressure Adapter (8259) and a 0-300 psi (0-21 kg/cm²) pressure gauge. Place gearshift lever in "P" position and start engine. Compare line pressure reading from scan tool with line pressure reading on pressure gauge. If pressure gauge reading is within 5 psi (.4 kg/cm²) of scan tool reading, go to next step. If pressure gauge reading is not within 5 psi (.4 kg/cm²) of scan tool reading, replace line pressure sensor. See **LINE PRESSURE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

6. Transmission has an internal problem and must be replaced or repaired. See appropriate OVERHAUL article. Ensure to inspect oil pump and replace if necessary. If oil pump is okay, replace solenoid/TRS assembly (stuck pressure control solenoid). See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
7. Turn ignition switch to LOCK position. Disconnect TCM harness connector and line pressure sensor harness connector. Measure resistance of 5-volt supply circuit between TCM harness connector terminal No. 38 and line pressure sensor harness connector terminal No. 2. See **WIRING DIAGRAMS**. If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
8. Disconnect solenoid/TRS assembly harness connector. Measure resistance of pressure control solenoid control circuit between TCM harness connector terminal No. 18 and solenoid/TRS assembly harness connector terminal No. 12. If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
9. Measure resistance between ground and 5-volt supply circuit at line pressure sensor harness connector terminal No. 2. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
10. Measure resistance between ground and pressure control solenoid control circuit at solenoid/TRS assembly harness connector terminal No. 12. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
11. If no other potential causes for DTC P0869 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
12. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING**

DIAGRAMS . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0870: OD HYDRAULIC PRESSURE TEST FAILURE

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

After a shift into a forward gear and with engine speed greater than 1000 RPM, the TCM momentarily turns on element pressure to clutch circuits that don't have pressure to confirm the correct pressure switch closes. If pressure switch does not close 2 times, DTC P0870 will set.

Possible Cause

The following items may be area of concern:

- Open in transmission control relay output circuit.
- Other line pressure-related DTCs present.
- Excessive debris in oil pan.
- Intermittent wiring and connector problems.
- Internal transmission problem (OD pressure test).
- Other speed ratio and/or pressure switch DTCs present.
- OD pressure switch sense circuit shorted to voltage, shorted to ground or open.
- Faulty line pressure sensor.
- Poor line pressure sensor connection.
- 5-volt supply circuit open or shorted to ground.
- Faulty TCM.
- Incorrect fluid level.

Diagnostic Procedure

1. Using scan tool, check for line pressure-related DTCs. If DTCs P0867, P0932, P0868, P0869 or P0944 are present, diagnose using appropriate test. If line pressure-related DTCs are not present, go to next step.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

2. Using scan tool, check for transmission-related DTCs P0733 and/or P0871. If any of these DTCs are present, replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION**

RANGE SENSOR under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. If DTCs P0733 and/or P0871 are not present, go to next step.

3. Ensure all harness connectors, wiring, oil cooler connections and fluid level are okay. Repair as necessary. Using scan tool, check STARTS SINCE SET counter. If counter displays 2 or less, go to next step. If counter does not display 2 or less, go to step 20 .
4. Start engine. Warm transmission to at least 180°F (82°C). Apply brakes. While monitoring line pressure with scan tool, move gearshift lever through each gear position and record line pressure reading. Allow line pressure to stabilize for at least 5 seconds in each gear. If pressure remains steady at 85-95 psi (6.0-6.7 kg/cm²) through entire procedure, go to next step. If pressure did not remain steady as specified, turn engine off and go to step 11 .
5. Turn ignition on. While monitoring actual line pressure with scan tool, firmly push line pressure sensor harness connector toward transmission. If actual line pressure changes to about 30 psi (2.1 kg/cm²), repair poor connection at line pressure sensor. If actual line pressure does not change, go to next step.

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

NOTE: All 3 scan tool line pressure readings should be steady and within 2 psi (.14 kg/cm²) of reading specified on transmission simulator.

6. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Select OFF position on INPUT/OUTPUT speed switch on simulator. Turn ignition on. While monitoring line pressure on scan tool, turn rotary knob on transmission simulator to all 3 line pressure positions. If line pressure remains steady while changing simulator knob position, go to next step. If line pressure does not remain steady while changing simulator knob position, go to step 10 .
7. Turn ignition switch to LOCK position. Disconnect TCM and line pressure sensor harness connectors. Measure resistance of 5-volt supply circuit between TCM harness connector terminal No. 38 and line pressure sensor harness connector terminal No. 2. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
8. Measure resistance between ground and 5-volt supply circuit at TCM harness connector terminal No. 38. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
9. If no other potential causes for DTC P0870 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. The TCM and wiring are functioning properly. Replace line pressure sensor. See **LINE PRESSURE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

11. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Place pressure switch selector on OD. Monitor scan tool display while pressing switch test button and wiggling wire harness to TCM. If OD pressure switch state changes to CLOSED and

remains closed while wiggling wire harness, go to next step. If operation was not as specified, go to step 15 .

NOTE: **Ensure transmission fluid is at normal operating temperature. Check and adjust fluid level as necessary. Fluid level may not show on dipstick if transmission temperature is less than 50°F (100°C), even though transmission has an adequate fluid level.**

12. Ensure transmission is at normal operating temperature. Check fluid level. See appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**. Fill as necessary and retest. If fluid level is okay, go to next step.
13. Remove transmission oil pan and inspect for excessive debris or contamination. Repair as necessary. If no debris is found, go to next step.

NOTE: **Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.**

14. Transmission has an internal problem and must be replaced or repaired. See appropriate **OVERHAUL** article. If repairing transmission, ensure to inspect valve body and replace or repair as necessary. If valve body is okay, replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under **REMOVAL & INSTALLATION** in appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**.
15. Turn ignition switch to **LOCK** position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of OD pressure switch sense circuit between TCM harness connector terminal No. 9 and solenoid/TRS assembly harness connector terminal No. 16. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
16. Measure resistance between ground and OD pressure switch sense circuit at TCM harness connector terminal No. 9. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.

NOTE: **When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.**

17. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate brightly, repair open or high resistance in transmission control relay output circuit. If fuse is open, ensure to check for a short to ground.
18. Turn ignition switch to **LOCK** position. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and OD pressure switch sense circuit at TCM harness connector terminal No. 9. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt

or less, go to next step.

19. If no other potential causes for DTC P0870 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
20. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0871: OD PRESSURE SWITCH SENSE CIRCUIT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0871 will set if one of the pressure switches are open or closed at wrong time in a given gear. Transmission system will default to immediate shutdown routine.

Possible Cause

The following items may be area of concern:

- Related relay DTCs present.
- Transmission control relay output circuit open.
- Pressure switch inoperative.
- Intermittent wiring and connector problems.
- OD pressure switch sense circuit open.
- OD pressure switch sense circuit shorted to ground.
- OD pressure switch sense circuit shorted to voltage.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0888, P0890 or P0891 are present, repair those DTCs first. If no transmission-related DTCs are present, go to next step.
2. Using scan tool, check STARTS SINCE SET counter for DTC P0871. If STARTS SINCE SET counter is 2 or less, go to next step. If STARTS SINCE SET counter is not 2 or less, go to step 10 .

NOTE: Failure to remove starter relay can cause a **NO RESPONSE FROM TCM condition**.

3. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn

ignition on. Place pressure switch selector on OD. Using scan tool, actuate OD pressure switch and monitor switch state. If switch state changes while pressing button, go to next step. If switch state did not change while pressing button, go to step 5 .

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

4. If no other potential causes for DTC P0871 remain, OD pressure switch in solenoid/TRS assembly is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
5. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of OD pressure switch sense circuit between TCM harness connector terminal No. 9 and solenoid/TRS assembly harness connector terminal No. 16. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.

NOTE: When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.

6. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate brightly, repair open or high resistance in transmission control relay output circuit.
7. Turn ignition switch to LOCK position. Measure resistance between ground and OD pressure switch sense circuit at TCM harness connector terminal No. 9. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
8. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and OD pressure switch sense circuit at TCM harness connector terminal No. 9. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
9. If no other potential causes for DTC P0871 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. Conditions necessary to set DTC are not present at this time. Check for a sump filter not installed correctly or reverse carrier snap ring dislodged. Repair as necessary. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0875: UD HYDRAULIC PRESSURE TEST FAILURE

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

PMZ

12 апреля 2010 г. 11:40:34

Page 81

© 2005 Mitchell Repair Information Company, LLC.

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

After a shift into a forward gear and with engine speed greater than 1000 RPM, the TCM momentarily turns on element pressure to clutch circuits that don't have pressure to confirm the correct pressure switch closes. If pressure switch does not close 2 times, DTC P0875 will set.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Internal transmission problem (UD pressure test).
- Other line pressure-related DTCs present.
- Other speed ratio and/or pressure switch DTCs present.
- Excessive debris in oil pan.
- UD pressure switch sense circuit shorted to voltage, shorted to ground or open.
- Faulty line pressure sensor.
- Poor line pressure sensor connection.
- 5-volt supply circuit open or shorted to ground.
- Faulty TCM.
- Incorrect fluid level.
- Open in transmission control relay output circuit.

Diagnostic Procedure

1. Using scan tool, check for line pressure-related DTCs. If DTCs P0867, P0932, P0868, P0869 or P0944 are present, diagnose using appropriate test. If line pressure-related DTCs are not present, go to next step.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

2. Using scan tool, check for transmission-related DTCs P0731, P0732, P0733 and P0876. If any of these DTCs are present, replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. If DTCs P0731, P0732, P0733 and P0876 are not present, go to next step.
3. Ensure all harness connectors, wiring, oil cooler connections and fluid level are okay. Repair as necessary. Using scan tool, check STARTS SINCE SET counter. If counter displays 2 or less, go to next step. If counter does not display 2 or less, go to step 19 .
4. Start engine. Warm transmission to at least 180°F (82°C). Apply brakes. While monitoring line pressure with scan tool, move gearshift lever through each gear position and record line pressure

reading. Allow line pressure to stabilize for at least 5 seconds in each gear. If pressure remains steady at 85-95 psi (6.0-6.7 kg/cm²) through entire procedure, go to next step. If pressure did not remain steady as specified, turn engine off and go to step 10.

- Turn ignition on. While monitoring actual line pressure with scan tool, firmly push line pressure sensor harness connector toward transmission. If actual line pressure changes to about 30 psi (2.1 kg/cm²), repair poor connection at line pressure sensor. If actual line pressure does not change, go to next step.

NOTE: All 3 scan tool line pressure readings should be steady and within 2 psi (.14 kg/cm²) of reading specified on transmission simulator.

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

- Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8**. Install Transmission Simulator (8333). Turn ignition on. While monitoring line pressure on scan tool, turn rotary knob on transmission simulator to all 3 line pressure positions. If line pressure remains steady while changing simulator knob position, go to next step. If line pressure does not remain steady while changing simulator knob position, the TCM and wiring are functioning properly. Replace line pressure sensor. See **LINE PRESSURE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
- Turn ignition switch to LOCK position. Disconnect TCM harness connector and line pressure sensor harness connector. Measure resistance of 5-volt supply circuit between TCM harness connector terminal No. 38 and line pressure sensor harness connector terminal No. 2. See **WIRING DIAGRAMS**. If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
- Measure resistance between ground and 5-volt supply circuit at line pressure sensor harness connector terminal No. 2. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
- If no other potential causes for DTC P0875 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

- Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8**. Install Transmission Simulator (8333). Turn ignition on. Place pressure switch selector on UD. Monitor scan tool display while pressing switch test button and wiggling wire harness to TCM. If UD pressure switch state changes to CLOSED and remains closed while wiggling wire harness, go to next step. If operation was not as specified, go to step 14.

NOTE: Ensure transmission fluid is at normal operating temperature. Check and adjust fluid level as necessary. Fluid level may not show on dipstick if transmission temperature is less than 50°F (100°C), even though transmission has an adequate fluid level.

11. Ensure transmission is at normal operating temperature. Check fluid level. See appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**. Fill as necessary and retest. If fluid level is okay, go to next step.
12. Remove transmission oil pan and inspect for excessive debris or contamination. See appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**. Repair as necessary. If no debris is found, go to next step.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

13. Transmission has an internal problem and must be replaced or repaired. See appropriate **OVERHAUL** article. If repairing transmission, ensure to inspect valve body and replace or repair as necessary. If valve body is okay, replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under **REMOVAL & INSTALLATION** in appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**.

NOTE: When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.

14. Turn ignition switch to **LOCK** position. Disconnect solenoid/TRS assembly harness connector. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS**. If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate, or does not illuminate brightly, repair circuit for open or high resistance in transmission control relay output circuit. If fuse is open, ensure to check for a short to ground.
15. Turn ignition switch to **LOCK** position. Disconnect TCM harness connector. Measure resistance of UD pressure sense circuit between TCM harness connector terminal No. 29 and solenoid/TRS assembly harness connector terminal No. 18. If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
16. Measure resistance between ground and UD pressure switch sense circuit at solenoid/TRS assembly harness connector terminal No. 18. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
17. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8**. Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS**. Turn ignition on. Measure voltage between ground and UD pressure switch sense circuit at TCM harness connector terminal No. 29. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, remove jumper wire and go to next step.
18. If no other potential causes for DTC P0875 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under **REMOVAL & INSTALLATION**.
19. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS**. Wiggle wires while checking for shorted and open circuits. Repair as necessary. If

circuits are okay, testing is complete.

DTC P0876: UD PRESSURE SWITCH SENSE CIRCUIT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS**.

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS**.

Circuit Description

DTC P0876 will set if UD pressure switch is open or closed at the wrong time in a given gear. For example, this DTC would set if UD pressure switch remained off while transmission was in second gear. Transmission system will default to immediate shutdown routine.

Possible Cause

The following items may be area of concern:

- Transmission control relay-related DTCs present.
- Faulty pressure switch.
- Intermittent wiring and connector problems.
- UD pressure switch sense circuit shorted to voltage, shorted to ground or open.
- Open in transmission control relay output circuit.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0888, P0890 or P0891 are present, perform appropriate diagnostic test. If no other transmission-related DTCs are present, go to next step.
2. Using scan tool, check STARTS SINCE SET counter. If counter displays 2 or less, go to next step. If counter does not display 2 or less, go to step 10.

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

3. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 - Fig. 8**. Install Transmission Simulator (8333). Turn ignition on. Place pressure switch selector on UD. Using scan tool, monitor UD pressure switch state while pressing pressure switch test button. If UD pressure switch state changed while pressing button, go to next step. If pressure switch state does not change while pressing button, go to step 5.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

4. If no other potential causes for DTC P0876 remain, UD pressure switch is assumed to be faulty. Replace solenoid/TRS assembly as necessary. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.

NOTE: When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.

5. Turn ignition switch to LOCK position. Disconnect solenoid/TRS assembly harness connector. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate brightly, repair open or high resistance in circuit. If fuse is open, ensure to check for a short to ground.
6. Turn ignition switch to LOCK position. Disconnect TCM harness connector. Measure resistance of UD pressure switch sense circuit between TCM harness connector terminal No. 29 and solenoid/TRS assembly harness connector terminal No. 18. If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
7. Measure resistance between ground and UD pressure switch sense circuit at solenoid/TRS assembly harness connector terminal No. 18. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
8. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage of UD pressure switch sense circuit at TCM harness connector terminal No. 29. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, and go to next step.
9. If no other potential causes for DTC P0876 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. Conditions necessary to set DTC are not present at this time. Check for a sump filter not installed correctly or reverse carrier snap ring dislodged. Repair as necessary. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0884: POWER UP AT SPEED

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

PMZ	
-----	--

12 апреля 2010 г. 11:40:34	Page 86	© 2005 Mitchell Repair Information Company, LLC.
----------------------------	---------	--

DTC P0884 will set when TCM powers up and senses a valid forward gear PRNDL code and output RPM is greater than 800 RPM (about 20 MPH).

Possible Cause

Power up at speed.

Diagnostic Procedure

This DTC is set when vehicle is moving in a valid forward gear. Using appropriate wiring diagram as a guide, check and repair all fused B+, fused ignition switch output and ground circuits to TCM for an intermittent open or short to ground. Repair as necessary.

DTC P0888: RELAY OUTPUT ALWAYS OFF

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0888 will set when less than 3 volts are present at transmission control relay output terminals of TCM (terminals No. 16, 17 and 36) while TCM is energizing relay. Transmission will default to immediate shutdown routine. This DTC may take up to 5 minutes to detect before illuminating MIL.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Ground circuit open.
- Fused B+ circuit open.
- Transmission control relay control circuit open.
- Transmission control relay control circuit shorted to ground.
- Transmission control relay output circuit open.
- Transmission control relay output circuit shorted to ground.
- Transmission control relay stuck open.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check STARTS SINCE SET counter for DTC P0888. If counter is set at zero, go to next step. If counter is not set at zero, go to step 10 .

NOTE: When testing circuits with a test light, ensure test light illuminates

PMZ

12 апреля 2010 г. 11:40:34

Page 87

© 2005 Mitchell Repair Information Company, LLC.

brightly. Compare test light brightness of circuits to brightness of test light when connected to direct battery voltage. If circuits do not illuminate with same brightness as direct battery voltage, circuit must be repaired.

2. Turn ignition switch to LOCK position. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Connect test light between ground and fused B+ circuit at transmission control relay connector terminal No. 30. If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate brightly, repair open circuit. If fuse is open, ensure to check for a short to ground.
3. Disconnect TCM and solenoid/TRS assembly harness connectors. Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. Connect test light between ground and each transmission control relay output circuit at TCM harness connector terminals No. 16, 17 and 36. See **WIRING DIAGRAMS** . If test light illuminates brightly at each terminal, remove test light and go to next step. If test light does not illuminate brightly at each terminal, repair open or high resistance in transmission control relay output circuit.
4. Measure resistance of transmission control relay control circuit between transmission control relay connector terminal No. 86 and TCM harness connector terminal No. 15. If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
5. Measure resistance between ground and transmission control relay ground circuit at transmission control relay connector terminal No. 85. If resistance is greater than 5 ohms, repair open ground circuit. If resistance is 5 ohms or less, go to next step.
6. Measure resistance between ground and transmission control relay output circuit at transmission control relay connector terminal No. 87. If resistance is less than 5 ohms, repair output circuit short to ground. If resistance is 5 ohms or greater, go to next step.
7. Measure resistance of transmission control relay control circuit between ground and transmission control relay connector terminal No. 86. If resistance is less than 5 ohms, repair control circuit short to ground. If resistance is 5 ohms or greater, go to next step.
8. Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Measure voltage between ground and transmission control relay output circuit at TCM harness connector terminals No. 16, 17 and 36. If voltage is greater than 10 volts on any circuit, replace transmission control relay. If voltage is 10 volts or less, go to next step.
9. If no other potential causes for DTC P0888 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0890: SWITCHED BATTERY

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before

proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0890 will set when TCM senses voltage on any pressure switch inputs before TCM energizes relay. Transmission system will default to immediate shutdown routine.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- 2C solenoid pressure switch sense circuit shorted to voltage.
- LR solenoid pressure switch sense circuit shorted to voltage.
- 4C solenoid pressure switch sense circuit shorted to voltage.
- OD solenoid pressure switch sense circuit shorted to voltage.
- UD solenoid pressure switch sense circuit shorted to voltage.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check STARTS SINCE SET counter for DTC P0890. If counter is set at zero, go to next step. If counter is not set at zero, go to step 8 .
2. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and 2C pressure switch sense circuit at TCM harness connector terminal No. 47. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
3. Measure voltage between ground and 4C pressure switch sense circuit at TCM harness connector terminal No. 48. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
4. Measure voltage between ground and OD pressure switch sense circuit at TCM harness connector terminal No. 9. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
5. Measure voltage between ground and LR pressure switch sense circuit at TCM harness connector terminal No. 50. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
6. Measure voltage between ground and UD pressure switch sense circuit at TCM harness connector terminal No. 29. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
7. If no other potential causes for DTC P0890 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
8. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING**

DIAGRAMS . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0891: TRANSMISSION RELAY ALWAYS ON

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0891 will set when TCM senses greater than 3 volts at transmission control relay output terminals of TCM prior to TCM energizing relay. Transmission will default to immediate shutdown routine. This DTC may take up to 5 minutes to detect before illuminating MIL.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Transmission control relay control circuit shorted to voltage.
- Transmission control relay stuck closed.
- Faulty TCM.
- Transmission control relay output circuit shorted to voltage.

Diagnostic Procedure

1. Using scan tool, check STARTS SINCE SET counter for DTC P0891. If counter is set at zero, go to next step. If counter is not set at zero, go to step 6 .
2. Turn ignition switch to LOCK position. Disconnect TCM harness connector. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 - Fig. 8** . Turn ignition on. Measure voltage between ground and transmission control relay control circuit (terminal No. 86) at transmission control relay connector. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
3. Measure voltage between ground and transmission control relay output circuit (terminal No. 87) at transmission control relay connector. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
4. Turn ignition switch to LOCK position. Measure resistance between fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) at transmission control relay connector. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, go to next step. If resistance is 5 ohms or less, replace transmission control relay.
5. If no other potential causes for DTC P0891 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
6. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING**

DIAGRAMS . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P0932: LINE PRESSURE SENSOR FAULT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0932 will set if line pressure sensor voltage is less than .2 volt or greater than 4.75 volts. Transmission system will default to open loop line pressure control, resulting in a fixed solenoid duty cycle. This duty cycle will change slightly depending on temperature and current gear.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Open in ground circuit.
- Line pressure sensor signal circuit shorted to voltage, shorted to ground or open.
- Faulty line pressure sensor.
- 5-volt supply circuit shorted to ground or open.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check line pressure sensor voltage. If voltage is .2-4.75 volts, go to next step. If voltage is not .2-4.75, go to step 3 .
2. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

NOTE: When comparing line pressure sensor voltage readings with transmission simulator and scan tool, voltage readings should be within .25 volt of each other.

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

3. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. While monitoring line pressure sensor voltage on scan tool, turn rotary knob on

transmission simulator to all 3 line pressure positions. If voltage is less than .2 volt, go to next step. If voltage is .2-4.75 volts, go to step 8 . If voltage is greater than 4.75 volts, go to step 9 .

4. Turn ignition switch to LOCK position. Disconnect TCM harness connector and line pressure sensor harness connector. Measure resistance of line pressure sensor signal circuit between ground and line pressure sensor harness connector terminal No. 3. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
5. Measure resistance of 5-volt supply circuit between TCM harness connector terminal No. 38 and line pressure sensor harness connector terminal No. 2. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
6. Measure resistance between ground and 5-volt supply circuit at line pressure sensor harness connector terminal No. 2. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
7. If no other potential causes for DTC P0932 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
8. The TCM and wiring are functioning properly. Replace line pressure sensor. See **LINE PRESSURE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
9. Turn ignition switch to LOCK position. Disconnect TCM harness connector and line pressure sensor harness connector. Measure resistance of ground circuit between TCM harness connector terminal No. 53 and line pressure sensor harness connector terminal No. 1. If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
10. Measure resistance of line pressure sensor signal circuit between TCM harness connector terminal No. 30 and line pressure sensor harness connector terminal No. 3. If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, reconnect line pressure sensor harness connector and go to next step.
11. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage of line pressure sensor signal circuit at TCM harness connector terminal No. 30. If voltage is greater than 5.5 volts, repair circuit for short to voltage. If voltage is 5.5 volts or less, remove jumper wire and go to next step.
12. If no other potential causes for DTC P0932 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.

DTC P0944: LOSS OF PRIME

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

If transmission begins to slip in a forward gear and pressure switches that should be closed are open, a loss of prime test begins. Available elements are turned on by TCM to see if pump prime exists. DTC P0944 sets if no pressure switches respond. Vehicle will not move or transmission slips. Normal operation will continue

PMZ	
-----	--

12 апреля 2010 г. 11:40:35	Page 92	© 2005 Mitchell Repair Information Company, LLC.
----------------------------	---------	--

if pump prime returns.

Possible Cause

The following items may be area of concern:

- Incorrect fluid level.
- Defective oil pump.
- Invalid PRNDL code.
- Plugged filter.

Diagnostic Procedure

1. Start engine. Ensure transmission is at normal operating temperature. Place gearshift lever in "R" position. Using scan tool, monitor line pressure. If line pressure is less than 150 psi (10.6 kg/cm²) or fluctuates at more than 10 psi (.7 kg/cm²), go to next step. If line pressure is not as specified, go to step 3.
2. Conditions necessary to set DTC are not present at this time. Ask customer if delayed engagement or a no-drive symptom has occurred. If symptoms have not occurred, erase DTC and return vehicle to customer. Ensure to check for any TSBs or controller flash updates that may apply to this DTC. If symptoms have occurred, repair internal transmission problem as necessary. See appropriate OVERHAUL article. Replace oil pump if inspection reveals no signs of internal seal leakage. Repair as necessary. If components are okay, testing is complete.

NOTE: **Ensure transmission fluid is at normal operating temperature. Check and adjust fluid level as necessary. Fluid level may not show on dipstick if transmission temperature is less than 50°F (100°C), even though transmission has an adequate fluid level.**

3. Ensure transmission is at normal operating temperature. Check transmission fluid level. See appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. Fill if necessary and repair cause of low fluid level. If fluid level is okay, go to next step.
4. Using scan tool, perform SHIFT LEVER POSITION TEST. If shift lever position test passed, go to next step. If shift lever position test did not pass, see **DTC P0706: CHECK SHIFTER SIGNAL**.
5. Remove transmission oil pan and primary oil filter. Inspect oil filter "O" ring for damage and proper installation. Check for excessive debris in oil pan or a plugged filter. Check to ensure seal is installed onto filter neck instead of into pump bore. Ensure seal is fully seated against pump housing. Ensure filter neck is engaged into pump. Repair as necessary. If no problems are found, refill transmission and go to next step.
6. If no other potential causes for DTC P0944 remain, oil pump is assumed to be defective. Repair or replace as necessary. See appropriate OVERHAUL assembly.

DTC P0987: 4C HYDRAULIC PRESSURE TEST FAILURE

NOTE: **For circuit reference, see CONNECTOR IDENTIFICATION and/or WIRING DIAGRAMS.**

NOTE: Always perform TRANSMISSION VERIFICATION TEST VER-1 after repair is completed. Ensure PRE-DIAGNOSTIC CHECKS has been performed before proceeding with following procedure. See PRE-DIAGNOSTIC CHECKS .

Circuit Description

After a shift into a forward gear and with engine speed greater than 1000 RPM, the TCM momentarily turns on element pressure to clutch circuits that don't have pressure to confirm the correct pressure switch closes. If pressure switch does not close 2 times, DTC P0987 will set.

Possible Cause

The following items may be area of concern:

- Open in transmission control relay output circuit.
- Intermittent wiring and connector problems.
- Internal transmission problem (4th clutch pressure test).
- Other line pressure-related DTCs present.
- Other speed ratio and/or pressure switch DTCs present.
- Excessive debris in oil pan.
- 4th clutch pressure switch sense circuit shorted to voltage, shorted to ground or open.
- Faulty line pressure sensor.
- Poor line pressure sensor connection.
- 5-volt supply circuit open or shorted to ground.
- Faulty TCM.
- Incorrect fluid level.

Diagnostic Procedure

1. Using scan tool, check for line pressure-related DTCs. If DTCs P0867, P0932, P0868, P0869 or P0944 are present, diagnose using appropriate test. If line pressure-related DTCs are not present, go to next step.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

2. Using scan tool, check for transmission-related DTCs P0734 and/or P0988. If any of these DTCs are present, replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. If DTCs P0734 and P0988 are not present, go to next step.
3. Ensure all harness connectors, wiring, oil cooler connections and fluid level are okay. Repair as necessary. Using scan tool, check STARTS SINCE SET counter. If counter displays 2 or less, go to next step. If counter does not display 2 or less, go to step 20 .
4. Start engine. Warm transmission to at least 180°F (82°C). Apply brakes. While monitoring line pressure with scan tool, move gearshift lever through each gear position and record line pressure reading. Allow line pressure to stabilize for at least 5 seconds in each gear. If pressure remains steady

at 85-95 psi (6.0-6.7 kg/cm²) through entire procedure, go to next step. If pressure did not remain steady as specified, turn engine off and go to step 11 .

5. Turn ignition on. While monitoring actual line pressure with scan tool, firmly push line pressure sensor harness connector toward transmission. If actual line pressure changes to about 30 psi (2.1 kg/cm²), repair poor connection at line pressure sensor. If actual line pressure does not change, go to next step.

NOTE: All 3 scan tool line pressure readings should be steady and within 2 psi (.14 kg/cm²) of reading specified on transmission simulator.

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

6. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. While monitoring line pressure on scan tool, turn rotary knob on transmission simulator to all 3 line pressure positions. If line pressure remains steady while changing simulator knob position, go to next step. If line pressure does not remain steady while changing simulator knob position, go to step 10 .
7. Turn ignition switch to LOCK position. Disconnect TCM harness connector and line pressure sensor harness connector. Measure resistance of 5-volt supply circuit between TCM harness connector terminal No. 38 and line pressure sensor harness connector terminal No. 2. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
8. Measure resistance between ground and 5-volt supply circuit at line pressure sensor harness connector terminal No. 2. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
9. If no other potential causes for DTC P0987 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. The TCM and wiring are functioning properly. Replace line pressure sensor. See **LINE PRESSURE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

11. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Place pressure switch selector on 4C. Monitor scan tool display while pressing switch test button and wiggling wire harness to TCM. If 4th clutch pressure switch state changes to CLOSED and remains closed while wiggling wire harness, go to next step. If operation was not as specified, go to step 15 .

NOTE: Ensure transmission fluid is at normal operating temperature. Check and adjust fluid level as necessary. Fluid level may not show on dipstick if transmission temperature is less than 50°F (100°C), even though transmission has an adequate fluid level.

12. Ensure transmission is at normal operating temperature. Check fluid level. See appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**. Fill as necessary and retest. If fluid level is okay, go to next step.
13. Remove transmission oil pan and inspect for excessive debris or contamination. See appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**. Repair as necessary. If no debris is found, go to next step.

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.

14. Transmission has an internal problem and must be replaced or repaired. See appropriate **OVERHAUL** article. If repairing transmission, ensure to inspect valve body and replace or repair as necessary. If valve body is okay, replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under **REMOVAL & INSTALLATION** in appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**.
15. Turn ignition switch to **LOCK** position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of 4C pressure switch sense circuit between TCM harness connector terminal No. 48 and solenoid/TRS assembly harness connector terminal No. 11. If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
16. Measure resistance between ground and 4C pressure switch sense circuit at solenoid/TRS assembly harness connector terminal No. 11. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.

NOTE: When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.

17. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate brightly, repair open or high resistance in transmission control relay output circuit. If fuse is open, ensure to check for a short to ground.
18. Leave fused jumper wire connected between fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) at transmission control relay connector. Measure voltage between ground and 4C pressure switch sense circuit at TCM harness connector terminal No. 48. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
19. If no other potential causes for DTC P0987 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under **REMOVAL & INSTALLATION**.
20. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If

circuits are okay, testing is complete.

DTC P0988: 4C PRESSURE SWITCH SENSE CIRCUIT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P0988 will set if 4C (4th clutch) pressure switch is open or closed at the wrong time in a given gear. For example, this DTC would be set if the 4C pressure switch came on while transmission was in second gear. Transmission system will default to immediate shutdown routine.

Possible Cause

The following items may be area of concern:

- Transmission control relay-related DTCs present.
- Open in transmission control relay output circuit.
- Faulty pressure switch.
- Intermittent wiring and connector problems.
- 4th clutch pressure switch sense circuit shorted to voltage, shorted to ground or open.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0888, P0890 or P0891 are present, perform appropriate diagnostic test. If no other transmission-related DTCs are present, go to next step.
2. Using scan tool, check STARTS SINCE SET counter. If counter displays 2 or less, go to next step. If counter does not display 2 or less, go to step 10 .

NOTE: Failure to remove starter relay can cause a **NO RESPONSE FROM TCM condition**.

3. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Place pressure switch selector on 4C. Using scan tool, monitor 4th clutch pressure switch state while pressing pressure switch test button. If 4th clutch pressure switch state changed while pressing button, go to next step. If 4th clutch pressure switch state does not change while pressing button, go to step 5 .

NOTE: Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as

required by current warranty policy.

4. If no other potential causes for DTC P0988 remain, 4th clutch pressure switch is assumed to be faulty. Replace solenoid/TRS assembly as necessary. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
5. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of 4C pressure switch sense circuit between TCM harness connector terminal No. 48 and solenoid/TRS assembly harness connector terminal No. 11. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
6. Measure resistance between ground and 4C pressure switch sense circuit at solenoid/TRS assembly harness connector terminal No. 11. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.

NOTE: **When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.**

7. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate brightly, repair open or high resistance in transmission control relay output circuit. If fuse is open, ensure to check for a short to ground.
8. Turn ignition switch to LOCK position. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and 4C pressure switch sense circuit at TCM harness connector terminal No. 48. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
9. If no other potential causes for DTC P0988 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. Conditions necessary to set DTC are not present at this time. Check for a sump filter not installed correctly or reverse carrier snap ring dislodged. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P1684: BATTERY WAS DISCONNECTED

NOTE: **For circuit reference, see CONNECTOR IDENTIFICATION and/or WIRING DIAGRAMS .**

NOTE: **Always perform TRANSMISSION VERIFICATION TEST VER-1 after repair is completed. Ensure PRE-DIAGNOSTIC CHECKS has been performed before**

proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P1684 will set if TCM is disconnected from battery power B+ or ground. DTC will also set during scan tool battery disconnect procedure. Effect on transmission will be a loss of DTC data. Transmission system will default to immediate shutdown routine if power is lost while operating vehicle. Normal operation is resumed if power is restored during same key start.

Possible Cause

The following items may be area of concern:

- Scan tool battery disconnect was performed.
- Quick learn was performed.
- TCM replaced or disconnected.
- Battery was disconnected.
- Intermittent wiring or connectors.

Diagnostic Procedure

1. If this DTC can be read from TCM, conditions necessary to set DTC are not currently present. This DTC is set due to momentary loss of fused B+ circuit feed to TCM. Go to next step.
2. If battery has been replaced, lost it's charge or been disconnected, this is cause of DTC. Erase DTC and return vehicle to customer. If battery has not been replaced, lost it's charge or been disconnected, go to next step.
3. If scan tool battery disconnect procedure had been performed, this is cause of DTC. Erase DTC and return vehicle to customer. If scan tool battery disconnect procedure had not been performed, go to next step.
4. If a quick learn procedure has been performed, this is cause of DTC. Erase DTC and return vehicle to customer. If a quick learn procedure has not been performed, go to next step.
5. If TCM has been replaced or disconnected, this is cause of DTC. Erase DTC and return vehicle to customer. If TCM has not been replaced or disconnected, go to next step.
6. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. Check for any TSBs or controller flash updates that may apply. If circuits are okay, testing is complete.

DTC P1694: BUS COMMUNICATION WITH PCM

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P1694 will set if no bus messages are received from PCM for 10 seconds. Effects on transmission will be delayed 3-4 shifts, and no EMCC and early 3-4 shifts for a few minutes after engine is started.

NOTE: **Some aftermarket equipment, such as remote starters or communication equipment, will also set this DTC.**

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Open in PCI bus circuit.
- Faulty TCM (bus problem).
- Other bus problems present.

Diagnostic Procedure

1. Using scan tool, check STARTS SINCE SET counter. If STARTS SINCE SET counter is equal to zero, go to next step. If counter is not equal to zero, go to step 5 .
2. Using scan tool, check all modules on vehicle for bus problems. If there is evidence of a bus problem, or PRNDL display on scan tool indicates NO BUS, diagnose body control system. See appropriate BODY CONTROL MODULES article in ACCESSORIES & EQUIPMENT for diagnosis and repair as necessary. If no evidence of bus problems are present, go to next step.
3. Turn ignition switch to LOCK position. Disconnect Gray PCM harness connector C3. Measure resistance of PCI bus circuit between PCM harness connector C3 terminal No. 30 and DLC terminal No. 2. Use care when probing DLC terminal. If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, reconnect all harness connectors and go to next step.
4. TCM has a bus problem and must be replaced. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
5. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P1715: RESTRICTED PORT IN T3 RANGE

NOTE: **For circuit reference, see CONNECTOR IDENTIFICATION and/or WIRING DIAGRAMS .**

NOTE: **Always perform TRANSMISSION VERIFICATION TEST VER-1 after repair is completed.**

Circuit Description

DTC P1715 will set if conditions for DTC P1776 are satisfied with manual valve in T3 range. No major transmission problem exists. Manual valve is restricting fluid flow, causing a restricted clutch feed port.

PMZ

12 апреля 2010 г. 11:40:35

Page 100

© 2005 Mitchell Repair Information Company, LLC.

Transmission will go into Neutral when this DTC is set. If driver puts gearshift lever into Neutral and back into Drive, transmission will operate normal.

Possible Cause

The following items may be area of concern:

- Customer driving habits.
- Misadjusted shifter.
- Related DTCs are present.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTCs P0731, P0732, P0733, P0734, P1736 or P0715 are also present, diagnose these DTCs first in the order listed. If no other transmission-related DTCs are present, go to next step.
2. Check gearshift lever adjustment and adjust if necessary. See ADJUSTMENTS in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. If gearshift lever adjustment is okay, go to next step.
3. DTC P1715 can be set if customer rests their hand on gearshift lever while driving, or accidentally bumps gearshift lever toward Neutral during acceleration. This may cause transmission to be put in T3 position which restricts feed port to the clutch, causing transmission to declare Neutral. To avoid DTC P1715, customer should be informed that excess forward pressure on gearshift lever while in OD position may set this code.

DTC P1736: GEAR RATIO ERROR IN 2ND PRIME

NOTE: For circuit reference, see CONNECTOR IDENTIFICATION and/or WIRING DIAGRAMS .

NOTE: Always perform TRANSMISSION VERIFICATION TEST VER-1 after repair is completed. Ensure PRE-DIAGNOSTIC CHECKS has been performed before proceeding with following procedure. See PRE-DIAGNOSTIC CHECKS .

Circuit Description

DTC P1736 will set if ratio of input RPM to output RPM does not match current gear ratio. Transmission system will default to logical shutdown (without recovery) routine after 5 minutes of substituted gear operation or if 3 gear ratio error events occur in a given key start. This DTC may take up to 5 minutes of detection before MIL is illuminated.

Possible Cause

The following items may be area of concern:

- Faulty transmission.
- Related DTCs present.

Diagnostic Procedure

PMZ

12 апреля 2010 г. 11:40:35

Page 101

© 2005 Mitchell Repair Information Company, LLC.

1. Using scan tool, check for other transmission-related DTCs. If any transmission-related DTCs are present, repair those DTCs first, starting with DTC P0944. If no transmission-related DTCs are present, go to next step.
2. Using scan tool, perform 2nd prime gear clutch test. Follow scan tool instructions. Increase throttle angle to 30 degrees for no more than a few seconds. Do not overheat transmission. If clutch test passes (input speed remains at zero), go to next step. If clutch test does not pass, go to step 4 .
3. Conditions necessary to set DTC are not present at this time. Check gearshift lever adjustment and adjust if necessary. See **ADJUSTMENTS** in appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**. Intermittent gear ratio DTCs can be set by problems with input and output speed sensor circuits. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Perform wiggle test using Transmission Simulator (8333). Repair as necessary. Gear ratio DTCs can also be set under extreme temperature conditions. This is usually caused by an internal transmission problem. Ask customer if problem is only experienced under extreme hot or cold conditions. Repair as necessary.
4. Transmission has an internal problem and must be repaired or replaced. If transmission is to be repaired and any line pressure DTCs were present, ensure oil pump and pressure control solenoid are inspected. See appropriate **OVERHAUL** article.

DTC P1775: SOLENOID SWITCH VALVE LATCHED IN TCC POSITION

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P1775 will set when 3 unsuccessful attempts are made to go into 1st gear in one key start. This DTC may take up to 5 minutes to detect before illuminating MIL.

Possible Cause

The following items may be area of concern:

- Transmission control relay output circuit open.
- LR pressure switch sense circuit open.
- LR pressure switch sense circuit shorted to ground.
- LR pressure switch sense circuit shorted to voltage.
- Faulty TCM.
- DTC P0841 present.
- Defective oil pump.
- Incorrect fluid level.
- Intermittent wiring and connector problems.
- Internal transmission problem (SSV stuck).

Diagnostic Procedure

1. Using scan tool, check for transmission-related DTCs. If DTC P0841 is also present, see **DTC P0841: LR PRESSURE SWITCH SENSE CIRCUIT** . If DTC P0841 is not present, go to next step.
2. Inspect cooler connections, wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Repair as necessary. Check transmission fluid level. See appropriate **SERVICING** article in AUTOMATIC TRANSMISSIONS. Fill if necessary and repair cause of low fluid level. Using scan tool, check STARTS SINCE SET counter for DTC P1775. If counter is set at 2 or less, go to next step. If counter is not set at 2 or less, go to step 11 .

NOTE: **Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.**

3. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Using transmission simulator, turn pressure switch selector knob to LR position. Press pressure switch button. Monitor LR pressure switch LED on simulator. If pressure switch state changes from OPEN to CLOSED when button is pushed, go to next step. If pressure switch state does not change from OPEN to CLOSED when button is pushed, go to step 6 .

NOTE: **Ensure transmission fluid is at normal operating temperature. Check and adjust fluid level as necessary. Fluid level may not show on dipstick if transmission temperature is less than 50°F (100°C), even though transmission has an adequate fluid level.**

4. Ensure transmission is at normal operating temperature. Check transmission fluid level. See appropriate **SERVICING** article in AUTOMATIC TRANSMISSIONS. Fill if necessary and repair cause of low fluid level. If fluid level is okay, go to next step.

NOTE: **Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.**

5. Transmission has an internal problem and must be replaced or repaired. See appropriate **OVERHAUL** article. If transmission is to be repaired, inspect solenoid switch valve in oil pump and replace if necessary. If no problems are found in oil pump assembly, replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under **REMOVAL & INSTALLATION** in appropriate **SERVICING** article in AUTOMATIC TRANSMISSIONS.
6. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of LR pressure switch sense circuit between solenoid/TRS assembly connector terminal No. 14 and TCM harness connector terminal No. 50. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open sense circuit. If resistance is 5 ohms or less, go to next step.

NOTE: **When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.**

7. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate brightly, repair open or high resistance in transmission control relay output circuit. If fuse is open, ensure to check for a short to ground.
8. Turn ignition switch to LOCK position. Measure resistance between ground and LR pressure switch sense circuit at TCM harness connector terminal No. 50. If resistance is less than 5 ohms, repair sense circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
9. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and LR pressure switch sense circuit at TCM connector terminal No. 50. If voltage is greater than .5 volt, repair sense circuit for short to voltage. If voltage is .5 volt or less, go to next step.
10. If no other potential causes for DTC P1775 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
11. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. This DTC may also set if solenoid switch valve intermittently sticks in it's bore under extreme temperature conditions. Ask customer for additional information on conditions in which DTC was set. If circuits and components are okay, testing is complete.

DTC P1776: SOLENOID SWITCH VALVE LATCHED IN LR POSITION

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P1776 will set if transmission senses LR pressure switch closing while actuating Torque Converter Clutch (TCC). With 2 unsuccessful attempts made to actuate TCC, DTC will set. EMCC is inhibited and transmission system will default to orderly shutdown routine. This DTC may take up to 5 minutes to detect before illuminating MIL.

Possible Cause

The following items may be area of concern:

- Transmission control relay output circuit open.
- LR pressure switch sense circuit open.
- LR pressure switch sense circuit shorted to ground.
- LR pressure switch sense circuit shorted to voltage.
- Faulty TCM.

- DTC P0841 present.
- Incorrect fluid level.
- Defective oil pump.
- Internal transmission problem (SSV stuck).

Diagnostic Procedure

1. Using scan tool, check for transmission-related DTCs. If DTC P0841 is also present, see **DTC P0841: LR PRESSURE SWITCH SENSE CIRCUIT** . If DTC P0841 is not present, go to next step.
2. Inspect cooler connections, wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Repair as necessary. Check transmission fluid level. See appropriate **SERVICING** article in AUTOMATIC TRANSMISSIONS. Fill if necessary and repair cause of low fluid level. Using scan tool, check STARTS SINCE SET counter for DTC P1776. If counter is set at 2 or less, go to next step. If counter is not set at 2 or less, go to step 11 .

NOTE: **Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.**

3. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Using transmission simulator, turn pressure switch selector knob to LR position. Press pressure switch button. Monitor LR pressure switch LED on simulator. If pressure switch state changes from OPEN to CLOSED when button is pushed, go to next step. If pressure switch state does not change from OPEN to CLOSED when button is pushed, go to step 6 .

NOTE: **Ensure transmission fluid is at normal operating temperature. Check and adjust fluid level as necessary. Fluid level may not show on dipstick if transmission temperature is less than 50°F (100°C), even though transmission has an adequate fluid level.**

4. Ensure transmission is at normal operating temperature. Check transmission fluid level. See appropriate **SERVICING** article in AUTOMATIC TRANSMISSIONS. Fill if necessary and repair cause of low fluid level. If fluid level is okay, go to next step.

NOTE: **Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.**

5. Transmission has an internal problem and must be replaced or repaired. See appropriate **OVERHAUL** article. If transmission is to be repaired, inspect solenoid switch valve in oil pump and replace if necessary. If no problems are found in oil pump assembly, replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under **REMOVAL & INSTALLATION** in appropriate **SERVICING** article in AUTOMATIC TRANSMISSIONS.
6. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of LR pressure switch sense circuit between solenoid/TRS assembly harness connector terminal No. 14 and TCM harness connector terminal No. 50. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open sense circuit. If resistance is 5 ohms or less, go to next step.

7. Measure resistance between ground and LR pressure switch sense circuit at TCM harness connector terminal No. 50. If resistance is less than 5 ohms, repair sense circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
8. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and LR pressure switch sense circuit at TCM harness connector terminal No. 50. If voltage is greater than .5 volt, repair sense circuit for short to voltage. If voltage is .5 volt or less, go to next step.

NOTE: **When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.**

9. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate brightly, repair open or high resistance in transmission control relay output circuit. If fuse is open, ensure to check for a short to ground.
10. If no other potential causes for DTC P1776 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
11. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. This DTC may also set if solenoid switch valve intermittently sticks in it's bore under extreme temperature conditions. Ask customer for additional information on conditions in which DTC was set. If circuits and components are okay, testing is complete.

DTC P1790: FAULT IMMEDIATELY AFTER SHIFT

NOTE: **For circuit reference, see CONNECTOR IDENTIFICATION and/or WIRING DIAGRAMS .**

NOTE: **Always perform TRANSMISSION VERIFICATION TEST VER-1 after repair is completed. Ensure PRE-DIAGNOSTIC CHECKS has been performed before proceeding with following procedure. See PRE-DIAGNOSTIC CHECKS .**

Circuit Description

DTC P1790 will set if associated speed ratio DTC is set within 1.3 seconds after shift.

Possible Cause

Fault after shift.

Diagnostic Procedure

PMZ

12 апреля 2010 г. 11:40:36

Page 106

© 2005 Mitchell Repair Information Company, LLC.

This DTC will set if speed ratio DTC is also set. Perform appropriate speed ratio DTC first. If no speed ratio DTCs are set, check one trip failures and review repair options.

DTC P1793: TRD LINK COMMUNICATION ERROR

NOTE: For circuit reference, see CONNECTOR IDENTIFICATION and/or WIRING DIAGRAMS.

NOTE: Always perform TRANSMISSION VERIFICATION TEST VER-1 after repair is completed. Ensure PRE-DIAGNOSTIC CHECKS has been performed before proceeding with following procedure. See PRE-DIAGNOSTIC CHECKS.

Circuit Description

DTC P1793 will set if TCM sends 2 torque reduction messages to PCM through TRD link circuit and does not receive confirmation from PCM over communication bus. Maximum throttle angle used by TCM will be 54 degrees. As a result, a customer may complain about loss of performance and/or normal and WOT shifts may be harsh.

Possible Cause

The following items may be area of concern:

- Other related DTCs present.
- Intermittent wiring and connector problems.
- Torque management request sense circuit open.
- Torque management request sense circuit shorted to ground.
- Torque management request sense circuit shorted to voltage.
- Faulty PCM.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check for transmission-related DTCs. If DTCs P0731, P0732, P0733, P0734, P1694 or P1736 are present, disregard DTC P1793 and diagnose using appropriate test. If transmission-related DTCs are not present, go to next step.
2. Using scan tool, check STARTS SINCE SET counter for DTC P1793. If counter is set at zero, go to next step. If counter is not set at zero, go to step 8.
3. Turn ignition switch to LOCK position. Disconnect TCM harness connector. Disconnect Gray PCM harness connector C3. Measure resistance of torque management request sense circuit between TCM harness connector terminal No. 10 and PCM harness connector C3 terminal No. 13. See WIRING DIAGRAMS. If resistance is greater than 5 ohms, repair open circuit. If resistance is 5 ohms or less, go to next step.
4. Measure resistance between ground and torque management request sense circuit at TCM harness connector terminal No. 10. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or less, go to next step.
5. Turn ignition on. Measure voltage between ground and torque management request sense circuit at TCM harness connector terminal No. 10. See WIRING DIAGRAMS. If voltage is greater than 10.5

volts, repair circuit for short to voltage. If voltage is 10.5 volts or less, go to next step.

6. Measure voltage between ground and torque management request sense circuit at TCM harness connector terminal No. 10. If voltage is greater than 7 volts, replace TCM. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION. If voltage is 7 volts or less, go to next step.

NOTE: If replacing PCM, PCM must be properly programmed. See **PROGRAMMING** in appropriate **SELF-DIAGNOSTICS** article in **ENGINE PERFORMANCE**.

7. If no other potential causes for DTC P1793 remain, PCM is assumed to be faulty. Repair or replace as necessary. See appropriate REMOVAL, OVERHAUL & INSTALLATION article in **ENGINE PERFORMANCE**.
8. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS**. Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

DTC P1794: SPEED SENSOR GROUND ERROR

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS**.

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS**.

Circuit Description

DTC P1794 will set after a TCM reset in Neutral and input RPM and output RPM equals a ratio of input to output of 2.0:1. Transmission system will default to logical shutdown (without recovery) routine after 5 minutes of substituted gear operation or if 3 gear ratio error events occur in a given key start. This DTC may take up to 5 minutes of detection before MIL is illuminated.

Possible Cause

The following items may be area of concern:

- Speed sensor ground circuit open, shorted to ground or shorted to voltage.
- Intermittent wiring and connector problems.
- Faulty TCM.

Diagnostic Procedure

1. Start engine. Using scan tool, monitor input and output speed sensor readings. If output speed sensor readings are not twice input speed sensor readings, go to step 7. If output speed sensor readings are twice input speed sensor readings, go to next step.

NOTE: Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.

2. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Turn rotary knob on transmission simulator to 1000/3000 position. Turn INPUT/OUTPUT switch on. Using scan tool, monitor input and output speed sensor readings. If input speed sensor reading is 3000 RPM and output sensor reading is 1000 RPM (within 50 RPM), go to step 7 . If speed sensor readings are not as specified, go to next step.
3. Turn ignition switch to LOCK position. Disconnect TCM harness connector. Disconnect speed sensor harness connectors. Measure resistance of speed sensor ground circuit between TCM harness connector terminal No. 13 and appropriate speed sensor harness connector terminal. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open ground circuit. If resistance is 5 ohms or less, go to next step.
4. Measure resistance between ground and speed sensor ground circuit at appropriate speed sensor harness connector terminal. See **WIRING DIAGRAMS** . If resistance is 5 ohms or more, go to next step. If resistance is less than 5 ohms, repair circuit for short to ground.
5. Turn ignition on. Measure voltage of speed sensor ground circuit. If voltage is .5 volt or less, go to next step. If voltage is greater than .5 volt, repair circuit for short to voltage.
6. If no other potential causes for DTC P1794 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
7. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, go to next step.

DTC P1799: CALCULATED OIL TEMP IN USE

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P1799 will set if transmission temperature sensor is out of range, continuous erratic voltage is sensed or temperature stays low for an extended period of time. If temperature sensor indicates a temperature below 0°F (-18°C) or above 240°F (116°C) at start-up, TCM compares calculated fluid temperature to indicated fluid temperature. If calculated fluid temperature differs significantly from temperature sensor value, calculated fluid temperature will be used for that key start. This DTC does not cause transmission to go into limp-in mode.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.

PMZ	
-----	--

12 апреля 2010 г. 11:40:36	Page 109	© 2005 Mitchell Repair Information Company, LLC.
----------------------------	----------	--

- Transmission temperature sensor inoperative.
- Speed sensor ground circuit open.
- Transmission temperature sensor signal circuit open.
- Transmission temperature sensor signal circuit shorted to ground.
- Speed sensor ground circuit shorted to voltage.
- Transmission temperature sensor signal circuit shorted to voltage.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check STARTS SINCE SET counter for DTC P1799. If counter is set at 2 or less, go to next step. If counter is not set at 2 or less, go to step 11 .

NOTE: **Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.**

2. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. While monitoring thermistor voltage on scan tool, turn rotary knob on transmission simulator to all 3 positions. Using scan tool, compare readings in all 3 positions with readings on transmission simulator. If scan tool readings are always equal to simulator (plus or minus .25 volt), go to step 8 . If scan tool readings are always less than simulator, go to step 9 . If scan tool readings are always erratic compared to simulator, go to step 11 . If scan tool readings are always greater than simulator, go to next step.
3. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of transmission temperature sensor (speed sensor) ground circuit between TCM harness connector terminal No. 13 and solenoid/TRS assembly harness connector terminal No. 22. See **WIRING DIAGRAMS** . If resistance is greater than 5 ohms, repair open sensor ground circuit. If resistance is 5 ohms or less, go to next step.
4. Measure resistance of transmission temperature sensor signal circuit between TCM harness connector terminal No. 54 and solenoid/TRS assembly harness connector terminal No. 23. If resistance is greater than 5 ohms, repair open signal circuit. If resistance is 5 ohms or less, go to next step.
5. Disconnect input and output speed sensor connectors. Turn ignition on. Measure voltage between ground and transmission temperature sensor (speed sensor) ground circuit at TCM harness connector terminal No. 13. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
6. Turn ignition switch to LOCK position. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and transmission temperature sensor signal circuit at TCM harness connector terminal No. 54. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
7. If no other potential causes for DTC P1799 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.

NOTE: **Consult manufacturer's warranty documentation (if applicable) prior to**

performing repairs. Repair or replace transmission or solenoid/TRS assembly as required by current warranty policy.

8. If temperature readings are correct with transmission simulator installed, problem is internal. Replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
9. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance of transmission temperature sensor signal circuit between ground and TCM harness connector terminal No. 54. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
10. If no other potential causes for DTC P1799 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
11. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS**. Wiggle wires while checking for shorted and open circuits. Repair as necessary. Check for any applicable TSBs that may apply. If circuits are okay, testing is complete.

DTC P1899: P/N PERFORMANCE (45RFE)

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS**.

NOTE: After any repair is made or component is replaced, perform **TRANSMISSION VERIFICATION TEST VER-1A**.

Circuit Description

DTC P1899 will set if PCM detects an incorrect park/neutral state for a given mode of vehicle operation.

Possible Cause

The following items may be area of concern:

- Intermittent park/neutral sense circuit.
- Faulty solenoid/TRS assembly.
- Park/neutral sense circuit open or shorted to ground.
- Faulty PCM.

Diagnostic Procedure

1. Turn ignition on. Using scan tool, read DTCs. If GOOD TRIP COUNTER for DTC P1899 is displayed and equal to zero, go to next step. If GOOD TRIP COUNTER for DTC P1899 is not displayed and not equal to zero, go to step 7.
2. Using scan tool, read P/N input state. While moving gearshift lever through all gear positions (Park to 1st and back to Park), observe scan tool display. If scan tool displayed P/N and D/R in correct gear positions, test is complete. If scan tool does not displayed P/N and D/R in correct gear positions, go to next step.

3. Turn ignition switch to OFF position. Disconnect Black PCM 32-pin harness connector C1. See **Fig. 11 - Fig. 10** . Disconnect solenoid/TRS assembly harness connector. Measure resistance of P/N position switch sense circuit between PCM harness connector C1 terminal No. 6 and solenoid/TRS assembly harness connector terminal No. 3. See **WIRING DIAGRAMS** . If resistance is less than 5 ohms, go to next step. If resistance is 5 ohms or greater, repair circuit for open.
4. Measure resistance between ground and P/N position switch sense circuit at PCM harness connector C1 terminal No. 6. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
5. While moving gearshift lever through all gear positions (Park to 1st and back to Park), measure resistance between ground and P/N position switch sense circuit at PCM harness connector C1 terminal No. 6. If resistance changes from greater than 10 ohms to less than 10 ohms, go to next step. If resistance does not change from greater than 10 ohms to less than 10 ohms, replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.

NOTE: If replacing PCM, PCM must be properly programmed. See **PROGRAMMING** in appropriate **SELF-DIAGNOSTICS** article in **ENGINE PERFORMANCE**.

6. If no other potential causes for DTC P1899 remain, PCM is assumed to be faulty. Repair or replace as necessary. See appropriate REMOVAL, OVERHAUL & INSTALLATION article in **ENGINE PERFORMANCE**.

NOTE: Use freeze frame data to help duplicate conditions that set this DTC. Pay particular attention to DTC set conditions, such as VSS, MAP, ECT and load.

7. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Check for chafed, pierced, pinched or partially broken wires. Check for broken, bent, pushed out or corroded connector terminals. Repair as necessary. Check for any applicable TSBs that may apply. If circuits are okay, testing is complete.

DTC P2700: INADEQUATE ELEMENT VOLUME LR

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P2700 will set if LR volume is less than 16.

Possible Cause

PMZ	
-----	--

12 апреля 2010 г. 11:40:36	Page 112	© 2005 Mitchell Repair Information Company, LLC.
----------------------------	----------	--

The following items may be area of concern:

- Faulty TCM.
- Internal transmission problem (LR volume low).
- Incorrect fluid level.

Diagnostic Procedure

NOTE: Ensure transmission fluid temperature is at least 110°F (43°C) before performing the following steps.

1. Using scan tool, note LR clutch volume. Erase DTCs. Road test vehicle, completing 10 or more, 3-1 manual downshifts at closed throttle from 20 MPH. Using scan tool, read LR CL VOL INDEX. If LR CL VOL INDEX volume is less than 20, go to next step. If LR CL VOL INDEX volume is 20 or greater, go to step 3 .
2. Transmission has an internal problem and must be repaired or replaced. If transmission is to be repaired, pay close attention to the low-reverse clutch components. A weak return spring or dislocated snap ring can cause problem. See appropriate OVERHAUL article.
3. Start engine and accelerate lightly to 50 MPH, and then brake lightly to a stop. Turn engine off. Repeat sequence 8 times. Using scan tool, observe and record CL VOL INDEX Clutch Volume Index (CVI) for all clutches. Using scan tool, perform battery disconnect and observe CVIs. If any CVIs are less than 5 or different than before battery disconnect, replace TCM. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION. If all CVIs are 5 or greater and no different than before battery disconnect, testing is complete.

DTC P2701: INADEQUATE ELEMENT VOLUME 2C

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P2701 will set if 2C (2nd clutch) volume is less than 5.

Possible Cause

The following items may be area of concern:

- Faulty TCM.
- Internal transmission problem (2C clutch volume low).
- Incorrect fluid level.

Diagnostic Procedure

PMZ

12 апреля 2010 г. 11:40:36

Page 113

© 2005 Mitchell Repair Information Company, LLC.

NOTE: Ensure transmission fluid temperature is at least 110°F (43°C) before performing the following steps.

1. Using scan tool, note 2C clutch volume. Erase DTCs. Road test vehicle at about 50 MPH, then depress OD OFF button. This will shift transmission into 3rd gear. Complete 10 or more 3-2 kickdowns from 50 MPH with throttle angle of 10-54 degrees. If 2C CL VOL INDEX clutch volume is less than 10, go to next step. If 2C CL VOL INDEX clutch volume is 10 or greater, go to step 3 .
2. Transmission has an internal problem and must be repaired or replaced. If transmission is to be repaired, pay close attention to 2nd clutch components. A weak return spring or dislocated snap ring can cause problem. See appropriate OVERHAUL article.
3. Start engine and accelerate lightly to 50 MPH, and then brake lightly to a stop. Turn engine off. Repeat sequence 8 times. Using scan tool, observe and record CL VOL INDEX Clutch Volume Index (CVI) for all clutches. Using scan tool, perform battery disconnect and observe CVIs. If any CVIs are less than 5 or different than before battery disconnect, replace TCM. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION. If all CVIs are 5 or greater and no different than before battery disconnect, testing is complete.

DTC P2702: INADEQUATE ELEMENT VOLUME OD

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS** .

Circuit Description

DTC P2702 will set if OD volume is less than 6.

Possible Cause

The following items may be area of concern:

- Faulty TCM.
- Internal transmission problem (OD volume low).
- Incorrect fluid level.

Diagnostic Procedure

NOTE: Ensure transmission fluid temperature is at least 110°F (43°C) before performing the following steps.

1. Using scan tool, note OD clutch volume. Erase DTCs. Road test vehicle completing 10 or more 2-3 upshifts with throttle angle between 10 and 54 degrees. Using scan tool, read OD CL VOL INDEX. If OD CL VOL INDEX volume is less than 10, go to next step. If OD CL VOL INDEX volume is 10 or greater, go to step 3 .
2. Transmission has an internal problem and must be repaired or replaced. If transmission is to be

repaired, pay close attention to OD clutch components. A weak return spring or dislocated snap ring can cause problem. See appropriate OVERHAUL article.

3. Start engine and accelerate lightly to 50 MPH, and then brake lightly to a stop. Turn engine off. Repeat sequence 8 times. Using scan tool, observe and record CL VOL INDEX Clutch Volume Index (CVI) for all clutches. Using scan tool, perform battery disconnect and observe CVIs. If any CVIs are less than 5 or different than before battery disconnect, replace TCM. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION. If all CVIs are 5 or greater and no different than before battery disconnect, testing is complete.

DTC P2703: INADEQUATE ELEMENT VOLUME UD

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS**.

NOTE: Always perform **TRANSMISSION VERIFICATION TEST VER-1** after repair is completed. Ensure **PRE-DIAGNOSTIC CHECKS** has been performed before proceeding with following procedure. See **PRE-DIAGNOSTIC CHECKS**.

Circuit Description

DTC P2703 will set if UD volume is less than 11.

Possible Cause

The following items may be area of concern:

- Faulty TCM.
- Internal transmission problem (UD volume low).
- Incorrect fluid level.

Diagnostic Procedure

NOTE: Ensure transmission fluid temperature is at least 110F (43°C) before performing the following steps.

1. Using scan tool, note UD clutch volume. Erase DTCs. Road test vehicle and complete 10 or more 4-3 kickdowns by depressing throttle between 30 and 54 degrees at speeds of about 50 MPH. Using scan tool, read UD CL VOL INDEX. If UD CL VOL INDEX volume is less than 10, go to next step. If UD CL VOL INDEX volume is 10 or greater, go to step 3.
2. Transmission has an internal problem and must be repaired or replaced. If transmission is to be repaired, pay close attention to underdrive clutch components. A weak return spring or dislocated snap ring can cause problem. See appropriate OVERHAUL article.
3. Start engine and accelerate lightly to 50 MPH, and then brake lightly to a stop. Turn engine off. Repeat sequence 8 times. Using scan tool, observe and record CL VOL INDEX Clutch Volume Index (CVI) for all clutches. Using scan tool, perform battery disconnect and observe CVIs. If any CVIs are less than 5 or different than before battery disconnect, replace TCM. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION. If all CVIs are 5 or greater and no different than before battery disconnect, testing is complete.

DTC P2704: INADEQUATE ELEMENT VOLUME 4C

NOTE: For circuit reference, see CONNECTOR IDENTIFICATION and/or WIRING DIAGRAMS .

NOTE: Always perform TRANSMISSION VERIFICATION TEST VER-1 after repair is completed. Ensure PRE-DIAGNOSTIC CHECKS has been performed before proceeding with following procedure. See PRE-DIAGNOSTIC CHECKS .

Circuit Description

DTC P2704 will set if 4C (4th clutch) volume is less than 5.

Possible Cause

The following items may be area of concern:

- Faulty TCM.
- Internal transmission problem (4th clutch volume low).
- Incorrect fluid level.

Diagnostic Procedure

NOTE: Ensure transmission fluid is at normal operating temperature. Check and adjust fluid level as necessary. Fluid level may not show on dipstick if transmission temperature is less than 50°F (100°C), even though transmission has an adequate fluid level.

1. Using scan tool, note 4C clutch volume. Erase DTCs. Road test vehicle completing 10 or more 3-4 upshifts with throttle angle between 10 and 54 degrees. Ensure transmission fluid temperature is at least 110°F (43°C). Using scan tool, read 4C CL VOL INDEX. If 4C CL VOL INDEX volume is less than 10, go to next step. If 4C CL VOL INDEX volume is 10 or greater, go to step 3 .
2. Transmission has an internal problem and must be repaired or replaced. If transmission is to be repaired, pay close attention to 4th clutch components. A weak return spring or dislocated snap ring can cause problem. See appropriate OVERHAUL article.
3. Start engine and accelerate lightly to 50 MPH, and then brake lightly to a stop. Turn engine off. Repeat sequence 8 times. Using scan tool, observe and record Clutch Volume Index (CVI). Using scan tool, perform battery disconnect and observe CVIs. If any CVIs are less than 5 or different than before battery disconnect, replace TCM. See TRANSMISSION CONTROL MODULE under REMOVAL & INSTALLATION. If all CVIs are 5 or greater and no different than before battery disconnect, testing is complete.

DTC P2706: MS SOLENOID CIRCUIT

NOTE: For circuit reference, see CONNECTOR IDENTIFICATION and/or WIRING DIAGRAMS .

NOTE: Always perform TRANSMISSION VERIFICATION TEST VER-1 after repair is

completed. Ensure PRE-DIAGNOSTIC CHECKS has been performed before proceeding with following procedure. See PRE-DIAGNOSTIC CHECKS .

Circuit Description

MS solenoid is a Multi-Select (MS) solenoid and provides 2nd and 3rd gear limp-in operation. DTC P2706 will set with 3 consecutive solenoid continuity test failures, or one failure if test is run in response to gear ratio or pressure switch error. Transmission system will default to immediate shutdown routine.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Related relay DTCs present.
- Transmission control relay output circuit open.
- MS solenoid inoperative.
- MS solenoid control circuit open.
- MS solenoid control circuit shorted to ground.
- MS solenoid control circuit shorted to voltage.
- Faulty TCM.

Diagnostic Procedure

1. Using scan tool, check for other transmission-related DTCs. If DTC P0888, P0890 or P0891 transmission control relay DTCs are present, repair those DTCs first. If no transmission-related DTCs are present, go to next step.
2. Using scan tool, check STARTS SINCE SET counter for DTC P2706. If STARTS SINCE SET counter is set to zero, go to next step. If STARTS SINCE SET counter is not set to zero, go to step 10 .

NOTE: **Failure to remove starter relay can cause a NO RESPONSE FROM TCM condition.**

3. Turn ignition switch to LOCK position. Remove starter relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Install Transmission Simulator (8333). Turn ignition on. Using scan tool, actuate MS solenoid and monitor solenoid LED. If LED blinked on and off, go to next step. If LED did not blink on and off, go to step 5 .

NOTE: **Consult manufacturer's warranty documentation (if applicable) prior to performing repairs. Replace transmission or solenoid/TRS assembly as required by current warranty policy.**

4. If no other potential causes for DTC P2706 remain, solenoid/TRS assembly is assumed to be faulty. Replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.

5. Turn ignition switch to LOCK position. Disconnect TCM and solenoid/TRS assembly harness connectors. Measure resistance between ground and MS solenoid control circuit at TCM harness connector terminal No. 40. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
6. Measure resistance of MS solenoid control circuit between TCM harness connector terminal No. 40 and solenoid/TRS assembly harness connector terminal No. 21. If resistance is less than 5 ohms, repair open circuit. If resistance is 5 ohms or greater, go to next step.

NOTE: When testing output circuit with a test light, ensure test light illuminates brightly. Compare test light brightness of circuit to brightness of test light when connected to direct battery voltage. If circuit does not illuminate with same brightness as direct battery voltage, circuit must be repaired.

7. Turn ignition on. Connect test light between ground and transmission control relay output circuit at solenoid/TRS assembly harness connector terminal No. 10. See **WIRING DIAGRAMS** . If test light illuminates brightly, remove test light and go to next step. If test light does not illuminate brightly, repair open or high resistance in transmission control relay output circuit. If fuse is open, ensure to check for a short to ground.
8. Turn ignition switch to LOCK position. Remove transmission control relay from Integrated Power Module (IPM) or Power Distribution Center (PDC). See **Fig. 5 -Fig. 8** . Using fused jumper wire, jumper fused B+ circuit (terminal No. 30) and transmission control relay output circuit (terminal No. 87) together at transmission control relay connector. See **WIRING DIAGRAMS** . Turn ignition on. Measure voltage between ground and MS solenoid control circuit at TCM harness connector terminal No. 40. If voltage is greater than .5 volt, repair circuit for short to voltage. If voltage is .5 volt or less, go to next step.
9. If no other potential causes for DTC P2706 remain, TCM is assumed to be faulty. Repair or replace as necessary. See **TRANSMISSION CONTROL MODULE** under REMOVAL & INSTALLATION.
10. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

TRANSMISSION VERIFICATION TEST VER-1A

1. Inspect vehicle to ensure that all engine components are properly installed and connected. Reassemble and reconnect components as necessary.
2. If any existing DTCs or symptom has not been repaired, go to appropriate DTC or symptom test.
3. Connect scan tool to DLC.
4. Ensure the fuel tank has at least a 1/4 of fuel. Turn off all accessories.
5. Using scan tool, display transmission temperature. Start and run engine until transmission temperature is greater than 110°F (43.3°C).
6. Check transmission fluid level. Once transmission fluid level reaches bottom of dipstick, do not top off until fluid temperature reaches 180°F (82.2°C). Adjust transmission fluid level. See appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**.
7. Road test vehicle. Using scan tool, monitor engine RPM. While driving from a stand-still to 45 MPH with throttle opening at 20-25 degrees, make 15-20 1-2, 2-3 and 3-4 upshifts. With vehicle speed less than 25 MPH, make 5-8 wide open throttle kickdowns to 1st gear. Allow 5 seconds in 2nd and 3rd

gear between each kickdown.

8. For a specific DTC, drive vehicle in accordance with symptoms when monitored and set conditions to verify DTC repair. If any DTCs set during road test, go to appropriate test. If no DTCs set, repair is complete.

TRANSMISSION VERIFICATION TEST VER-1

1. Connect scan tool to DLC. Reconnect all disconnected connectors. Using scan tool, erase DTCs.
2. Using scan tool, display transmission temperature. Start and run engine until transmission temperature is greater than 110°F (43.3°C).
3. Check transmission fluid level. Once transmission fluid level reaches bottom of dipstick, do not top off until fluid temperature reaches 180°F (82.2°C). Adjust transmission fluid level.

NOTE: If TCM has been replaced or if transmission has been repaired or replaced, perform quick learn procedure. If TCM has been replaced, program pinion factor. See **TRANSMISSION QUICK-LEARN PROCEDURE** and/or **SHIFT QUALITY QUICK-LEARN PROCEDURE** under **PROGRAMMING**.

4. Road test vehicle. Using scan tool, monitor engine RPM. While driving from a stand-still to 45 MPH with throttle opening at 20-25 degrees, make 15-20 1-2, 2-3 and 3-4 upshifts. With vehicle speed less than 25 MPH, make 5-8 wide open throttle kickdowns to 1st gear. Allow 5 seconds in 2nd and 3rd gear between each kickdown.
5. Using scan tool, check DTCs during road test. If any DTCs set during road test, go to appropriate test. If no DTCs set, repair is complete.

NOTE: Use scan tool EATX OBD-II task manager to run **GOOD TRIP TIME** in each gear. This will confirm repair and ensure that DTC has not reset.

POWERTRAIN VERIFICATION TEST VER-2

1. Inspect vehicle to ensure that all engine components are properly installed and connected. Reassemble and reconnect components as necessary.
2. If this verification test is being performed after an NO TROUBLE CODE repair, perform steps 3 and 4 .
3. Check to see if initial symptom still exists. If there are no diagnostic trouble codes or symptom no longer exists, repair was successful and testing is complete.
4. If initial or another symptom exists, repair is not complete. Check all TSBs or flash updates and return to symptom if necessary.
5. If this verification test is being performed after a DTC repair, perform steps 6 -13 .
6. Connect the DRB-III to the data link connector. Erase DTCs and reset all values.
7. If the PCM was not replaced, skip steps 8 -10 and continue the verification test.
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 Module (SKIM), 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 DRB-III to data link connector. Go to THEFT ALARM, SKIM, MISC. and place SKIM in secured access mode by using the appropriate PIN code for this vehicle. Select UPDATE SECRET KEY DATA. Data will be transferred from SKIM to PCM.
11. If equipped with a transfer case position switch, perform step 12 , otherwise continue to step 13 .
12. With ignition on, place transfer case shift lever in each gear position, stopping for 15 seconds in each position.
13. Road test vehicle. If test is for A/C DTC, ensure A/C is operating during the following test.
14. Drive vehicle for at least 5 minutes at 40 MPH. Ensure transmission shifts properly through all gears. At some point, stop vehicle and turn off engine for at least 10 seconds.
15. Using scan tool, read DTCs. If DTCs or symptoms are present, check for any related TSBs and/or refer to SYMPTOM TESTS. If no DTCs or symptoms are present, testing is complete.

POWERTRAIN VERIFICATION TEST VER-5

1. Inspect 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 DTC are repair as necessary.
3. Connect the DRB-III to the data link connector.
4. Ensure the fuel tank has at least a 1/4 of fuel. Turn off all accessories.
5. If the PCM was not replaced, skip steps 6 -8 and continue the verification test.
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 DRB-III to data link connector. Go to THEFT ALARM, SKIM, MISC. and place SKIM in secured access mode by using the appropriate PIN code for this vehicle. Select UPDATE SECRET KEY DATA. Data will be transferred from SKIM to PCM.
9. If the catalyst was replaced, using DRB-III, go to 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 test.
11. After the ignition has been off for at least 10 seconds, restart the vehicle and run 2 minutes.
12. Using DRB-III, monitor the appropriate pretest enabling conditions until all conditions have been met. Once the conditions have been met, switch DRB-III 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 DRB-III.
14. If another DTC has set, repair DTC as necessary. If OBDII monitor ran successfully and the Good Trip Counter changed to one or more, repair is complete. If not, check for any related TSBs and/or refer to DTC symptom table. Perform appropriate procedure.

SYMPTOM TESTS

NOTE: After any repair is made or component is replaced, perform **TRANSMISSION**

PMZ

12 апреля 2010 г. 11:40:37

Page 120

© 2005 Mitchell Repair Information Company, LLC.

VERIFICATION TEST VER-1 under DIAGNOSTIC TESTS.**BACK-UP LIGHTS ILLUMINATE WHEN GEARSHIFT LEVER IS NOT IN "R" POSITION**

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Back-up light feed circuit shorted to voltage.
- Defective Transmission Range Sensor (TRS).

Diagnostic Procedure

1. Turn ignition on and apply brakes. Place gearshift lever in position that causes back-up lights to illuminate at wrong time. If back-up lights illuminate while shifter is not in "R" position, go to next step. If back-up lights do not illuminate while shifter is not in "R" position, go to step 5 .

NOTE: **Disconnecting solenoid/TRS assembly harness connector will cause DTC P0706 and possibly other DTCs to be stored in TCM. Ensure all DTCs are erased before returning vehicle to customer.**

2. Disconnect solenoid/TRS assembly harness connector. If back-up lights went out when connector was disconnected, go to next step. If back-up lights remained illuminated when connector was disconnected, go to step 4 .
3. Repair internal transmission problem. See appropriate OVERHAUL article. Replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
4. Measure voltage of back-up light feed circuit between ground and solenoid/TRS assembly harness connector terminal No. 6. If voltage is greater than .5 volt, repair circuit for short to voltage. Ensure back-up lights illuminate when gearshift lever is in "R" position. If voltage is .5 volt or less, test is complete.
5. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete.

BACK-UP LIGHTS INOPERATIVE

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

Possible Cause

PMZ

12 апреля 2010 г. 11:40:37

Page 121

© 2005 Mitchell Repair Information Company, LLC.

The following items may be area of concern:

- Back-up light ground circuit open.
- Fused ignition switch output circuit open.
- Back-up light feed circuit shorted to ground.
- Back-up light feed circuit open.
- Defective Transmission Range Sensor (TRS).
- Open back-up light bulb.

Diagnostic Procedure

1. Turn ignition on and apply brakes. Place gearshift lever in "R" position. If both back-up lights illuminate, test is complete. If either back-up light does not illuminate, go to next step.
2. Install Transmission Simulator (8333). Turn ignition on. Press REVERSE LIGHT TEST button. If either back-up light illuminates while button is pressed, go to next step. If either back-up light does not illuminate while button is pressed, go to step 4 .
3. Repair internal transmission problem. See appropriate OVERHAUL article. Replace solenoid/TRS assembly. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under REMOVAL & INSTALLATION in appropriate SERVICING article in AUTOMATIC TRANSMISSIONS.
4. Remove back-up light bulb. Measure resistance of bulb. If resistance is greater than 5 ohms, replace bulb. Ensure back-up lights illuminate when gearshift lever is in "R" position. If resistance is 5 ohms or less, go to next step.
5. Connect test light clamp end to 12-volt source. Probe ground circuit in bulb socket with test light. If test light does not illuminate, repair back-up light ground circuit to bulb socket and check operation of back-up lights in "R" position. If test light illuminates, go to next step.
6. Turn ignition switch to LOCK position. Disconnect solenoid/TRS assembly harness connector. Turn ignition on. Using test light connected to ground, probe fused ignition switch output (RUN) circuit at solenoid/TRS assembly harness connector terminal No. 1. If test light illuminates, go to next step. If test light does not illuminate, repair open circuit. Check and replace fuse as necessary. Check operation of back-up lights in "R" position.
7. Turn ignition switch to LOCK position. Measure resistance of back-up light feed circuit between bulb socket and solenoid/TRS assembly harness connector terminal No. 6. If resistance is greater than 5 ohms, repair open back-up light feed circuit. Check operation of back-up lights in "R" position. If resistance is 5 ohms or less, go to next step.
8. Measure resistance between ground and back-up light feed circuit at solenoid/TRS assembly harness connector terminal No. 6. If resistance is less than 5 ohms, repair short to ground in back-up light feed circuit. Check fuse and replace as necessary. If resistance is 5 ohms or greater, test is complete.

BUMP FELT SHORTLY AFTER STOP WITH NO DTC PRESENT

Possible Cause

Insufficient lube in rear slip joint.

Diagnostic Procedure

Remove rear drive shaft and grease output shaft and slip joint.

PMZ	
-----	--

12 апреля 2010 г. 11:40:37	Page 122	© 2005 Mitchell Repair Information Company, LLC.
----------------------------	----------	--

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

Possible Cause

Drive learn procedure/TCM flash update.

Diagnostic Procedure

Check for transmission or powertrain controller flash update or TSB to address this issue. Perform drive learn procedure for LR clutch element to reduce excessive bump in Neutral. See **DRIVE LEARN PROCEDURE** under PROGRAMMING. Some bump while coasting in Neutral is normal. Perform controller flash update, drive learn procedure or any TSB which may apply.

CHECKING PARK/NEUTRAL SWITCH OPERATION

NOTE: TR sensor is referred to as park/neutral switch in the following test.

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connectors.
- Faulty park/neutral switch.
- Park/Neutral switch sense circuit open or shorted to ground.
- Faulty PCM

Diagnostic Procedure

1. Turn ignition on. Using scan tool, read P/N input state. While moving gearshift lever through all gear positions (Park to 1st and back to Park), observe scan tool display. If scan tool displayed P/N and D/R in correct gear positions, go to next step. If scan tool does not displayed P/N and D/R in correct gear positions, go to step 3 .
2. Conditions necessary to set DTC are not present at this time. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with circuits in question. See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Check for chafed, pierced, pinched or partially broken wires. Check for broken, bent, pushed out or corroded connector terminals. Repair as necessary. If circuits are okay, testing is complete.
3. Turn ignition switch to OFF position. Disconnect Black Powertrain Control Module (PCM) 32-pin harness connector C1. PCM is located at passenger's side front corner of engine compartment on inner fender panel. Disconnect solenoid/TRS assembly harness connector. Measure resistance of P/N position switch sense circuit between PCM harness connector C1 terminal No. 6 and solenoid/TRS assembly harness connector terminal No. 3. See **WIRING DIAGRAMS** . If resistance is less than 5 ohms, go to next step. If resistance is 5 ohms or greater, repair circuit for open.
4. Measure resistance between ground and P/N position switch sense circuit at PCM harness connector C1 terminal No. 6. If resistance is less than 5 ohms, repair circuit for short to ground. If resistance is 5 ohms or greater, go to next step.
5. While moving gearshift lever through all gear positions (Park to 1st and back to Park), measure resistance between ground and P/N position switch sense circuit at PCM harness connector terminal No. 6. If resistance changes from greater than 10 ohms to less than 10 ohms, go to next step. If

resistance does not change from greater than 10 ohms to less than 10 ohms, replace park/neutral switch. See **TRANSMISSION SOLENOID/TRANSMISSION RANGE SENSOR** under **REMOVAL & INSTALLATION** in appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**.

NOTE: If replacing PCM, PCM must be properly programmed. See **PROGRAMMING** in appropriate **SELF-DIAGNOSTICS** article in **ENGINE PERFORMANCE**.

6. If no other potential causes remain, PCM is assumed to be faulty. Repair or replace as necessary. See appropriate **REMOVAL, OVERHAUL & INSTALLATION** article in **ENGINE PERFORMANCE**.

POOR SHIFT QUALITY

Possible Cause

Fluid level and/or condition.

Diagnostic Procedure

NOTE: Ensure transmission fluid is at normal operating temperature. Check and adjust fluid level as necessary. Fluid level may not show on dipstick if transmission temperature is less than 50°F (100°C), even though transmission has an adequate fluid level.

Ensure transmission is at normal operating temperature. Check transmission fluid level. See appropriate **SERVICING** article in **AUTOMATIC TRANSMISSIONS**. Fill if necessary and repair cause of low fluid level.

VEHICLE IS SLUGGISH WITH NO DTC PRESENT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS**.

Possible Cause

The following items may be area of concern:

- Engine viscous fan.
- Cold transmission.
- BUS problems.
- Intermittent wiring and connector problems.

Diagnostic Procedure

1. Check engine viscous fan for proper operation. If viscous fan operates correctly, go to next step. If viscous fan does not operate correctly, repair as necessary.
2. If transmission shifts too early when transmission is cold, this is a normal condition. If problem did not occur when transmission was cold, go to next step. If problem occurred when transmission was

cold, manufacturer software is designed to protect transmission from high torque and/or high RPM shifts during cold operation.

- Using DRB-III, attempt to communicate with other modules. Check for signs of a BUS problem such as BUS related DTC's and/or communication problems. Although it takes 2 occurrences of a missed TRD link message to set DTC, one missed message will cause transmission to short shift until next start up. If vehicle has any indications of a BUS problem, BUS must be repaired first. If any other modules show signs of BUS problems, diagnose body control system. See appropriate BODY CONTROL MODULES article in ACCESSORIES & EQUIPMENT. If no BUS problems exist, go to next step.
- Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with torque management request sense circuit (TCM connector terminal No. 10). See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete. Although it takes 2 occurrences of a missed TRD link message to set DTC, one missed message will cause transmission to short shift until next start up. If vehicle has any indications of a BUS problem, BUS must be repaired first.

TRANSMISSION NOISY WITH NO DTC PRESENT

Possible Cause

The following items may be area of concern:

- Internal transmission problem.
- Incorrect fluid level.

Diagnostic Procedure

NOTE: Ensure transmission fluid is at normal operating temperature. Check and adjust fluid level as necessary. Fluid level may not show on dipstick if transmission temperature is less than 50°F (100°C), even though transmission has an adequate fluid level.

- Ensure transmission is at operating temperature, check and adjust fluid level. See appropriate SERVICING article in AUTOMATIC TRANSMISSIONS. Place vehicle on hoist. Run vehicle under conditions to duplicate noise. Ensure noise originates from transmission. If noise originates from transmission, go to next step. If noise does not originate from transmission, repair component causing noise.

NOTE: Ensure radio is off. Radio noise can transfer through speakers and be misinterpreted as transmission pump wine.

- With gearshift lever in "N" position, increase engine speed. If noise pitch changes with increase of engine speed, go to next step. If noise pitch does not change with increase of engine speed, go to step 4 .
- Transmission has an internal problem. Inspect bearings in front half of transmission. If bearings are okay, replace oil pump. See appropriate OVERHAUL article.
- Transmission has an internal problem. Inspect bearings, pinion gears, etc. Repair as necessary. See appropriate OVERHAUL article.

TRANSMISSION SHIFTS EARLY WITH NO DTC PRESENT

NOTE: For circuit reference, see **CONNECTOR IDENTIFICATION** and/or **WIRING DIAGRAMS** .

Possible Cause

The following items may be area of concern:

- Intermittent wiring and connector problems.
- Bus problems.
- Cold transmission.

Diagnostic Procedure

1. If transmission shifts too early when transmission is cold, this is a normal condition. If problem did not occur when transmission was cold, go to next step. If problem occurred when transmission was cold, manufacturer software is designed to protect transmission from high torque and/or high RPM shifts during cold operation.
2. Using DRB-III, attempt to communicate with other modules. Check for signs of a BUS problem such as BUS related DTC's and/or communication problems. Although it takes 2 occurrences of a missed TRD link message to set DTC, one missed message will cause transmission to short shift until next start up. If vehicle has any indications of a BUS problem, BUS must be repaired first. If any other modules show signs of BUS problems, diagnose body control system. See appropriate **BODY CONTROL MODULES** article in **ACCESSORIES & EQUIPMENT**. If no BUS problems exist, go to next step.
3. Using appropriate wiring diagram as a guide, inspect wiring and connectors associated with torque management request sense circuit (TCM connector terminal No. 10). See **WIRING DIAGRAMS** . Wiggle wires while checking for shorted and open circuits. Repair as necessary. If circuits are okay, testing is complete. Although it takes 2 occurrences of a missed TRD link message to set DTC, one missed message will cause transmission to short shift until next start up. If vehicle has any indications of a BUS problem, BUS must be repaired first.

TRANSMISSION SHIFTS ROUGH AFTER PCM REPLACEMENT OR REFLASH**Diagnostic Procedure**

If transmission shifts rough after TCM was replaced or reflashed, perform quick-learn and drive learn procedures. Failure to do so may result in poor shift quality. See **TRANSMISSION QUICK-LEARN PROCEDURE** , **DRIVE LEARN PROCEDURE** and/or **SHIFT QUALITY QUICK-LEARN PROCEDURE** under PROGRAMMING.

TRANSMISSION SIMULATOR WILL NOT POWER UP**Diagnostic Procedure**

If Transmission Simulator (8333) will not power up, transmission control relay may be open (such as in limp-in mode). This also could be an indication transmission simulator is not connected correctly to vehicle. Ensure simulator is connected correctly. Check simulator ground cable connection. Repair as necessary.

REMOVAL & INSTALLATION

TRANSMISSION CONTROL MODULE

Removal & Installation (Dakota & Durango)

Transmission Control Module is located in right front corner of engine compartment. See **Fig. 11** . Information on TCM replacement is not available from manufacturer.

Removal & Installation (Ram Pickup 1500)

Transmission Control Module is located in right rear corner of engine compartment. See **Fig. 12** . Information on TCM replacement is not available from manufacturer.

Removal & Installation (Grand Cherokee & Liberty)

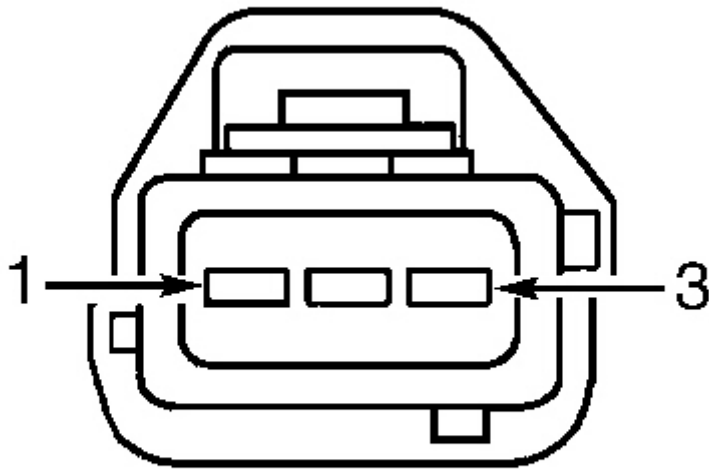
Transmission Control Module is located at right rear of engine compartment. See **Fig. 13** and **Fig. 14** . Turn ignition off and disconnect negative battery cable. Remove bolts attaching TCM to bracket. Disconnect electrical connectors. Remove TCM. To install, reverse removal procedure.

CONNECTOR IDENTIFICATION

NOTE: Connector identification is provided to aid in diagnosis while performing diagnostic tests. See **CONNECTOR IDENTIFICATION DIRECTORY** table.

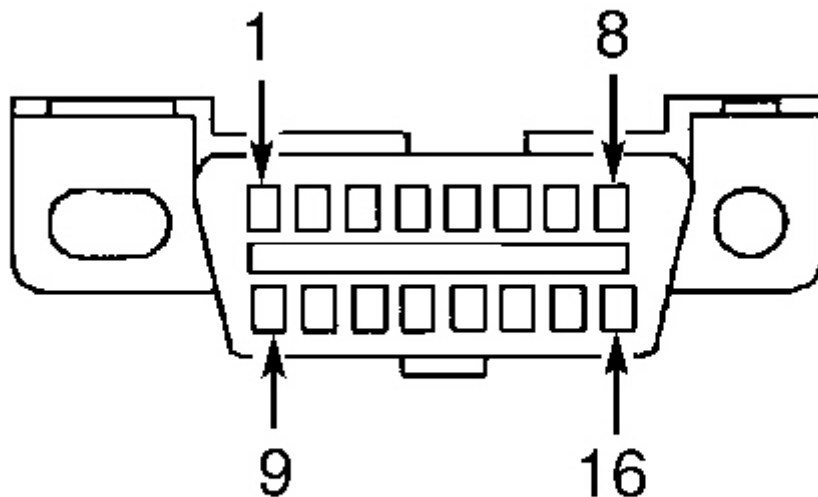
CONNECTOR IDENTIFICATION DIRECTORY

Description	Illustration
Crankshaft Position Sensor Connector	Fig. 20
Data Link Connector	Fig. 21
IPM Connectors C1, C5 & C7	Fig. 22
IPM Connectors C2 & C6	Fig. 23
IPM Connectors C3 & C4	Fig. 24
Line Pressure Sensor (Transducer) Connector	Fig. 25
Powertrain Control Module Connector	Fig. 26
Throttle Position Sensor Connector	Fig. 27
Transmission Control Module Connector	Fig. 28
Solenoid/TRS Assembly Harness Connector	Fig. 29



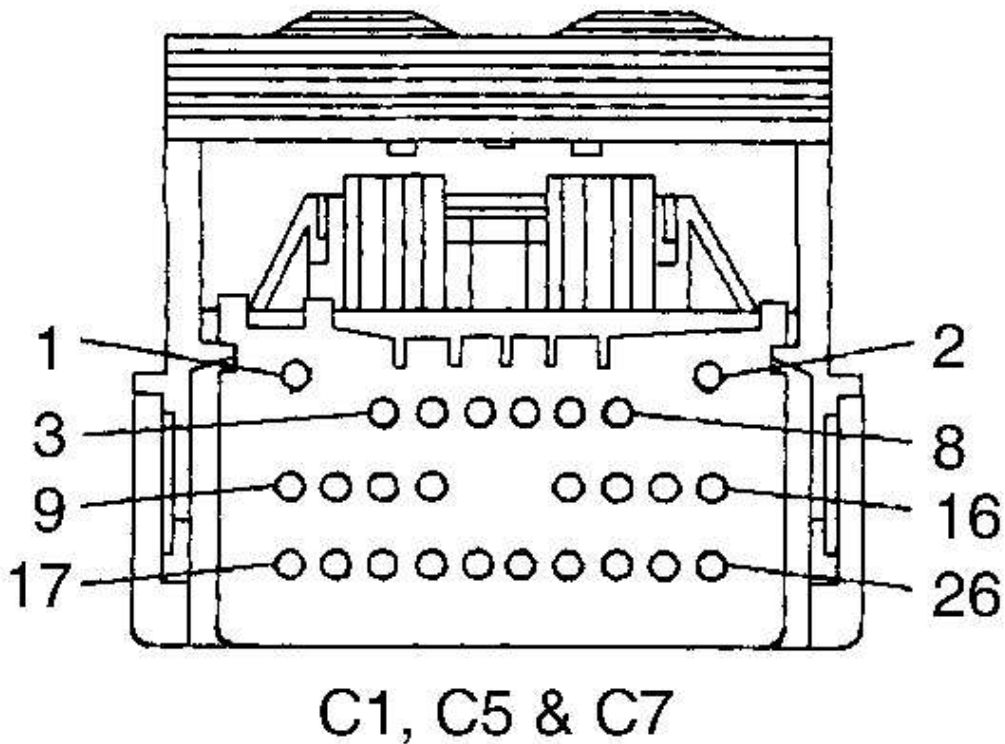
G99C08120

Fig. 20: Identifying Crankshaft Position Sensor Connector Terminals
Courtesy of DAIMLERCHRYSLER CORP.



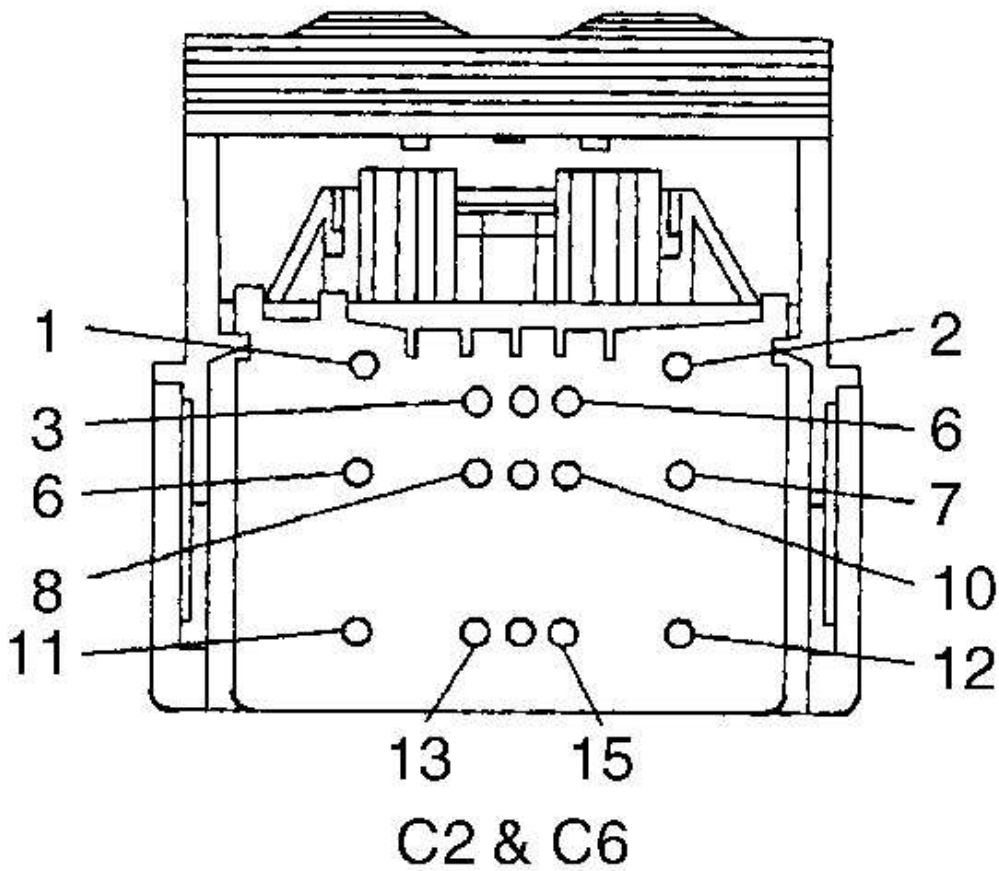
G99E08121

Fig. 21: Identifying Data Link Connector Terminals
Courtesy of DAIMLERCHRYSLER CORP.



G00072518

Fig. 22: Identifying Integrated Power Module Connector Terminals (C1, C5 & C7)
Courtesy of DAIMLERCHRYSLER CORPORATION



G00072516

Fig. 23: Identifying Integrated Power Module Connector Terminals (C2 & C6)
Courtesy of DAIMLERCHRYSLER CORPORATION

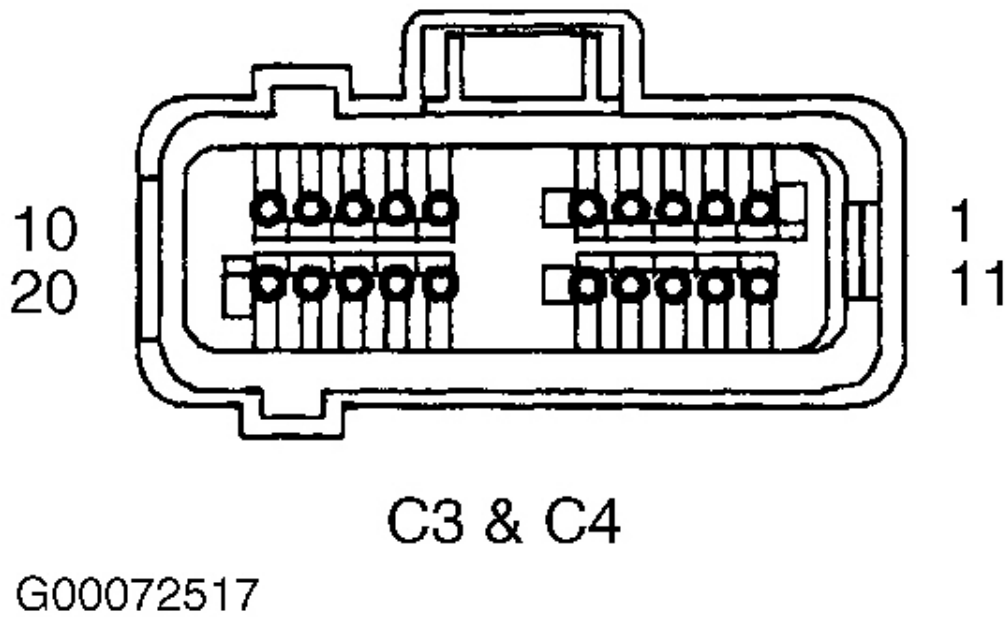
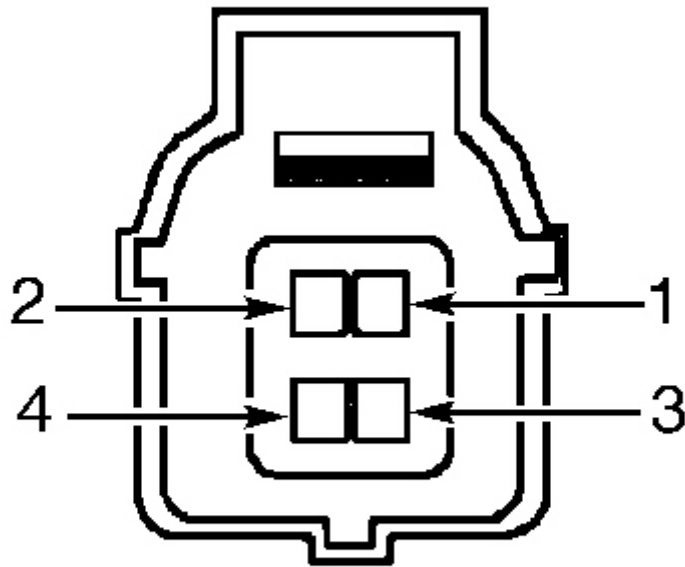
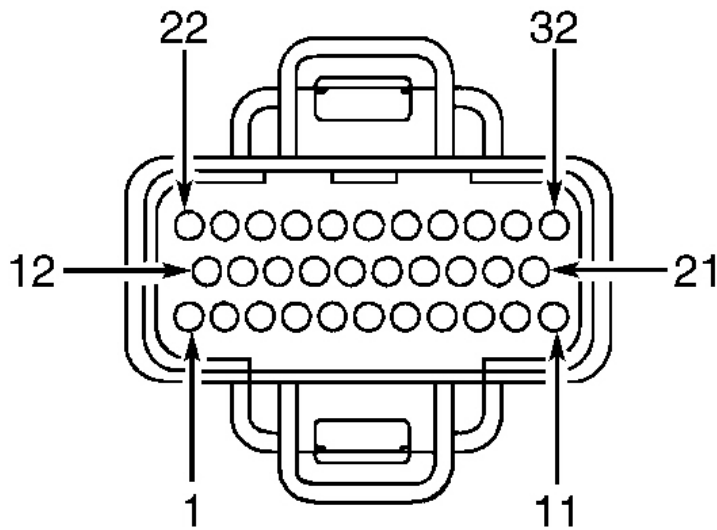


Fig. 24: Identifying Integrated Power Module Connector Terminals (C3 & C4)
Courtesy of DAIMLERCHRYSLER CORPORATION



G99I54963

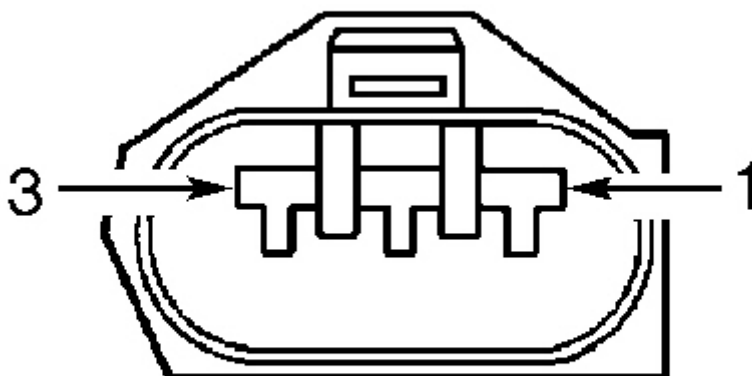
Fig. 25: Identifying Line Pressure Sensor (Transducer) Connector Terminals
Courtesy of DAIMLERCHRYSLER CORP.



NOTE: PCM has 3 connectors, C1, C2 and C3. All are 32-pin connectors. PCM connector C1 is Black, connector C2 is White and connector C3 is Gray.

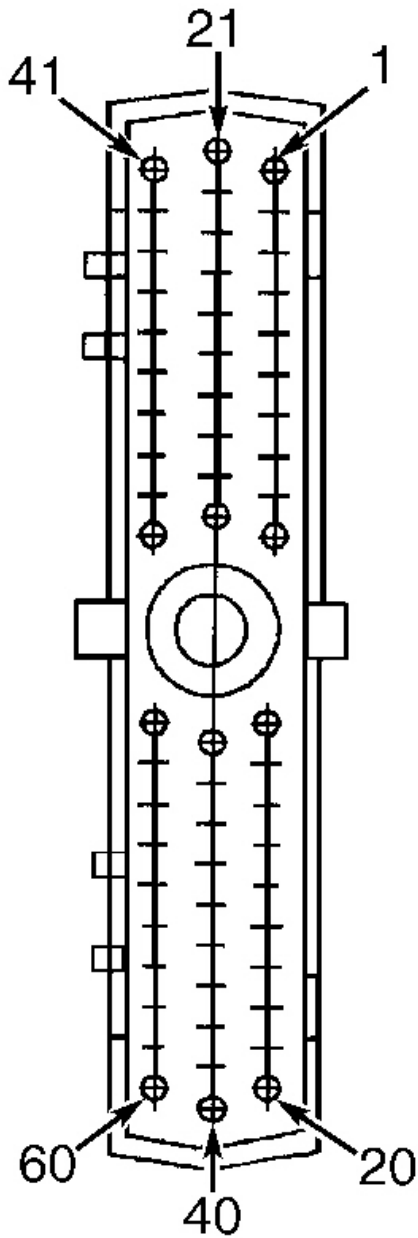
G00010241

Fig. 26: Identifying Powertrain Control Module Connector Terminals
 Courtesy of DAIMLERCHRYSLER CORP.



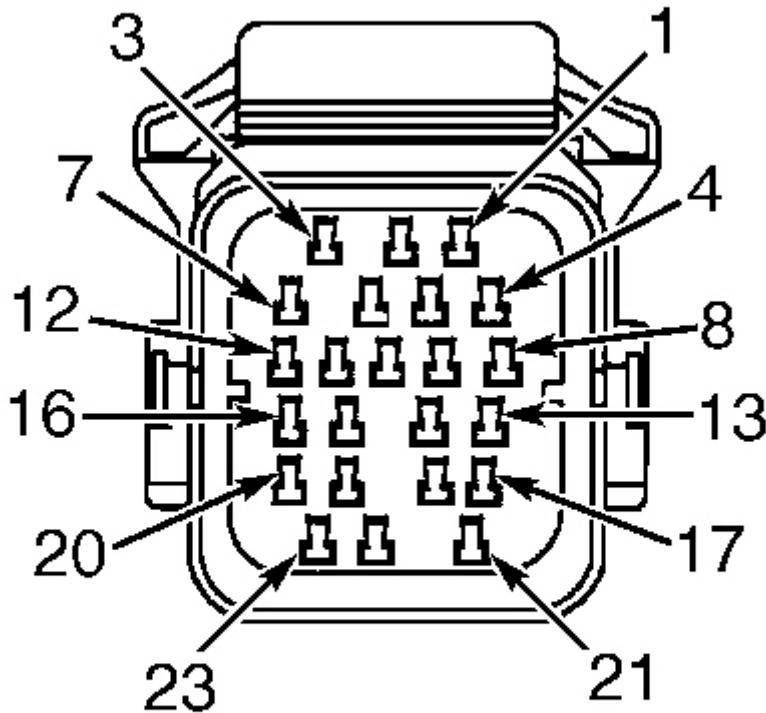
G99A08138

Fig. 27: Identifying Throttle Position Sensor Connector Terminals
 Courtesy of DAIMLERCHRYSLER CORP.



G99G54961

Fig. 28: Identifying Transmission Control Module Connector Terminals
 Courtesy of DAIMLERCHRYSLER CORP.



G99A08143

Fig. 29: Identifying Transmission Solenoid/TRS Assembly Connector Terminals
Courtesy of DAIMLERCHRYSLER CORP.

WIRING DIAGRAMS

Fig. 30: Transmission Electronic Control System Wiring Diagram (Dakota - 4.7L - 1 Of 2)

Fig. 31: Transmission Electronic Control System Wiring Diagram (Dakota - 4.7L - 2 Of 2)

Fig. 32: Transmission Electronic Control System Wiring Diagram (Durango - 4.7L - 1 Of 2)

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller

Fig. 33: Transmission Electronic Control System Wiring Diagram (Durango - 4.7L - 2 Of 2)

Fig. 34: Transmission Electronic Control System Wiring Diagram (Ram Pickup R1500 - 3.7L & 4.7L - 1 Of 2)

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller

Fig. 35: Transmission Electronic Control System Wiring Diagram (Ram Pickup R1500 - 3.7L & 4.7L - 2 Of 2)

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller

Fig. 36: Transmission Electronic Control System Wiring Diagram (Jeep Grand Cherokee - 4.7L - 1 Of 2)

Fig. 37: Transmission Electronic Control System Wiring Diagram (Jeep Grand Cherokee - 4.7L - 2 Of 2)

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller

Fig. 38: Transmission Electronic Control System Wiring Diagram (Jeep Liberty - 3.7L - 1 Of 2)

2002 Jeep Grand Cherokee Limited

2002 AUTOMATIC TRANSMISSIONS 45RFE & 545RFE Diagnosis - Except Next Generation Controller

Fig. 39: Transmission Electronic Control System Wiring Diagram (Jeep Liberty - 3.7L - 2 Of 2)