

2010 Transmission

Automatic Transmission - 6T30/6T40/6T45 - Equinox & Terrain

DTC P0989 OR P0990

DIAGNOSTIC INSTRUCTIONS

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC DESCRIPTORS

DTC P0989

Transmission Fluid Pressure Switch 5 Circuit Low Voltage

DTC P0990

Transmission Fluid Pressure Switch 5 Circuit High Voltage

DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Transmission Fluid Pressure Switch 1 Signal	P0842	P0843	P0843	-
Transmission Fluid Pressure Switch 3 Signal	P0872	P0873	P0873	-
Transmission Fluid Pressure Switch 4 Signal	P0877	P0878	P0878	-
Transmission Fluid Pressure Switch 5 Signal	P0989	P0990	P0990	-

TYPICAL SCAN TOOL DATA

Transmission Fluid Pressure Switch 5

Circuit	Short to Ground	Open/High Resistance	Short to Voltage
Operating Conditions: Engine running, normal operating temperature Parameter Normal Range: High, Low			
Transmission Fluid Pressure Switch 5 Signal	Low	High	High

CIRCUIT/SYSTEM DESCRIPTION

The transmission fluid pressure (TFP) switch 5 assembly is part of the control solenoid valve assembly which has no serviceable components. The transmission control module (TCM) supplies a signal circuit to the TFP switch 5. The TFP switch 5 has an internal case ground. TFP switch 5 is normally closed, or Low. When oil pressure is present at the TFP switch 5, the switch is open, or High. The normally high clutch pressure control (PC) solenoid 3 controls pressure to the R1/4-5-6 clutch regulator valve. The TCM monitors the TFP switch 5 to determine the position of the R1/4-5-6 clutch regulator valve. When the low and reverse clutch and 4-5-6 clutch are commanded OFF, pressure is present on the TFP switch 5. When the low and reverse clutch or 4-5-6 clutch is commanded ON, the R1/4-5-6 clutch regulator valve moves and pressure to the TFP switch 5 is exhausted through the R1/4-5-6 clutch regulator valve.

CONDITIONS FOR RUNNING THE DTC

- No DTCs P0711, P0712, P0713, P0716, P0717, P0722, P0723, P0742, P0751, P0756, P0757, P0973, P0974, P0976, P0977, P1915, or P182E.
- The engine speed is 500 RPM or greater for 5 seconds.
- Ignition voltage is 9.0 volts or greater.
- The transmission fluid temperature (TFT) is 0-110°C (32-230°F).
- The high side driver is ON.

CONDITIONS FOR SETTING THE DTC

P0989

The TCM detects that the TFP switch 5 signal voltage remains LOW after the low and reverse clutch or 4-5-6 clutch transitions from a HIGH pressure state to a LOW pressure state. The TCM counts each incident. The DTC sets when 15 counts are accumulated.

P0990

The TCM detects that the TFP switch 5 signal voltage remains HIGH after the low and reverse clutch or 4-5-6 clutch transitions from a LOW pressure state to a HIGH pressure state. The TCM counts each incident. The DTC sets when 26 counts are accumulated.

ACTION TAKEN WHEN THE DTC SETS

- DTCs P0989 and P0990 are Type C DTCs.
- The TCM freezes transmission adaptive functions on the low and reverse clutch and 4-5-6 clutch.

CONDITIONS FOR CLEARING THE DTC

DTCs P0989 and P0990 are Type C DTCs.

DIAGNOSTIC AIDS

A TFP switch may malfunction due to normal debris in the transmission fluid causing a TFP Switch DTC to intermittently set. This type of condition should not be immediately noticeable to a customer, as the switch outputs are used for shift adaptive pressure and do not cause transmission symptoms unless the switch malfunctions continuously for an extended period of time.

REFERENCE INFORMATION

Schematic Reference

Automatic Transmission Controls Schematics

Connector End View Reference

- Component Connector End Views
- Inline Harness Connector End Views

Description and Operation

- Transmission General Description
- Electronic Component Description
- Transmission Component and System Description

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

CIRCUIT/SYSTEM VERIFICATION

WARNING: Chock the wheels to prevent the vehicle from moving. Failure to chock the wheels can cause personal injury when the electrical system is repaired.

1. Engine idling in PARK with parking brake applied, and drive wheels chocked.
2. Monitor the Transmission Fluid Pressure Switch 1, Transmission Fluid Pressure Switch 3, Transmission

Fluid Pressure Switch 4, and Transmission Fluid Pressure Switch 5 parameters with a scan tool.

3. Place the gear select lever in Park, Reverse, and Neutral range. Verify the TFP switch parameter states are correct for each range. Refer to **Transmission Fluid Pressure Switch Logic** .
4. Place the gear select lever in Drive range. Command the shift transmission with a scan tool through all forward ranges. Verify the TFP switch parameter states are correct for each range. Refer to **Transmission Fluid Pressure Switch Logic** .
 - If any TFP switch parameter state does not match the logic table, replace the control solenoid valve assembly.
5. Operate the vehicle within the conditions for running the DTC to verify the TDC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.

REPAIR PROCEDURES

NOTE:

- Perform the **Transmission Adaptive Values Learn** following all transmission related repairs.
- Before replacing the TCM, perform the **Control Solenoid Valve and Transmission Control Module Assembly Inspection** .

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for control solenoid valve assembly replacement, setup, or programming.

DTC P150C

DIAGNOSTIC INSTRUCTIONS

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC DESCRIPTOR

DTC P150C

Transmission Control Module Engine Speed Request Signal Message Counter Incorrect

CIRCUIT/SYSTEM DESCRIPTION

To improve vehicle shift feel, the transmission control module (TCM) is constantly sending the engine control module (ECM) serial data messages with information regarding its request for modifying engine speed or torque. The ECM sets this code when it detects a discrepancy in the structure of this message causing its integrity to be questioned.

An intermittent fault in the controller area network (CAN) circuits will cause DTC P150C to set.

CONDITIONS FOR RUNNING THE DTC

- The engine is running.
- No other CAN errors are present.

CONDITIONS FOR SETTING THE DTC

The ECM detects greater than 2 message count errors.

ACTION TAKEN WHEN THE DTC SETS

- The ECM Disables engine speed requests from transmission.
- DTC P150C is a Type B DTC.
- The TCM commands maximum line pressure during shifts.

CONDITIONS FOR CLEARING THE DTC

DTC P150C is a Type B DTC.

REFERENCE INFORMATION

Description and Operation

Data Link Communications Description and Operation

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

CIRCUIT/SYSTEM VERIFICATION

- DTC P150C is an informational DTC. Diagnose all other Engine Control DTCs prior to DTC P150C. Refer to **Diagnostic Trouble Code (DTC) List - Vehicle** .
- If there are no other Engine Controls DTCs, diagnosis is accomplished by looking for an intermittent CAN circuit fault. Refer to **Scan Tool Does Not Communicate with High Speed GMLAN Device** .

REPAIR PROCEDURES

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for control solenoid valve assembly replacement, setup, and programming.

DTC P1751

DIAGNOSTIC INSTRUCTIONS

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC DESCRIPTOR

DTC P1751

Shift Valve 1 Performance

CIRCUIT/SYSTEM DESCRIPTION

The shift solenoid (SS) 1 is part of the control solenoid valve assembly, which has no serviceable components. SS 1 provides fluid pressure to control the operation of the clutch select valve 2, which is located in the control valve body assembly. SS 1, in conjunction with clutch select valve 2, controls fluid to the R1 and 4-5-6 clutches. A diagnostic test is performed by the transmission control module (TCM) to determine the state of the clutch select valve 2. During this diagnostic test, the TCM commands the SS 1 ON, supplying pressure to move the clutch select valve 2 toward its spring. At the same time, line pressure is elevated slightly to assist the spring side pressure. If the spring is broken, or the clutch select valve 2 cannot move due to another mechanical condition, the DTC will set.

CONDITIONS FOR RUNNING THE DTC

- No ISS DTCs P0716 or P0717.
- No OSS DTCs P0722 or P0723.
- No TCC Performance DTCs P0741 or P0742.
- No TCC Electrical DTCs P2763, P2763, or P2764.
- DTC 1751 has not failed this ignition cycle.
- The engine run time is greater than 5 seconds.
- The ignition voltage is between 8.6 volts and 19.0 volts.
- The transmission fluid temperature (TFT) is 20-130°C (68-266°F).
- The calc. throttle position is 8 percent or greater.
- The engine torque is greater than 80 N.m (59 lb ft).
- No upshift or downshift in process.
- The attained gear slip is equal to or greater than 100 RPM.
- The TCC is commanded OFF.
- Vehicle speed is greater than 16 km/h (20 mph).
- The TISS is equal to or greater than 1,100 RPM.
- Commanded gear is 2nd or greater.

- The gear ratio is between 0.69-1.97.
- Solenoid A is enabled.

CONDITIONS FOR SETTING THE DTC

The TCM detects attained gear slip is 150 RPM or greater for 0.5 second 5 times during the same ignition cycle.

ACTION TAKEN WHEN THE DTC SETS

DTC P1751 is a Type B DTC.

CONDITIONS FOR CLEARING THE DTC

DTC P1751 is a Type B DTC.

DIAGNOSTIC AIDS

DTC P1751 detects gear box slip when the mode 2 valve solenoid is commanded on as part of the P0742 TCC stuck OFF test.

REFERENCE INFORMATION

Description and Operation

- [Transmission General Description](#)
- [Transmission Component and System Description](#)
- [Electronic Component Description](#)

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

[Control Module References](#) for scan tool information

CIRCUIT/SYSTEM VERIFICATION

1. Perform the [Transmission Fluid Level and Condition Check](#) to verify correct fluid level and condition.

NOTE: Perform a scan tool snapshot during the road test.

2. Perform the [Road Test](#) . Verify the transmission operation performs as indicated in the road test instructions.
3. Review the scan tool snapshot transmission data parameters. Verify the following engine and

transmission data parameters display the correct values in all forward gear ranges.

- Engine Speed
 - Vehicle Speed
 - Transmission ISS
 - Transmission OSS
 - Shift Solenoid Valve 1
 - Gear Command
4. Operate the vehicle within the Conditions for Running the DTC to verify the DTC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.

CIRCUIT/SYSTEM TESTING

NOTE: You must perform the Circuit/System Verification first.

1. Perform the **Line Pressure Check** . Verify the transmission line pressure gauge is within the range specified in the Line PC Solenoid Valve Pressure table. Refer to **Solenoid Valve Pressure** .
 - If not within the specified ranges, refer to **Fluid Pressure High or Low** for further diagnosis.
2. Ignition OFF, remove the control solenoid valve assembly. Refer to **Control Solenoid Valve and Transmission Control Module Assembly Replacement** .
3. Perform the **Control Solenoid Valve and Transmission Control Module Assembly Solenoid Performance Test** .
 - If the control solenoid valve assembly does not pass the performance test, replace the control solenoid valve assembly.
4. Listed in the table below are conditions for each component that could set DTC P1751. Carefully inspect each component for that condition. Repair or replace as necessary.

DTCs	Component	Condition
P1751	Control Valve Body Assembly	Clutch select valve stuck, spring broken, debris, or damage
P1751	Channel Plate to Valve Body Spacer Plate	Orifice #2 blocked, obstructed, or irregular shaped
P1751	Channel Plate to Valve Body Spacer Plate	Checkball #1 ball seat blocked, obstructed, or irregular shaped (burr or flashing on hole(s))
P1751	Control Valve Body Assembly	Checkball #1 damaged or irregular shaped

REPAIR PROCEDURES

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

IMPORTANT: Before replacing the TCM, perform the **Control Solenoid Valve and Transmission Control Module Assembly Inspection** .

- Refer to **Control Module References** for control solenoid valve assembly replacement, setup, and programming.
- Perform the **Transmission Adaptive Values Learn** following all transmission related repairs.

DTC P1761

DIAGNOSTIC INSTRUCTIONS

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC DESCRIPTOR

DTC P1761

Up and Down Shift Switch Signal Message Counter Incorrect

CIRCUIT/SYSTEM DESCRIPTION

A 12 volt signal circuit is provided by the body control module (BCM) to the plus or minus buttons. When a plus or minus button is pressed, a corresponding voltage drop occurs across the resistor network embedded in the switches. This voltage drop is monitored by the BCM. The BCM will send the request to the transmission control module (TCM) to perform the upshift or downshift. The TCM is constantly monitoring the serial data sent from the BCM for the correct number and sequence of counts for Tap Up and Tap Down function.

CONDITIONS FOR RUNNING THE DTC

The engine speed is greater than 500 RPM for 5 seconds.

CONDITIONS FOR SETTING THE DTC

The transmission control module (TCM) detects the serial data rolling count value for the Tap Up/Tap Down does not match with the expected body control module (BCM) count, 3 or greater times in 10 seconds.

ACTION TAKEN WHEN THE DTC SETS

- DTC P1761 is a Type C DTC.
- The TCM inhibits the Tap Up Tap Down function.

CONDITIONS FOR CLEARING THE DTC

DTC P1761 is a Type C DTC.

REFERENCE INFORMATION

Description and Operation

Electronic Component Description for control solenoid valve assembly information.

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

CIRCUIT/SYSTEM VERIFICATION

1. DTC P1761 is an informational DTC. Diagnose all other BCM DTCs prior to DTC P1761. Refer to **Diagnostic Trouble Code (DTC) List - Vehicle** .
2. If there are no other body control DTCs, diagnosis is accomplished by looking for an intermittent CAN circuit fault. Refer to **Scan Tool Does Not Communicate with High Speed GMLAN Device** .
3. Operate the vehicle within the Conditions for Running the DTC to verify the DTC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.

REPAIR PROCEDURES

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Control Module References** for BCM and control solenoid valve assembly replacement, setup, and programming.
- Perform the **Transmission Adaptive Values Learn** following all transmission related repairs.

DTC P1763

DIAGNOSTIC INSTRUCTIONS

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC DESCRIPTOR

DTC P1763

Trans Mode Switch C circuit

DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Trans Mode Switch C Signal	P1763	-	-	P1763

CIRCUIT/SYSTEM DESCRIPTION

Winter mode programming in the transmission control module (TCM) will allow the driver selection of a third gear start in order to reduce wheel spin under low traction conditions. The winter mode switch is a console mounted momentary contact switch located on the electronic PRNDL assembly. Accessory voltage is supplied to the electronic PRNDL assembly through the ELEC PRNDL fuse. When the winter mode switch is depressed, it momentarily contacts the switch signal circuit. The rear integration module (RIM) recognizes the voltage on the circuit and sends a class 2 serial data message to the dash integration module (DIM). The DIM sends a class 2 message to the engine control module (ECM). The ECM sends a request to the TCM through the controller area network (CAN) to enable the winter mode program.

The TCM evaluates the request, and if operating conditions are correct for enabling the program, the TCM sends a confirmation message to the ECM. The ECM then requests the instrument panel cluster (IPC) to illuminate the winter mode indicator.

The winter mode feature remains enabled until the mode switch is pressed again, the transmission is placed in a lower gear, and certain vehicle speed, transmission fluid temperature, or accelerator pedal positions are exceeded. Once disabled, the TCM will resume a normal shift pattern.

CONDITIONS FOR RUNNING THE DTC

- The engine speed is greater than 500 RPM for 5 seconds.
- Ignition voltage is between 9.0 volts and 19.0 volts.

CONDITIONS FOR SETTING THE DTC

The TCM detects that the Winter Mode Switch has been continuously activated for 10 minutes.

ACTION TAKEN WHEN THE DTC SETS

- DTC P1763 is a Type C DTC.
- The TCM freezes transmission adaptive functions.

CONDITIONS FOR CLEARING THE DTC

DTC P1763 is a Type C DTC.

DIAGNOSTIC AIDS

- DTC P1763 detects a stuck winter pattern switch.
- Diagnose all communication and body DTCs first.
- Test the IPC for proper operation and lamp illumination. Refer to **Diagnostic System Check - Vehicle**.

- Test the RIM for proper winter mode switch input and output operation. Refer to **Control Module References** .

REFERENCE INFORMATION

Schematic Reference

Automatic Transmission Controls Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

- **Transmission General Description**
- **Transmission Component and System Description**
- **Electronic Component Description**

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON, engine OFF. While observing the winter mode indicator on the IPC, press the winter mode switch several times. Does the winter mode indicator illuminate On and Off with switch operation?
 - Test the instrument panel cluster (IPC) for proper operation and lamp illumination. Refer to **Diagnostic System Check - Vehicle** .
 - Test the rear integration module (RIM) for proper winter mode switch input and output operation. Refer to **Control Module References** .
 - If the DTC resets, go to Circuit/System Testing.
2. Operate the vehicle within the Conditions for Running the DTC to verify the DTC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure

Records data.

CIRCUIT/SYSTEM TESTING

IMPORTANT: You must perform the Circuit/System Verification before proceeding with Circuit/System Testing.

1. Ignition ON, engine OFF. While observing the winter mode indicator on the IPC, press the winter mode switch several times. Is the winter mode indicator always ON?
 - Test the accessory voltage circuit for an open.
 - Test the winter mode switch signal circuit for an open.
 - Test the electronic PRNDL ground circuits for on open.
 - If an open circuit is found, replace the electronic PRNDL assembly.
2. While observing the winter mode indicator on the IPC, disconnect the electronic PRNDL assembly from the console wiring harness connector. Is the winter mode indicator still illuminated?
 - If the winter mode indicator is illuminated, replace the electronic PRNDL assembly.
3. Test the winter mode switch signal circuit for a short to ground. If the circuit test good replace the winter mode switch.

COMPONENT TESTING

1. Disconnect the electronic PRNDL assembly.
2. Connect a DMM, between the winter mode switch signal circuit and the ground circuit of the electronic PRNDL assembly.
3. Set the DMM to measure resistance. While observing the DMM, press the winter mode switch several times. Does the resistance toggle between very low resistance to very high resistance as the switch is pressed?
 - If the resistance toggles between very low resistance and very high resistance, replace the electronic PRNDL assembly.

REPAIR PROCEDURES

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Manual Shift Detent Lever with Shaft Position Switch Assembly Replacement

DTC P182E OR P1915

DIAGNOSTIC INSTRUCTIONS

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC DESCRIPTORS

DTC P182E

Internal Mode Switch - Indicates Invalid Range

DTC P1915

Internal Mode Switch Does Not Indicate Park/Neutral During Start

DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Transmission Range Signal A	P182E	P1915	P1915	P182E, P1915
Transmission Range Signal B	P1915	P182E	P182E	P182E, P1915
Transmission Range Signal C	P1915	P182E	P182E	P182E, P1915
Transmission Range Signal P	P182E	P1915	P1915	P182E, P1915
Ground	-	P182E	P182E	P182E, P1915

TYPICAL SCAN TOOL DATA

Internal Mode Switch A/B/C/P

Circuit	Normal Range	Short to Ground	Open	Short to Voltage
Operating Conditions: Ignition ON, range selector in Park				
Transmission Range Switch Signal A	Low	Low	High	High
Transmission Range Switch Signal B	High	Low	High	High
Transmission Range Switch Signal C	High	Low	High	High
Transmission Range Switch Signal P	Low	Low	High	High
High = 12 volts				
Low = 0 volts				

CIRCUIT/SYSTEM DESCRIPTION

The internal mode switch (IMS) assembly is a sliding contact switch attached to the manual shift detent lever shaft inside the transmission. The 4 inputs to the transmission control module (TCM) from the switch indicate which position is selected by the transmission manual shaft. The input voltage at the TCM is high when the switch is open and low when the switch is closed to ground. The state of each input is displayed on the scan tool as IMS. The IMS input parameters represented are transmission range signal A, Signal B, signal C, and signal P.

CONDITIONS FOR RUNNING THE DTC

P182E

- The engine speed is greater than 500 RPM for 5 seconds.
- The ignition voltage is 9.0 volts.
- No DTCs P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E, P0722, or P0723.

P1915

- No DTCs P0722, P0723, or P1915.
- The transmission output shaft speed is less than 90 RPM or less.
- The ignition voltage is 6.0 volts or greater.

CONDITIONS FOR SETTING THE DTC

P182E

The IMS does not indicate a valid Park, Reverse, Neutral, or Drive Range gear position for 7 seconds.

P1915

The manual shift shaft switch assembly does not indicate Park or Neutral during the following sequence:

- The engine speed is less than 50 RPM for greater than 0.10 second.
- The engine speed is 50-480 RPM for greater than 0.07 second.
- The engine speed is greater than 500 RPM for greater than 1.25 seconds.

ACTION TAKEN WHEN THE DTC SETS

- DTCs P182E and P1915 are Type A DTCs.
- The TCM commands maximum line pressure.
- The TCM turns OFF all solenoids.
- The TCM freezes transmission adaptive functions.
- The TCM limits the transmission to reverse and 5th gear.
- The TCM forces the torque converter clutch (TCC) OFF.
- The TCM inhibits the Tap Up/Tap Down function.
- The TCM inhibits manual shifting of forward gears.
- The TCM turns the high side driver OFF.

CONDITIONS FOR CLEARING THE DTC

DTCs P182E and P1915 are Type A DTCs.

REFERENCE INFORMATION

Schematic Reference

Automatic Transmission Controls Schematics

Connector End View Reference

- Component Connector End Views
- Inline Harness Connector End Views

Description and Operation

- Transmission General Description
- Transmission Component and System Description
- Electronic Component Description for manual shift detent lever with shaft position switch assembly

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

CIRCUIT/SYSTEM VERIFICATION

1. Perform the Range Selector Lever Cable Adjustment procedure to verify proper adjustment.
2. Ignition ON, engine OFF, observe the scan tool Internal Mode Switch A/B/C/P parameter while moving the gear shift lever from Park, to Reverse and through all the ranges. The parameter should match each gear range that is selected. Refer to Transmission Internal Mode Switch Logic .
3. Observe the scan tool engine control module (ECM) PNP Switch parameter while moving the gear shift lever from Park, to Reverse and through all the ranges. The parameter should display Park/Neutral in the Park and Neutral positions, and In Gear in all other positions.
4. Operate the vehicle within the Conditions for Running the DTC to verify the DTC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.

CIRCUIT/SYSTEM TESTING

NOTE: **You must perform Circuit/System Verification first.**

1. Ignition OFF, disconnect the 14-way harness connector at the transmission.

NOTE: **Under certain driving conditions, DTC P182E could set due to an intermittent low voltage fault on the P/N signal circuit, before conditions for setting DTC P0851 are met.**

2. Ignition ON, verify the scan tool ECM PNP Switch parameter displays In Gear.
 - If not the specified value, test the P/N signal circuit for a short to ground. If the circuit tests normal, replace the ECM.
3. Ignition OFF, remove the control valve body cover. Refer to **Control Valve Body Cover Replacement** .
4. Connect the TCM harness connector.
5. Disconnect the IMS connector at the control solenoid valve assembly.
6. Ignition ON, verify the scan tool Internal Mode Switch A/B/C/P parameter displays High for all 4 signal circuits.
 - If not the specified value, replace the control solenoid valve assembly. Refer to **Control Solenoid Valve and Transmission Control Module Assembly Replacement** .
7. Connect a 3-amp fused jumper wire between each transmission range signal circuit terminal listed below and the IMS ground circuit, terminal A. The appropriate scan tool IMS A/B/C/P parameter should display Low when the terminal is connected to the IMS ground.
 - Switch Signal A terminal E
 - Switch Signal B terminal D
 - Switch Signal C terminal C
 - Switch Signal P terminal B
 - If not the specified value, replace the control solenoid valve assembly.
8. If all circuits test normal, replace the IMS.

REPAIR PROCEDURES

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

NOTE: **Before replacing the TCM, perform the Control Solenoid Valve and Transmission Control Module Assembly Inspection .**

- Refer to **Control Module References** for control solenoid valve assembly replacement, setup, and programming.
- Perform the **Transmission Adaptive Values Learn** following all transmission related repairs.
- For IMS replacement, perform the **Manual Shift Detent Lever with Shaft Position Switch Assembly Replacement** .

DTC P1876

DIAGNOSTIC INSTRUCTIONS

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC DESCRIPTOR

DTC P1876

Up and Down Shift Enable Switch Circuit Low Voltage

CIRCUIT/SYSTEM DESCRIPTION

The transmission adaptive pressure (TAP) shift system allows the driver to manually shift gears by using the TAP shift switches located on the automatic transmission shifter. Pushing the Up switch will command an upshift and pushing the Down switch will command a downshift. The TAP shift system is activated when the gear selector is in the L (M) position and is deactivated in all other positions.

If the transmission control module (TCM) detects TAP enable switch Active and the internal mode switch (IMS) switch does not indicate L (M), DTC P1876 sets.

CONDITIONS FOR RUNNING THE DTC

- The engine speed is greater than 500 RPM for 5 seconds.
- The ignition voltage is between 9.0 volts and 19.0 volts.
- No TAP system DTCs P0815, P0816, or P0826.
- No IMS DTCs P1825 or P1915.

CONDITIONS FOR SETTING THE DTC

The TCM detects a TAP Enable Switch request for 2 seconds when not in D6 range for 3 times.

ACTION TAKEN WHEN THE DTC SETS

- DTC P1876 is a Type C DTC.
- The TCM disables Tap shift functions.

CONDITIONS FOR CLEARING THE DIC/DTC

DTC P1876 is a Type C DTC.

REFERENCE INFORMATION

Schematic Reference

Automatic Transmission Controls Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

- **Transmission General Description**
- **Electronic Component Description**

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

CIRCUIT/SYSTEM VERIFICATION

1. Verify there are no IMS DTCs set.
 - If IMS DTCs are set, diagnose them first.
2. Ignition ON, transmission in Park, observe the scan tool Driver Shift Control parameter. The reading should display Inactive.
3. Operate the vehicle within the Conditions for Running the DTC to verify the DTC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.

CIRCUIT/SYSTEM TESTING

1. Ignition OFF, disconnect the harness connector at the transmission shift lever.
2. Ignition ON, verify that a test lamp illuminates between the ignition circuit terminal A and ground.
 - If the test lamp does not illuminate, test the IGN circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
3. Verify the scan tool Driver Shift Request parameter indicates Invalid.
 - If not the specified value, replace the BCM.

4. Ignition OFF, test for 300-600 ohms between the signal circuit terminal B and ground.
 - If less than the specified range, test the signal circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - If greater than the specified range, test the signal circuit for an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the transmission shift lever.

COMPONENT TESTING

1. Ignition OFF, disconnect the harness connector at the transmission control.
2. Test for 6.74-6.94 k ohms between terminals A and B.
 - If not within the specified range, replace the transmission control.
3. Test for 1.77-1.97 k ohms between terminals A and B while pressing the upshift button.
 - If not within the specified range, replace the transmission control.
4. Test for 3.87-4.07 k ohms between terminals A and B while pressing the downshift button.
 - If not within the specified range, replace the transmission control.

REPAIR PROCEDURES

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

NOTE:

- Perform the **Transmission Adaptive Values Learn** following all transmission related repairs.
- Before replacing the TCM, perform the **Control Solenoid Valve and Transmission Control Module Assembly Inspection**.
- **Transmission Control Replacement** for AT TAP shift switch replacement.
- **Control Module References** for body control module (BCM) or control solenoid valve assembly replacement, setup, and programming

DTC P2534

DIAGNOSTIC INSTRUCTIONS

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC DESCRIPTOR

DTC P2534

Ignition On/Start Switch Circuit Low Voltage

DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ignition 1 voltage	P2534 open fuse	P2534	-	P0562, P0563

CIRCUIT/SYSTEM DESCRIPTION

The transmission control module (TCM) continuously monitors the system voltage on the TCM Ignition voltage circuit. Lower than normal voltage may be inadequate to operate the transmission control solenoids properly. Improper solenoid operation may cause erratic transmission operation, which may result in internal damage.

CONDITIONS FOR RUNNING THE DTC

The engine control module (ECM) communicates that the engine is running through the controller area network (CAN).

CONDITIONS FOR SETTING THE DTC

The TCM detects 6 volts or less on the ignition voltage circuit at the TCM for 7 seconds.

ACTION TAKEN WHEN THE DTC SETS

- DTC P2534 is a Type A DTC.
- The TCM turns OFF all high side drivers.
- The TCM turns OFF all solenoids.
- The TCM commands maximum line pressure.
- The TCM freezes transmission adaptive functions.
- The TCM commands the torque converter clutch (TCC) OFF.
- The TCM limits the transmission to reverse and 5th gear.
- The TCM inhibits the Tap Up/Tap Down function.
- The TCM inhibits manual shifting of forward gears.

CONDITIONS FOR CLEARING THE DTC

DTC P2534 is a Type A DTC.

DIAGNOSTIC AIDS

- Observe the driver information center (DIC) messaging that would indicate the electrical system requires service.
- Inspect for the following conditions:
 - Loose or damaged terminals at the generator

- Loose or worn generator drive belt

REFERENCE INFORMATION

Schematic Reference

Automatic Transmission Controls Schematics

Connector End View Reference

- Component Connector End Views
- Inline Harness Connector End Views

Description and Operation

- Transmission General Description
- Transmission Component and System Description
- Electronic Component Description

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

Special Tools

DT-48616-10: Adapter Harness

For equivalent regional tools, refer to Special Tools .

CIRCUIT/SYSTEM VERIFICATION

1. Engine ON, accessories OFF, measure and record the battery voltage at the battery terminals. The voltage should be between 12.6-15.0 volts.
 - If the voltage is not within the specified range, or the charge indicator light is on, refer to Charging

System Test

1. Observe the scan tool TCM Ignition Voltage parameter. The reading should be between 12.6-15.0 volts.
3. Operate the vehicle within the Conditions for Running the DTC to verify the DTC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.

CIRCUIT/SYSTEM TESTING

1. Ignition OFF, disconnect the 14-way harness connector at the transmission.
2. Connect the **DT-48616-10:** harness to the 14-way transmission harness connector.
3. Test for less than 10 ohms between the ground circuit terminal 2 and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
4. Ignition ON, verify that a test lamp illuminates between the B+ and ignition circuit terminals listed below and ground.
 - Terminal 1
 - Terminal 12
 - Terminal 13
 - If the test lamp does not illuminate, test the affected B+ or ignition circuit for a short to ground or an open/high resistance.
5. If all circuits test normal, replace the control solenoid valve assembly. Refer to **Control Solenoid Valve and Transmission Control Module Assembly Replacement**.

REPAIR PROCEDURES

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

IMPORTANT: Before replacing the TCM, perform the Control Solenoid Valve and Transmission Control Module Assembly Inspection.

- Refer to **Control Module References** for control solenoid valve assembly replacement, setup, and programming.
- Perform the **Transmission Adaptive Values Learn** following all transmission related repairs.

DTC P2714 OR P2715

DIAGNOSTIC INSTRUCTIONS

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC DESCRIPTORS

DTC P2714

Clutch Pressure Control Solenoid 4 - Stuck Off

DTC P2715

Clutch Pressure Control Solenoid 4 - Stuck On

CIRCUIT/SYSTEM DESCRIPTION

The clutch pressure control (PC) solenoid 4 is part of the control solenoid valve assembly which has no serviceable components. The PC solenoid 4 regulates transmission fluid pressure (TFP) to the 2-6 regulator valve which controls pressure to the 2-6 clutch. The transmission control module (TCM) calculates gear ratio based on the RPM signals from the input speed sensor (ISS) and the output speed sensor (OSS). The TCM compares the expected transmission gear ratio to the calculated gear ratio for each commanded gear.

CONDITIONS FOR RUNNING THE DTC

P2714

- DTC P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E, P0716, P0717, P0722, P0723, or P182E is not set.
- The high side driver is enabled.
- The throttle position signal is valid.
- The ignition voltage is 9.0 volts or greater.
- The transmission fluid temperature is 0°C (32°F) or greater.
- The transmission input shaft speed is 80 RPM or greater.
- The 2-6 clutch is commanded ON.
- The output speed is greater than 650 RPM or the throttle position is greater than 0.5 percent.

P2715

- DTC P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E, P0716, P0717, P0722, P0723, or P182E is not set.
- The ignition voltage is 9.0 volts or greater.
- The transmission output shaft speed is 200 RPM or greater.
- The 2-6 clutch is commanded OFF.
- The transmission fluid temperature is 0°C (32°F) or greater.
- The attained range is not 1st gear.
- The high side driver is enabled.
- The transmission input speed is 200 RPM or greater.

CONDITIONS FOR SETTING THE DTC

P2714

The TCM detects an incorrect on-coming clutch gear ratio, or shift flare.

P2715

The TCM detects an incorrect off-going clutch gear ratio, or shift tie-up.

ACTION TAKEN WHEN THE DTC SETS

P2714

- DTC P2714 is a Type A DTC.
- The TCM commands maximum line pressure.
- The TCM freezes transmission adaptive functions.
- The TCM inhibits the Tap Up/Tap Down function.
- The TCM inhibits manual shifting of forward gears.
- The TCM limits the transmission to reverse and 3rd gear.

P2715

- DTC P2715 is a Type A DTC.
- The TCM commands maximum line pressure.
- The TCM freezes transmission adaptive functions.
- The TCM inhibits the Tap Up/Tap Down function.
- The TCM inhibits manual shifting of forward gears.
- The TCM limits the transmission to reverse and 2nd gear.

CONDITIONS FOR CLEARING THE DIC/DTC

DTCs P2714 and P2715 are Type A DTCs.

DIAGNOSTIC AIDS

Before performing a road test, configure and setup the scan tool for snapshot mode. This allows you to monitor, display, and verify multiple transmission data parameters at one time, after the road test.

REFERENCE INFORMATION

Schematic Reference

- Drive Range, Second Gear
- Drive Range, Sixth Gear

Description and Operation

- Transmission General Description
- Transmission Component and System Description
- Electronic Component Description

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

CIRCUIT/SYSTEM VERIFICATION

WARNING: Refer to Parking Brake and Drive Wheels Warning .

NOTE: If other DTCs are set, diagnose those DTCs first.

1. Engine idling in Park, with parking brake applied and drive wheels chocked.
2. Perform the Transmission Fluid Level and Condition Check to verify correct fluid level and condition.
3. Perform the Control Solenoid Valve and Transmission Control Module Assembly Cleaning to dislodge debris and free up the valves.
4. Monitor the Transmission Fluid Pressure Switch 3 with a scan tool. Place the gear select lever in Park, Reverse, and Neutral range. Verify the Transmission Fluid Pressure Switch 3 parameter states are correct for Park, Reverse, and Neutral. Refer to Transmission Fluid Pressure Switch Logic .
5. Place the gear select lever in Drive range. Command the shift transmission with a scan tool through all forward ranges. Verify the Transmission Fluid Pressure Switch 3 parameter states are correct for all forward ranges. Refer to Transmission Fluid Pressure Switch Logic .
6. Engine idling in Park, verify with a scan tool the ISS/OSS Supply Voltage parameter displays OK.
7. Engine idling in Park. Observe the Transmission ISS parameter on the scan tool, while varying the engine speed. The Transmission ISS parameter should vary with engine speed and not drop out.
8. Operate the vehicle at 16-32 km/h (10-20 mph) while observing the Transmission OSS parameter on the scan tool. The Transmission OSS parameter should vary with the vehicle speed and not drop out.

NOTE: Perform a scan tool snapshot, during the road test.

9. Perform the Road Test . Verify the transmission operation performs as indicated in the road test instructions.
10. Review the scan tool snapshot data. Verify the following transmission data parameters display the correct values for each gear range.

- Transmission ISS
- Transmission OSS
- Pressure Control Solenoid Valve 4
- Transmission Fluid Pressure Switch 3

11. Operate the vehicle within the Conditions for Running the DTC to verify the DTC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.

CIRCUIT/SYSTEM TESTING

NOTE: You must perform the Circuit/System Verification first.

1. Perform the **Line Pressure Check** . Verify the transmission line pressures are within the range specified in the Line PC Solenoid Valve Pressure table. Refer to **Solenoid Valve Pressure** .
 - If not within the specified range, refer to **Fluid Pressure High or Low** .
2. Ignition OFF, remove the control solenoid valve assembly. Refer to **Control Solenoid Valve and Transmission Control Module Assembly Replacement** .
3. Perform the **Control Solenoid Valve and Transmission Control Module Assembly Solenoid Performance Test** .
 - If the control solenoid valve assembly does not pass the performance test, replace the control solenoid valve assembly.
4. Inspect for the following conditions and repair/replace as necessary.

DTCs	Component	Condition
P2714 P2715	Control Valve Body Assembly	2-6 clutch regulator valve stuck/sticking, debris, binding, damaged valve, or scored bore
P2714 P2715	Control Solenoid Valve Assembly	• Control signal fluid supply leak - valve body filter plate assembly cracked or damaged gasket seal • O-ring seals leaking
P2714 P2715	Trans case, 2-6 clutch piston, spring retaining ring, reaction sun gear	• 2-6 clutch return spring retaining ring not seated in groove • 2-6 clutch piston assembly - seal damaged or leaking • 2-6 clutch plates worn or damaged • 2-6 clutch plates will not slide over the reaction sun gear shell freely
P2714	Trans case and 1-2-3-4 clutch backing plate retainer ring	1-2-3-4 clutch backing plate retaining ring not seated/oriented correctly at trans case groove
P2714	Torque Converter (w/fluid pump) Housing Assembly	Fluid pump housing/gear damaged/scored
P2714	A/Trans Fluid Filter Assembly	Oil filter or filter seal loose or damaged

REPAIR PROCEDURES

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

IMPORTANT: Before replacing the TCM, perform the Control Solenoid Valve and Transmission Control Module Assembly Inspection .

- Refer to Control Module References for control solenoid valve assembly replacement, setup, and programming.
- Perform the Transmission Adaptive Values Learn following all transmission related repairs.
- Perform the:
 - Internal Components Removal
 - 2-6 Clutch Piston Removal
 - Low and Reverse and 1-2-3-4 Clutch Housing, Low and Reverse Clutch Assembly, Output Sun Gear, and 2-6 Clutch Plate Disassemble
 - 2-6 Clutch Piston Installation
 - 3-5-Reverse and 4-5-6 Clutch Housing, and Input, Reaction, and Output Carrier Installation

DTC P2719-P2721

DIAGNOSTIC INSTRUCTIONS

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

DTC DESCRIPTORS

DTC P2719

Clutch Pressure Control Solenoid Valve 4 System Performance

DTC P2720

Clutch Pressure Control Solenoid Valve 4 Control Circuit Low Voltage

DTC P2721

Clutch Pressure Control Solenoid Valve 4 Control Circuit High Voltage

DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance

Clutch PC Solenoid 4 Control	P2720	P2721	P2721	P2719
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TYPICAL SCAN TOOL DATA

Pressure Control Solenoid Valve 4 Performance Test Status

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Operating Conditions: Engine running, normal operating temperature Parameter Normal Range: OK				
Pressure Control Solenoid Valve 4 Control	-	-	-	Fault or Malfunction

Pressure Control Solenoid Valve 4 Control Circuit Low Voltage Test Status

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Operating Conditions: Engine running, normal operating temperature Parameter Normal Range: OK				
Pressure Control Solenoid Valve 4 Control	Fault or Malfunction	-	-	-

Pressure Control Solenoid Valve 4 Control Circuit High Voltage Test Status

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Operating Conditions: Engine running, normal operating temperature Parameter Normal Range: OK				
Pressure Control Solenoid Valve 4 Control	-	Fault or Malfunction	Fault or Malfunction	-

CIRCUIT/SYSTEM DESCRIPTION

The clutch pressure control (PC) solenoid 4 is part of the control solenoid valve assembly which has no serviceable components. The normally low clutch PC solenoid 4 regulates and directs oil pressure to the 2-6 clutch regulator valve. Increasing clutch PC solenoid 4 pressure increases pressure to the 2-6 clutch. The transmission control module (TCM) PC solenoid 4 low side driver varies current to the solenoid. Increasing the current to the clutch PC solenoid 4 increases oil pressure by closing off the solenoid exhaust port. Decreasing the current to the clutch PC solenoid 4 decreases oil pressure by opening the exhaust port. PC solenoid 4 power is supplied by the TCM through a high side driver (HSD). The HSD protects the circuit and components from excessive current flow. If excessive current flow is detected, the HSD will turn OFF. When the fault is corrected, the HSD will reset.

CONDITIONS FOR RUNNING THE DTC

P2719, P2720, or P2721

- The engine speed is 500 RPM or greater for 5 seconds.

- The ignition voltage is 9.0 volts or greater.

CONDITIONS FOR SETTING THE DTC

P2719

The TCM detects an internal electrical performance malfunction of the clutch PC solenoid 4 control circuit where the measured clutch PC solenoid 4 current does not equal the commanded clutch PC solenoid 4 current for 5 seconds.

P2720

The TCM detects a short to ground on the clutch PC solenoid 4 control circuit for 1 second.

P2721

The TCM detects an open or short to voltage on the clutch PC solenoid 4 control circuit for 1 second.

ACTION TAKEN WHEN THE DTC SETS

P2719

- DTC P2719 is a Type C DTC.
- The TCM freezes transmission adaptive functions on the 2-6 clutch.

P2720

- DTC P2720 is a Type A DTC.
- The TCM defaults the transmission to 2nd gear and reverse.
- The TCM commands maximum line pressure.
- The TCM freezes transmission adaptive functions.
- The TCM inhibits Tap Up/Tap Down function.
- The TCM inhibits manual up, manual down shifts with the shift selector.

P2721

- The DTC P2721 is a Type A DTC.
- The TCM defaults the transmission to 3rd gear and reverse.
- The TCM commands maximum line pressure.
- The TCM freezes transmission adaptive functions.
- The TCM inhibits Tap Up/Tap Down function.
- The TCM inhibits manual shifting of forward gears.

CONDITIONS FOR CLEARING THE DTC

- DTC P2719 is a Type C DTC.
- DTCs P2720 and P2721 are Type A DTCs.

REFERENCE INFORMATION

Schematic Reference

Automatic Transmission Controls Schematics

Connector End View Reference

- Component Connector End Views
- Inline Harness Connector End Views

Description and Operation

- Transmission General Description
- Transmission Component and System Description
- Electronic Component Description

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

Special Tools

DT-48616-10: Adapter Harness

For equivalent regional tools, refer to Special Tools .

CIRCUIT/SYSTEM VERIFICATION

1. Operate the vehicle in second gear long enough to ensure at least a 3°C (5°F) rise in TCM temperature, then operate the vehicle in PARK for 5 seconds.

2. Operate the vehicle in drive range. Allow the transmission to shift through all forward gear ranges. Verify with a scan tool, the following test status parameters display OK.
 - Pressure Control Solenoid Valve 4 Performance Test Status
 - Pressure Control Solenoid Valve 4 Control Circuit High Voltage Test Status
 - Pressure Control Solenoid Valve 4 Control Circuit Low Voltage Test Status
3. Operate the vehicle within the Conditions for Running the DTC to verify the DTC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.

CIRCUIT/SYSTEM TESTING

NOTE: You must perform the **Circuit/System Verification** first.

1. Ignition OFF, remove the control solenoid assembly. Refer to **Control Solenoid Valve and Transmission Control Module Assembly Replacement** .
 2. Perform the **Control Solenoid Valve and Transmission Control Module Assembly Inspection** .
 3. Place the control solenoid valve assembly on a clean work surface near the transmission assembly.
 4. Connect **DT-48616-10**: harness between the vehicle wire harness electrical connector, and the control solenoid valve assembly.
 5. Ignition ON, verify with a scan tool the following test status parameters display, OK.
 - Pressure Control Solenoid Valve 4 Performance Test Status
 - Pressure Control Solenoid Valve 4 Control Circuit High Voltage Test Status
 - Pressure Control Solenoid Valve 4 Control Circuit Low Voltage Test Status
- If any test status parameter displays Fault or Malfunction, replace the control solenoid valve assembly.

REPAIR PROCEDURES

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

NOTE: Before replacing the TCM, perform the **Control Solenoid Valve and Transmission Control Module Assembly Inspection** .

- Refer to **Control Module References** for control solenoid valve assembly replacement, setup, and programming.
- Perform the **Transmission Adaptive Values Learn** following all transmission related repairs.
- Perform the **Control Solenoid Valve and Transmission Control Module Assembly Inspection**

DTC P2723 OR P2724

DIAGNOSTIC INSTRUCTIONS

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC DESCRIPTORS

DTC P2723

Pressure Control Solenoid Valve 5 - Stuck Off

DTC P2724

Pressure Control Solenoid Valve 5 - Stuck On

CIRCUIT/SYSTEM DESCRIPTION

The clutch pressure control (PC) solenoid 5 is part of the control solenoid valve assembly, which has no serviceable components. The PC solenoid 5 regulates transmission fluid pressure (TFP) to the 1-2-3-4 regulator valve which controls pressure to the 1-2-3-4 clutch. The transmission control module (TCM) calculates gear ratio based on the RPM signals from the input speed sensor (ISS) and the output speed sensor (OSS). The TCM compares the expected transmission gear ratio to the calculated gear ratio for each commanded gear.

CONDITIONS FOR RUNNING THE DTC

P2723

- DTC P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E, P0716, P0717, P0722, P0723, or P182E is not set.
- The ignition voltage is 9.0 volts or greater.
- The throttle position signal is valid.
- The engine speed is 500 RPM or greater for 5 seconds.
- The high side driver (HSD) is enabled.
- The transmission fluid temperature is 0°C (32°F) or greater.
- The transmission output speed is 650 RPM or greater or the throttle position is 0.5 percent or greater.

P2724

- DTC P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E, P0716, P0717, P0722, P0723, or P182E is not set.
- The transmission fluid temperature is 0°C (32°F) or greater.
- The high HSD is ON.
- The transmission output shaft speed is 200 RPM or greater.
- The transmission input shaft speed is 200 RPM or greater.

- The commanded range is not 1st gear.

CONDITIONS FOR SETTING THE DTC

P2723

The TCM detects an incorrect on-coming clutch gear ratio, or shift flare.

P2724

The TCM detects an incorrect off-going clutch gear ratio, or shift tie-up.

ACTION TAKEN WHEN THE DTC SETS

P2723

- DTC P2723 is a Type A DTC.
- The TCM freezes transmission adaptive functions.
- The TCM commands maximum line pressure.
- The TCM inhibits Tap Up/Tap Down.
- The TCM inhibits Manual Up/Manual Down with the gear selector.
- Torque management is enabled.
- The TCM limits the transmission to reverse and 5th range.

P2724

- DTC P2724 is a Type A DTC.
- The TCM freezes transmission adaptive functions.
- The TCM commands maximum line pressure.
- The TCM inhibits Tap Up/Tap Down.
- The TCM inhibits Manual Up/Manual Down with the gear selector.
- The TCM limits the transmission to reverse and 3rd range.

CONDITIONS FOR CLEARING THE DIC/DTC

DTCs P2723 and P2724 are Type A DTCs.

DIAGNOSTIC AIDS

Before performing a road test, configure and setup the scan tool for snapshot mode. This allows you to monitor, display, and verify multiple transmission data parameters at one time, after the road test.

REFERENCE INFORMATION

Description and Operation

- **Transmission General Description**
- **Transmission Component and System Description**
- **Electronic Component Description**

For Hydraulic Schematic reference and description, refer to:

- **Drive Range, First Gear**
- **Drive Range, Second Gear**
- **Drive Range, Third Gear**
- **Drive Range - Fourth Gear**
- **Drive Range, Fifth Gear**
- **Drive Range, Fifth Gear Default**
- **Drive Range, Sixth Gear**

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

CIRCUIT/SYSTEM VERIFICATION

WARNING: Refer to **Parking Brake and Drive Wheels Warning** .

NOTE: If other DTCs are set, diagnose those DTC s first.

1. Engine idling in Park, with parking brake applied and drive wheels chocked.
2. Perform the **Transmission Fluid Level and Condition Check** , to verify correct fluid level and condition.
3. Perform the **Control Solenoid Valve and Transmission Control Module Assembly Cleaning** , to dislodge debris and free up the valves.
4. Monitor the Transmission Fluid Pressure Switch 4 with a scan tool. Place the gear select lever in Park, Reverse, and Neutral range. Verify the Transmission Fluid Pressure Switch 4 parameter states are correct for Park, Reverse, and Neutral. Refer to **Transmission Fluid Pressure Switch Logic** .
5. Place the gear select lever in Drive range. Command the shift transmission with a scan tool through all forward ranges. Verify the Transmission Fluid Pressure Switch 4 parameter states are correct for all forward ranges. Refer to **Transmission Fluid Pressure Switch Logic** .
6. Engine idling in Park, verify with a scan tool the ISS/OSS Supply Voltage parameter displays OK.

7. Engine idling in Park. Observe the Transmission ISS parameter on the scan tool, while varying the engine speed. The Transmission ISS parameter should vary with engine speed and not drop out.
8. Operate the vehicle at 16-32 km/h (10-20 mph) while observing the Transmission OSS parameter on the scan tool. The Transmission OSS parameter should vary with the vehicle speed and not drop out.

NOTE: **Perform a scan tool snapshot, during the road test.**

9. Perform the **Road Test** . Verify the transmission operation performs as indicated in the road test instructions.
10. Review the scan tool snapshot data. Verify the following transmission data parameters display the correct values for each gear range.
 - Transmission ISS
 - Transmission OSS
 - Pressure Control Solenoid Valve 5
 - Transmission Fluid Pressure Switch 4
11. Operate the vehicle within the Conditions for Running the DTC to verify the DTC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.

CIRCUIT/SYSTEM TESTING

NOTE: **You must perform the Circuit/System Verification first.**

1. Perform the **Line Pressure Check** . Verify the transmission line pressures are within the range specified in the Line PC Solenoid Valve Pressure table. Refer to **Solenoid Valve Pressure** .
 - If not within the specified range, refer to **Fluid Pressure High or Low** .
2. Ignition OFF, remove the control solenoid valve assembly. Refer to **Control Solenoid Valve and Transmission Control Module Assembly Replacement** .
3. Perform the **Control Solenoid Valve and Transmission Control Module Assembly Solenoid Performance Test** .
 - If the control solenoid valve assembly does not pass the performance test, replace the control solenoid valve assembly.
4. Inspect for the following conditions and repair or replace as necessary.

DTCs	Component	Condition
P2723 P2724	Control Valve Body Assembly	1-2-3-4 clutch regulator valve stuck/sticking - debris, binding, damaged valve, or scored bore
P2723 P2724	Control Solenoid Valve Assembly (314)	• O-ring seals leaking • Valve body filter plate assembly cracked, blocked, or damaged gasket seal
P2723	Lo and Reverse and 1-2-3-4 Clutch Housing Assembly (51)	1-2-3-4 clutch piston (414) cracked/damaged/leaking

P2723	Output Sun Gear Assembly	Housing/hub weld cracked/leaking
P2723	Trans Case and 1-2-3-4 Clutch Backing Plate Retaining Ring	1-2-3-4 clutch backing plate retaining ring not seated/oriented, causing clutch pack/piston overtravel
P2723	Torque Converter (w/Fluid Pump) Housing Assembly	• Fluid pump housing/gear damaged/scored • Fluid pump or torque converter overstressed due to high temperatures
P2723	Automatic Transmission Fluid Filter Assembly	Oil filter or filter seal loose or damaged

REPAIR PROCEDURES

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

IMPORTANT: Before replacing the TCM, perform the Control Solenoid Valve and Transmission Control Module Assembly Inspection .

- Refer to **Control Module References** for control solenoid valve assembly replacement, setup, and programming.
- Perform the **Transmission Adaptive Values Learn** following all transmission related repairs.
- Perform the:
 - **Internal Components Removal**
 - **Low and Reverse and 1-2-3-4 Clutch Housing Disassemble**
 - **Low and Reverse and 1-2-3-4 Clutch Housing Cleaning and Inspection**
 - **Low and Reverse and 1-2-3-4 Clutch Housing Assemble**
 - **Low and Reverse and 1-2-3-4 Clutch Housing, and 1-2-3-4 Clutch Plate Installation**

DTC P2728-P2730

DIAGNOSTIC INSTRUCTIONS

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC DESCRIPTORS

DTC P2728

Pressure Control Solenoid Valve 5 System Performance

DTC P2729

Pressure Control Solenoid Valve 5 Control Circuit Low Voltage

DTC P2730

Pressure Control Solenoid Valve 5 Control Circuit High Voltage

DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Pressure Control Solenoid 5 Control	P2729	P2730	P2730	P2728

TYPICAL SCAN TOOL DATA

Pressure Control Solenoid Valve 5 Performance Test Status

Circuit	Short to Ground	Open	Short to Voltage	Signal Performance
Operating Conditions: Engine running, normal operating temperature Parameter Normal Range: OK				
Pressure Control Solenoid 5 Control	-	-	-	Fault or Malfunction

Pressure Control Solenoid Valve 5 Control Circuit Low Voltage Test Status

Circuit	Short to Ground	Open	Short to Voltage	Signal Performance
Operating Conditions: Engine running, normal operating temperature Parameter Normal Range: OK				
Pressure Control Solenoid 5 Control	Fault or Malfunction	-	-	-

Pressure Control Solenoid Valve 5 Control Circuit High Voltage Test Status

Circuit	Short to Ground	Open	Short to Voltage	Signal Performance
Operating Conditions: Engine running, normal operating temperature Parameter Normal Range: OK				
Pressure Control Solenoid 5 Control	-	Fault or Malfunction	Fault or Malfunction	-

CIRCUIT/SYSTEM DESCRIPTION

The clutch pressure (PC) solenoid 5 is part of the control solenoid valve assembly which has no serviceable components. The normally low clutch PC solenoid 5 regulates and directs the clutch PC solenoid 5 oil pressure to the 1-2-3-4 clutch regulator valve. Increasing clutch PC solenoid 5 pressure increases pressure to the 1-2-3-4 clutch. The transmission control module (TCM) varies the current to the PC solenoid 5 through a low side driver. Increasing the current to the clutch PC solenoid 5 increases clutch PC solenoid 5 oil pressure by closing

OFF the solenoid exhaust port. Decreasing the current to the clutch PC solenoid 5 decreases clutch PC solenoid 5 oil pressure by opening the solenoid exhaust port. Clutch PC solenoid 5 power is supplied by the TCM through a high side driver (HSD). The HSD protects the circuit and components from excessive current flow. If excessive current flow is detected, the HSD will turn OFF. When the fault is corrected, the HSD will reset.

CONDITIONS FOR RUNNING THE DTC

P2728, P2729, or P2730

- The engine speed is 500 RPM or greater for 5 seconds.
- The ignition voltage is 9.0 volts or greater.

CONDITIONS FOR SETTING THE DTC

P2728

The TCM detects an internal electrical performance malfunction of the clutch PC solenoid 5 control circuit where the measured clutch PC solenoid 5 current does not equal the commanded clutch PC solenoid 5 current for 5 seconds.

P2729

The TCM detects a short to ground on the clutch PC solenoid 5 control circuit for 1 second.

P2730

The TCM detects an open or short to voltage on the clutch PC solenoid 5 control circuit for 1 second.

ACTION TAKEN WHEN THE DTC SETS

P2728

- DTC P2728 is a Type C DTC.
- The TCM freezes transmission adaptive functions on the 1-2-3-4 clutch.

P2729

- DTC P2729 is a Type A DTC.
- The TCM defaults the transmission to 3rd gear and reverse.
- The TCM commands maximum line pressure.
- The TCM freezes transmission adaptive functions.
- The TCM inhibits Tap Up/Tap Down.
- The TCM inhibits manual up, manual down with the shift selector.

P2730

- DTC P2730 is a Type A DTC.
- The TCM forces the High Side Driver OFF.
- The TCM defaults the transmission to reverse and 5th gear.
- The TCM Forces TCC OFF.
- The TCM enables torque management.
- The TCM inhibits Tap Up/Tap Down function.
- The TCM inhibits manual shifting of forward gears.
- The TCM commands maximum line pressure.
- The TCM freezes transmission adaptive functions.

CONDITIONS FOR CLEARING THE DTC

- DTC P2728 is a Type C DTC.
- DTCs P2729 and P2730 are Type A DTCs.

REFERENCE INFORMATION

Schematic Reference

Automatic Transmission Controls Schematics

Description and Operation

- **Transmission General Description**
- **Transmission Component and System Description**
- **Electronic Component Description**

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

Special Tools

DT-48616-10: Adapter Harness

For equivalent regional tools, refer to **Special Tools** .

CIRCUIT/SYSTEM VERIFICATION

1. Operate the vehicle in second gear long enough to ensure at least a 3°C (5°F) rise in TCM temperature, then operate the vehicle in PARK for 5 seconds.
2. Operate the vehicle in drive range. Allow the transmission to shift through all forward gear ranges. Verify with a scan tool, the following test status parameters display OK.
 - Pressure Control Solenoid Valve 5 Performance Test Status
 - Pressure Control Solenoid Valve 5 Control Circuit High Voltage Test Status
 - Pressure Control Solenoid Valve 5 Control Circuit Low Voltage Test Status
3. Operate the vehicle within the Conditions for Running the DTC to verify the DTC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.

CIRCUIT/SYSTEM TESTING

NOTE: **You must perform the Circuit/System Verification first.**

1. Ignition OFF, remove the control solenoid assembly. Refer to **Control Solenoid Valve and Transmission Control Module Assembly Replacement** .
 2. Perform the **Control Solenoid Valve and Transmission Control Module Assembly Inspection** .
 3. Place the control solenoid valve assembly on a clean work surface near the transmission assembly.
 4. Connect **DT-48616-10:** harness between the vehicle wire harness electrical connector, and the control solenoid valve assembly electrical connector.
 5. Ignition ON, verify with a scan tool the following test status parameters display OK.
 - Pressure Control Solenoid Valve 5 Performance Test Status
 - Pressure Control Solenoid Valve 5 Control Circuit High Voltage Test Status
 - Pressure Control Solenoid Valve 5 Control Circuit Low Voltage Test Status
- If any test status parameter displays Fault or Malfunction, replace the control solenoid valve assembly.

REPAIR PROCEDURES

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

NOTE: **Before replacing the TCM, perform the Control Solenoid Valve and Transmission Control Module Assembly Inspection .**

- Refer to **Control Module References** for control solenoid valve assembly replacement, setup, and programming.

- Perform the **Transmission Adaptive Values Learn** following all transmission related repairs.
- Perform the **Control Solenoid Valve and Transmission Control Module Assembly Cleaning** procedure.

DTC P2762, P2763, OR P2764

DIAGNOSTIC INSTRUCTIONS

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC DESCRIPTORS

DTC P2762

Torque Converter Clutch (TCC) Pressure Control Solenoid Valve Performance

DTC P2763

Torque Converter Clutch (TCC) Pressure Control Solenoid Valve Control Circuit High Voltage

DTC P2764

Torque Converter Clutch (TCC) Pressure Control Solenoid Valve Control Circuit Low Voltage

DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
TCC Pressure Control Solenoid Control	P2764	P2763	P2763	P2762

TYPICAL SCAN TOOL DATA

TCC Pressure Control Solenoid Valve Performance Test Status

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Operating Conditions: Engine running, normal operating temperature Parameter Normal Range: OK				
TCC Pressure Control Solenoid Control	-	-	-	Fault or Malfunction

TCC Pressure Control Solenoid Valve Control Circuit High Voltage Test Status

	Short to	Open/High	Short to	Signal
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Circuit	Ground	Resistance	Voltage	Performance
Operating Conditions: Engine running, normal operating temperature Parameter Normal Range: OK				
TCC Pressure Control Solenoid Control	-	Fault or Malfunction	Fault or Malfunction	-

TCC Pressure Control Solenoid Valve Control Circuit Low Voltage Test Status

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Operating Conditions: Engine running, normal operating temperature Parameter Normal Range: OK				
TCC Pressure Control Solenoid Control	Fault or Malfunction	-	-	-

CIRCUIT/SYSTEM DESCRIPTION

The torque converter clutch (TCC) pressure control (PC) solenoid is part of the control solenoid valve assembly which has no serviceable components. The normally low TCC PC solenoid regulates oil pressure to the TCC regulator valve and TCC control valve. Increasing TCC PC solenoid oil pressure increases oil pressure to the torque converter to apply the clutch. The transmission control module (TCM) varies the current to the TCC PC solenoid through a low side driver. Increasing current to the TCC PC solenoid increases oil pressure by closing OFF the solenoid exhaust port. Decreasing current to the TCC PC solenoid decreases oil pressure by opening up the solenoid exhaust port. The TCC PC solenoid power is supplied by the TCM through a high side driver (HSD). The HSD protects the circuit and components from excessive current flow. If excessive current flow is detected, the HSD will turn OFF. When the fault is corrected, the HSD will reset.

CONDITIONS FOR RUNNING THE DTC

P2762

- The engine speed is 500 RPM or greater for 5 seconds.
- The ignition voltage is 9.0 volts or greater.
- DTC P2762 has not set this ignition cycle.

P2763 or P2764

- The engine speed is 500 RPM or greater for 5 seconds.
- The ignition voltage is 9.0 volts or greater.
- No DTCs P0658 or P0659.
- The high side driver is enabled.

CONDITIONS FOR SETTING THE DTC

P2762

The TCM detects an internal electrical performance malfunction of the TCC PC solenoid control circuit where the measured TCC PC solenoid current does not equal the commanded TCC PC solenoid for 5 seconds.

P2763

The TCM detects an open/high resistance or short to voltage on the TCC PC solenoid control circuit for 5 seconds.

P2764

The TCM detects a short to ground on the TCC PC solenoid control circuit for 5 seconds.

ACTION TAKEN WHEN THE DTC SETS

P2762

DTC P2762 is a Type C DTC.

P2763

- DTC P2763 is a Type B DTC.
- The TCM inhibits 6th gear.
- The TCM forces TCC OFF.
- The TCM inhibits Tap Up/Down function.
- The TCM inhibits manual shifting of forward gears.
- The TCM changes to a Hot Mode shift pattern.

P2764

- DTC P2764 is a Type A DTC.
- The TCM inhibits TCC.
- The TCM commands maximum line pressure.
- The TCM freezes transmission adaptive functions.
- The TCM defaults the transmission to 5th gear and reverse.
- The TCM inhibits Tap Up/Down function.
- The TCM inhibits manual shifting of forward gears.
- The TCM forces the high side driver OFF.
- The TCM enables torque management.

CONDITIONS FOR CLEARING THE DIC/DTC

- DTC P2762 is a Type C DTC.
- DTC P2763 is a Type B DTC.
- DTC P2764 is a Type A DTC.

REFERENCE INFORMATION

Schematic Reference

Automatic Transmission Controls Schematics

Connector End View Reference

- Component Connector End Views
- Inline Harness Connector End Views

Description and Operation

- Transmission General Description
- Transmission Component and System Description
- Electronic Component Description

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

Special Tools

DT-48616-10: Adapter Harness

For equivalent regional tools, refer to **Special Tools** .

CIRCUIT/SYSTEM VERIFICATION

1. Operate the vehicle in 2nd gear long enough to ensure at least a 3°C (5°F) rise in TCM temperature.
2. Operate the vehicle in drive range and ensure TCC is commanded ON for 1 minute. Verify with a scan tool the following parameters display OK.
 - TCC Pressure Control Solenoid Valve Performance Test Status
 - TCC Pressure Control Solenoid Valve Control Circuit Low Voltage Test Status

- TCC Pressure Control Solenoid Valve Control Circuit High Voltage Test Status
3. Operate the vehicle within the Conditions for Running the DTC to verify the DTC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.

CIRCUIT/SYSTEM TESTING

NOTE: **You must perform the Circuit/System Verification first.**

1. Ignition OFF, remove the control solenoid assembly. Refer to **Control Solenoid Valve and Transmission Control Module Assembly Replacement** .
 2. Perform the **Control Solenoid Valve and Transmission Control Module Assembly Inspection** .
 3. Place the control solenoid valve assembly on a clean work surface near the transmission assembly.
 4. Connect **DT-48616-10:** harness between the vehicle wire harness electrical connector, and the control solenoid valve assembly electrical connector.
 5. Ignition ON, verify with a scan tool the following test status parameters display OK.
 - TCC Pressure Control Solenoid Valve Performance Test Status
 - TCC Pressure Control Solenoid Valve Control Circuit Low Voltage Test Status
 - TCC Pressure Control Solenoid Valve Control Circuit High Voltage Test Status
- If any test status parameter displays Fault or Malfunction, replace the control solenoid valve assembly.

REPAIR PROCEDURES

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

NOTE: **Before replacing the TCM, perform the Control Solenoid Valve and Transmission Control Module Assembly Inspection .**

- Refer to **Control Module References** for control solenoid valve assembly replacement, setup, and programming.
- Perform the **Transmission Adaptive Values Learn** following all transmission related repairs.