

SECTION 307-01: Automatic Transaxle/Transmission — 6R80
DIAGNOSIS AND TESTING

2014 F-150 Workshop Manual
Procedure revision date: 10/25/2013

Pinpoint Tests — OSC Equipped Vehicle

Special Tool(s)

 ST3093-A	Fluke 77-IV Digital Multimeter FLU77-4 or equivalent
 ST2834-A	Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) software with appropriate hardware, or equivalent scan tool

When the electrical connector or solenoid body is disconnected, inspect the connector for terminal condition, corrosion and contamination. Also inspect the connector seal for damage. Clean, repair or install new components as required.

Power is routed through the Transmission Solenoid Power Control (TSPC) relay (inside the PCM) to all transmission solenoids. If the power circuit to the transmission solenoids or the TSPC relay fails open, then all solenoids are failed electrically OFF. CHECK for open, short to ground or the transmission connector disconnected. The TSPC relay will disable power to the transmission solenoids when certain transmission DTCs are set.

Shift Solenoid Pre-Diagnosis

Solenoid Operation Chart

Selector Lever Position	PCM Commanded Gear	Shift Solenoid					TCC NL
		SSA NL (1,2,3,4)	SSB NH (3,5,R)	SSC NL (CB 2,6)	SSD NH (CB L,R/C 4,5,6)	SSE NC	
P	P	Off	On	Off	Off	Off	Off
R	R	Off	Off	Off	Off	Off	Off
N	N	Off	On	Off	Off ^a	Off	Off
D	1	On	On	Off	Off ^b	Off	Off
	2	On	On	On	On	Off	Off
	3	On	Off	Off	On	On	On/Off
	4	On	On	Off	Off	On	On/Off
	5	Off	Off	Off	Off	On	On/Off

	6	Off	On	On	Off	On	On/Off
M ^c	—	—	—	—	—	—	—
2	2	On	On	On	On	Off	Off
1	1	On	On	Off	Off	On	Off

^a Solenoid state will change if vehicle is moving forward with the selector lever in the NEUTRAL position.

^b Solenoid is On when vehicle is above 3 mph.

^c All gears available upon driver request.

CB = Clutch brake

NC = Normally closed

NH = Normally high

NL = Normally low

Pinpoint Tests

Refer to Wiring Diagrams Cell [30](#) for schematic and connector information.

NOTE: Refer to all TSBs and On-Line Automotive Service Information System (OASIS) messages that pertain to the transmission concern and follow the procedure as described.

NOTE: Vehicles equipped with a 3.7L engine use PCM C175T.

NOTE: Vehicles equipped with a 5.0L or 6.2L engine use PCM C1381T.

NOTE: Vehicles equipped with a 3.5L engine use PCM C1551E.

PINPOINT TEST A: TRANSMISSION CONTROL SOLENOIDS

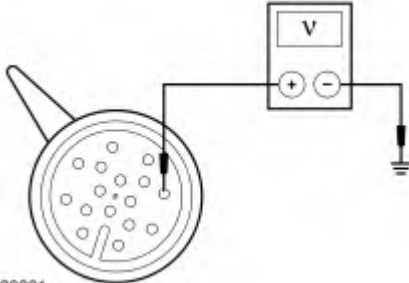
NOTE: Refer to the Transmission Vehicle Harness Connector illustration within the [Transmission Connector Layouts](#) procedure in this section.

NOTE: Refer to the Transmission Leadframe Connector illustration within the [Transmission Connector Layouts](#) procedure in this section.

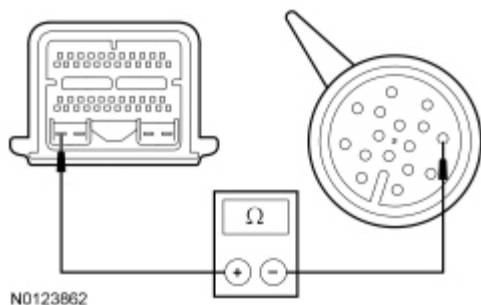
NOTE: If the scan tool is unable to access the transmission PIDs, refer to Powertrain Control/Emissions Diagnosis (PC/ED) manual.

NOTE: Read and record all DTCs.

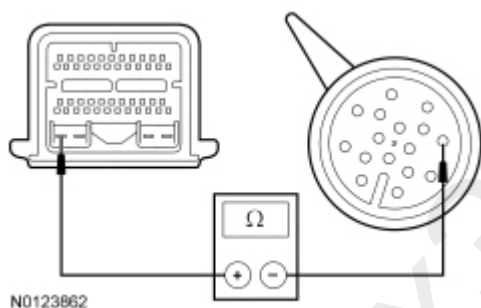
NOTE: Without a voltage signal return to the PCM, the Transmission Solenoid Power Control (TSPC) relay is commanded OFF. By using a fused jumper between a transmission solenoid control circuit and the signal return circuit, the TSPC relay circuit will supply power to the transmission solenoids when the ignition is cycled from OFF to ON. Do not use a solenoid control circuit that may be at fault, refer to [Diagnostic Trouble Code \(DTC\) Charts](#) in this section for a fault listing.

Test Step	Result / Action to Take																
A1 CHECK THE SOLENOID POWER CIRCUIT FOR VOLTAGE																	
- Ignition OFF. - Disconnect: Transmission C1575 . - Inspect the connector for damaged or pushed out terminals, corrosion, loose wires and missing or damaged seals. NOTICE: Do not use a solenoid control circuit that may be at fault. Failure to jump pin 5 to a known good solenoid control circuit can cause incorrect diagnostic results. For additional information, refer to Diagnostic Trouble Code (DTC) Charts in this section for a fault listing. - Using the chart, connect a fused jumper between one of the 7 solenoid control circuit pins on transmission vehicle harness C1575 and C1575-5. <table border="1"> <thead> <tr> <th>Transmission Vehicle Harness C1575</th><th>Solenoid Control Circuit</th></tr> </thead> <tbody> <tr> <td>C1575-9</td><td>Shift Solenoid A (SSA) CET05 (BU/GN)</td></tr> <tr> <td>C1575-14</td><td>Shift Solenoid B (SSB) CET06 (GN/BN)</td></tr> <tr> <td>C1575-13</td><td>Shift Solenoid C (SSC) CET07 (GY/OG)</td></tr> <tr> <td>C1575-10</td><td>Shift Solenoid D (SSD) CET08 (BN/WH)</td></tr> <tr> <td>C1575-8</td><td>Shift Solenoid E (SSE) CET18 (GY/YE)</td></tr> <tr> <td>C1575-16</td><td>Line Pressure Control (LPC) solenoid CET09 (YE/VT)</td></tr> <tr> <td>C1575-3</td><td>Torque Converter Clutch (TCC) solenoid CET10 (BU/GY)</td></tr> </tbody> </table> - Ignition ON. - Measure the voltage from the transmission vehicle harness C1575-7 circuit CET25 (BU/GN) harness side to ground.  N0123861 - Is the voltage greater than 10 volts?	Transmission Vehicle Harness C1575	Solenoid Control Circuit	C1575-9	Shift Solenoid A (SSA) CET05 (BU/GN)	C1575-14	Shift Solenoid B (SSB) CET06 (GN/BN)	C1575-13	Shift Solenoid C (SSC) CET07 (GY/OG)	C1575-10	Shift Solenoid D (SSD) CET08 (BN/WH)	C1575-8	Shift Solenoid E (SSE) CET18 (GY/YE)	C1575-16	Line Pressure Control (LPC) solenoid CET09 (YE/VT)	C1575-3	Torque Converter Clutch (TCC) solenoid CET10 (BU/GY)	Yes GO to A4. No GO to A2.
Transmission Vehicle Harness C1575	Solenoid Control Circuit																
C1575-9	Shift Solenoid A (SSA) CET05 (BU/GN)																
C1575-14	Shift Solenoid B (SSB) CET06 (GN/BN)																
C1575-13	Shift Solenoid C (SSC) CET07 (GY/OG)																
C1575-10	Shift Solenoid D (SSD) CET08 (BN/WH)																
C1575-8	Shift Solenoid E (SSE) CET18 (GY/YE)																
C1575-16	Line Pressure Control (LPC) solenoid CET09 (YE/VT)																
C1575-3	Torque Converter Clutch (TCC) solenoid CET10 (BU/GY)																
A2 CHECK THE SOLENOID POWER CIRCUIT FOR AN OPEN																	
- Ignition OFF. - Disconnect: PCM C175T (3.7L Engine) . - Disconnect: PCM C1381T (5.0L and 6.2L Engines) .	Yes GO to A3.																

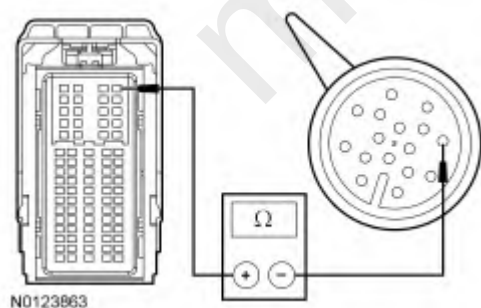
- Disconnect: PCM C1551E (3.5L Gasoline Turbocharged Direct Injection (GTDI) Engine) .
- Inspect the connector for damaged or pushed out terminals, corrosion, loose wires and missing or damaged seals.
- Vehicle equipped with 3.7L engine, measure the resistance from the PCM C175T-50 to the transmission vehicle harness C1575-7, circuit CET25 (BU/GN).



- Vehicle equipped with 5.0L or 6.2L engine, measure the resistance from the PCM C1381T-50 to the transmission vehicle harness C1575-7, circuit CET25 (BU/GN).



- Vehicle equipped with 3.5L engine, measure the resistance from the PCM C1551E-80 to the transmission vehicle harness C1575-7, circuit CET25 (BU/GN).



- Is the resistance less than 5 ohms?

A3 CHECK THE SOLENOID POWER CIRCUIT FOR A SHORT TO GROUND

- Vehicle equipped with 3.7L engine, measure the resistance from the PCM C175T-50, circuit CET25 (BU/GN) of the transmission vehicle harness to ground.

No

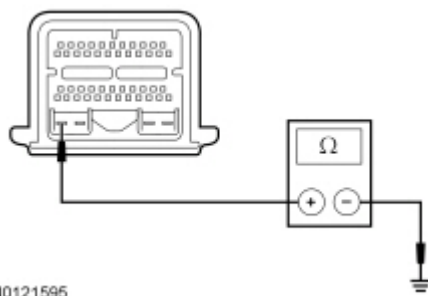
REPAIR transmission vehicle harness circuit CET25 (BU/GN) for an open. CLEAR the DTC's. TEST the system for normal operation. If DTC P0657 returns, REPLACE the PCM. REFER to [Section 303-14](#) . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy](#) in this section. TEST the system for normal operation.

Yes

GO to [A4](#) .

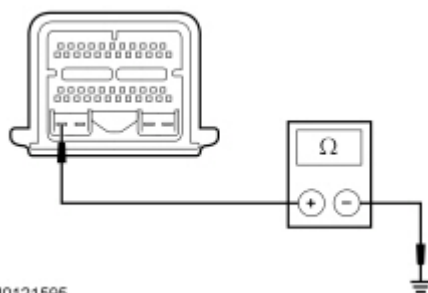
No

REPAIR transmission vehicle harness circuit CET25 (BU/GN)



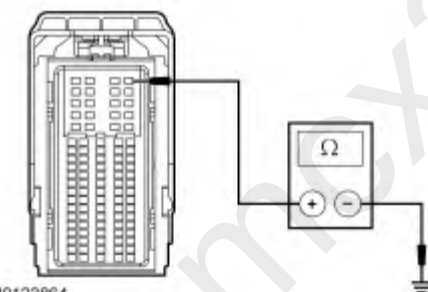
N0121595

- Vehicle equipped with 5.0L or 6.2L engine, measure the resistance from the PCM C1381T-50, circuit CET25 (BU/GN) of the transmission vehicle harness to ground.



N0121595

- Vehicle equipped with 3.5L engine, measure the resistance from the PCM C1551E-80, circuit CET25 (BU/GN) of the transmission vehicle harness to ground.



N0123864

- Is the resistance greater than 10,000 ohms?

A4 CHECK SOLENOID CONTROL CIRCUITS FOR AN OPEN

- Ignition OFF.
- Disconnect: PCM C175T (3.7L Engine) .
- Disconnect: PCM C1381T (5.0L and 6.2L Engines) .
- Disconnect: PCM C1551E (3.5L GTDI Engine) .
- Inspect the connector for damaged or pushed out terminals, corrosion, loose wires and missing or damaged seals.
- Vehicles equipped with a 3.7L engine, measure the resistance of the solenoid control circuits using the following chart.

PCM	Circuit	Transmission
C175T-45	<u>SSA</u> CET05 (BU/GN)	C1575-9
C175T-43	<u>SSB</u> CET06 (GN/BN)	C1575-14

for a short to ground. CLEAR the DTC's. TEST the system for normal operation. If DTC P0657 returns, REPLACE the PCM, REFER to [Section 303-14](#) . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy](#) in this section. TEST the system for moral operation.

Yes
GO to [A5](#) .

No
REPAIR the transmission vehicle harness circuit which measured greater than 5 ohms. CLEAR the DTCs. TEST the system for normal operation.

C175T-44	<u>SSC</u> CET07 (GY/OG)	C1575-13
C175T-10	<u>SSD</u> CET08 (BN/WH)	C1575-10
C175T-11	<u>SSE</u> CET18 (GY/YE)	C1575-8
C175T-34	<u>LPC</u> solenoid CET09 (YE/VT)	C1575-16
C175T-46	<u>TCC</u> solenoid CET10 (BU/GY)	C1575-3

- Vehicles equipped with a 5.0L or 6.2L engine, measure the resistance of the solenoid control circuits using the following chart.

PCM	Circuit	Transmission
C1381T-43	<u>SSA</u> CET05 (BU/GN)	C1575-9
C1381T-44	<u>SSB</u> CET06 (GN/BN)	C1575-14
C1381T-45	<u>SSC</u> CET07 (GY/OG)	C1575-13
C1381T-10	<u>SSD</u> CET08 (BN/WH)	C1575-10
C1381T-11	<u>SSE</u> CET18 (GY/YE)	C1575-8
C1381T-34	<u>LPC</u> CET09 (YE/VT)	C1575-16
C1381T-46	<u>TCC</u> CET10 (BU/GY)	C1575-3

- Vehicles equipped with a 3.5L engine, measure the resistance of the solenoid control circuits using the following chart.

PCM	Circuit	Transmission
C1551E-60	<u>SSA</u> CET05 (BU/GN)	C1575-9
C1551E-45	<u>SSB</u> CET06 (GN/BN)	C1575-14
C1551E-75	<u>SSC</u> CET07 (GY/OG)	C1575-13
C1551E-30	<u>SSD</u> CET08 (BN/WH)	C1575-10
C1551E-2	<u>SSE</u> CET16 (WH/BU)	C1575-8
C1551E-59	<u>LPC</u> solenoid CET09 (YE/VT)	C1575-16
C1551E-44	<u>TCC</u> solenoid CET10 (BU/GY)	C1575-3

- Is the resistance less than 5 ohms on each circuit?

A5 CHECK SOLENOID CONTROL CIRCUITS FOR A SHORT TO GROUND

- Measure the resistance between the transmission vehicle harness C1575, harness side and ground using the following chart.

Transmission	Control Circuit	Ground
C1575-7	Solenoid Power CET25 (BU/GN)	Ground
C1575-9	<u>SSA</u> CET05 (BU/GN)	Ground
C1575-14	<u>SSB</u> CET06 (GN/BN)	Ground
C1575-13	<u>SSC</u> CET07 (GY/OG)	Ground

Yes
GO to [A6](#).

No
REPAIR the transmission vehicle harness circuit which measured less than 10,000 ohms. CLEAR the DTCs. TEST the system for normal operation.

C1575-10	<u>SSD</u> CET08 (BN/WH)	Ground
C1575-8	<u>SSE</u> CET18 (GY/YE) (CET16 (WH/BU) 3.5L only)	Ground
C1575-16	<u>LPC</u> solenoid CET09 (YE/VT)	Ground
C1575-3	<u>TCC</u> solenoid CET10 (BU/GY)	Ground

- Is the resistance greater than 10,000 ohms?

A6 CHECK SOLENOID CONTROL CIRCUITS FOR A SHORT TO POWER

- Connect: PCM C175T (3.7L Engine) .
- Connect: PCM C1381T (5.0L and 6.2L Engines) .
- Connect: PCM C1551E (3.5L GTDI Engine) .
- Ignition ON.
- Measure for voltage between the transmission vehicle harness C1575, harness side and ground using the following chart.

Transmission	Control Circuit	Ground
C1575-9	<u>SSA</u> CET05 (BU/GN)	Ground
C1575-14	<u>SSB</u> CET06 (GN/BN)	Ground
C1575-13	<u>SSC</u> CET07 (GY/OG)	Ground
C1575-10	<u>SSD</u> CET08 (BN/WH)	Ground
C1575-8	<u>SSE</u> CET18 (GY/YE) (CET16 (WH/BU) 3.5L only)	Ground
C1575-16	<u>LPC</u> solenoid CET09 (YE/VT)	Ground
C1575-3	<u>TCC</u> solenoid CET10 (BU/GY)	Ground

- Is voltage greater than 4 volts?

A7 CHECK COMPONENT RESISTANCE

- Measure resistance of the solenoid between the transmission molded leadframe C1575, component side using the following chart.

Transmission	Solenoid	Transmission	Ohms
C1575-7	<u>SSA</u>	C1575-9	4.8 to 5.6
C1575-7	<u>SSB</u>	C1575-14	4.8 to 5.6
C1575-7	<u>SSC</u>	C1575-13	4.8 to 5.6
C1575-7	<u>SSD</u>	C1575-10	4.8 to 5.6
C1575-7	<u>SSE</u>	C1575-8	17.5 to 18.6
C1575-7	<u>LPC</u> solenoid	C1575-16	4.8 to 5.6
C1575-7	<u>TCC</u> solenoid	C1575-3	4.8 to 5.6

- Is the resistance within specifications?

Yes

REPAIR the transmission vehicle harness circuit shorted to power. CLEAR the DTCs. TEST the system for normal operation.

No

GO to [A7](#).

Yes

REFER to [Main Control](#) to inspect for stuck valves or debris. If no problems are found, INSTALL suspected solenoid. REFER to [Shift Solenoids \(SS\)](#). CLEAR the DTCs. TEST the system for normal operation.

No

REPLACE the suspected solenoid which failed the resistance check. REFER to [Shift Solenoids \(SS\)](#) in this section. CLEAR the transmission adaptive tables and perform the adaptive drive cycle. REFER to [Shift Point Road Test](#) in this section. TEST the system for normal

	operation.																
A8 CHECK SOLENOID RESISTANCE																	
- Remove the molded leadframe from the main control. Refer to Shift Solenoids (SS) in this section. Inspect for metallic contamination and clean the solenoid and molded leadframe terminals. - Measure and record the resistance of the suspected solenoid. For solenoid location, refer to Shift Solenoids (SS) in this section. Compare the recorded value with the chart below. <table border="1" data-bbox="263 510 597 877"> <thead> <tr> <th>Solenoid</th><th>Ohms</th></tr> </thead> <tbody> <tr> <td>SSA</td><td>4.8 to 5.6</td></tr> <tr> <td>SSB</td><td>4.8 to 5.6</td></tr> <tr> <td>SSC</td><td>4.8 to 5.6</td></tr> <tr> <td>SSD</td><td>4.8 to 5.6</td></tr> <tr> <td>SSE</td><td>17.5 to 18.6</td></tr> <tr> <td>LPC solenoid</td><td>4.8 to 5.6</td></tr> <tr> <td>TCC solenoid</td><td>4.8 to 5.6</td></tr> </tbody> </table> - Is the solenoid resistance within specification?	Solenoid	Ohms	SSA	4.8 to 5.6	SSB	4.8 to 5.6	SSC	4.8 to 5.6	SSD	4.8 to 5.6	SSE	17.5 to 18.6	LPC solenoid	4.8 to 5.6	TCC solenoid	4.8 to 5.6	Yes INSTALL a new molded leadframe, REFER to Shift Solenoids (SS) in this section. CLEAR the DTCs. TEST the system for normal operation. No REPLACE the suspected solenoid which failed the resistance check. REFER to Shift Solenoids (SS) in this section. CLEAR the transmission adaptive tables and perform the adaptive drive cycle. REFER to Shift Point Road Test in this section. TEST the system for normal operation.
Solenoid	Ohms																
SSA	4.8 to 5.6																
SSB	4.8 to 5.6																
SSC	4.8 to 5.6																
SSD	4.8 to 5.6																
SSE	17.5 to 18.6																
LPC solenoid	4.8 to 5.6																
TCC solenoid	4.8 to 5.6																

PINPOINT TEST B: TFT SENSOR

NOTE: Refer to the Transmission Vehicle Harness Connector illustration within the [Transmission Connector Layouts](#) procedure in this section.

NOTE: Refer to the Transmission Leadframe Connector illustration within the [Transmission Connector Layouts](#) procedure in this section.

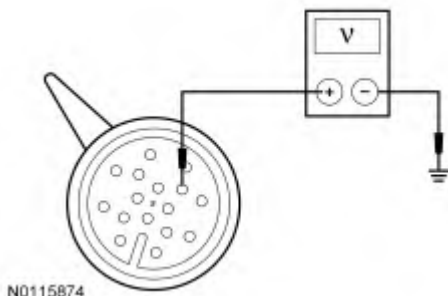
NOTE: If the scan tool is unable to access the transmission PIDs, refer to Powertrain Control/Emissions Diagnosis (PC/ED) manual.

NOTE: Read and record all DTCs.

Test Step	Result / Action to Take
B1 CHECK <u>TFT</u> INPUT SIGNAL - Ignition OFF. - Disconnect: Transmission Vehicle Harness C1575 . - Inspect the connector for damaged or pushed out terminals, corrosion, loose wires and missing or damaged seals. - Connect the scan tool. - Ignition ON. - Enter the following diagnostic mode on the scan tool: TFT PIDs: TFT and TFTV . - Does the TFT PID display -40°C (-40°F) and the TFTV PID display 4.96 to 5.10 volts?	Yes GO to B2. No REPAIR vehicle harness circuit VET27 (BN/YE) for a short to ground. CLEAR the DTCs. TEST the system for normal operation.
B2 CHECK <u>TFT</u> SIGNAL INPUT CIRCUIT FOR	

VOLTAGE

- Measure the voltage between the transmission vehicle harness C1575-6, circuit VET27 (BN/YE), harness side and ground.



- Is the voltage between 4.8 and 5.1 volts?

Yes

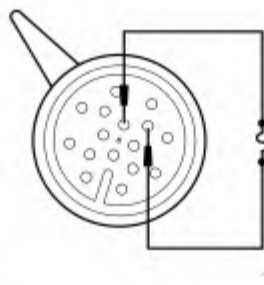
GO to [B3](#).

No

INSPECT and REPAIR transmission vehicle harness circuit VET27 (BN/YE) for an open. If an open circuit is not found, REPLACE the PCM, REFER to [Section 303-14](#). PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy](#) in this section. TEST the system for normal operation.

B3 CHECK TFT SIGNAL RETURN CIRCUIT

- Connect a fused jumper between the transmission vehicle harness C1575-5 and C1575-6, harness side.



- Does the TFT PID display 190°-195°C (374°-383°F) and the TFTV PID display 0 volts?

Yes

GO to [B4](#).

No

INSPECT and REPAIR the transmission vehicle harness signal return circuit for an open. If an open circuit is not found, REPLACE the PCM, REFER to [Section 303-14](#). PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy](#) in this section. TEST the system for normal operation.

B4 CHECK TFT SENSOR RESISTANCE

- Measure the resistance between the transmission molded leadframe C1575-5 and C1575-6, component side using the following chart.

TRANSMISSION FLUID TEMPERATURE (TFT)

°C	°F	Resistance
-40 to -20	-40 to -4	967K-284K
-19 to -1	-3 to 31	284K-100K
0-20	32-68	100K-37K
21-40	69-104	37K-16K
41-70	105-158	16K-5K
71-90	159-194	5K-2.7K
91-110	195-230	2.7K-1.5K
111-130	231-266	1.5K-0.8K

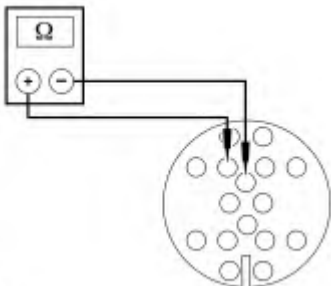
Yes

REFER to [Diagnosis By Symptom](#) in this section to diagnose an overheating concern.

No

INSPECT and CLEAN the TFT sensor on the molded leadframe for metallic contamination. INSTALL a new molded leadframe if no debris was found, REFER to [Shift Solenoids \(SS\)](#) in this section. CLEAR the DTCs. TEST the system for normal operation.

131-150	267-302	0.8K-0.54K
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N0110073

- Does the temperature to resistance specifications match?

PINPOINT TEST C: TR SENSOR

NOTE: Refer to the Transmission Vehicle Harness Connector illustration within the [Transmission Connector Layouts](#) procedure in this section.

NOTE: Refer to the Transmission Leadframe Connector illustration within the [Transmission Connector Layouts](#) procedure in this section.

NOTE: If the scan tool is unable to access the transmission PIDs, refer to Powertrain Control/Emissions Diagnosis (PC/ED) manual.

NOTE: Read and record all DTCs.

Test Step	Result / Action to Take
C1 VERIFY DTCs	
• Ignition OFF. • Select PARK. • Connect the scan tool. • Carry out the Key ON Engine OFF (KOEO) then the Key ON Engine Running (KOER) test. DTCs P0705, P0706, P0707, P0708, P0709, P1702, P1705 and P1921 cannot be set by an incorrectly adjusted selector lever cable. • Are Transmission Range (TR) sensor DTCs present?	Yes GO to C3. No GO to C2.
C2 VERIFY SELECTOR LEVER CABLE/LINKAGE ADJUSTMENT	
• Verify the selector lever cable is correctly adjusted. Refer to Section 307-05. • Is the selector lever cable correctly adjusted?	Yes GO to C3. No ADJUST the selector lever cable. REFER to Section 307-05.
C3 CHECK <u>TR</u> SENSOR ELECTRICAL OPERATION	

- Ignition ON.
- Enter the following diagnostic mode on the scan tool:
TR PIDs: TR_DC and TR_FREQ .
- Move the selector lever into each range and stop.
- Observe the following PIDs: TR_DC and TR_FREQ while wiggling the harness or driving the vehicle.
- Compare the PID: TR_DC to the selector lever position duty cycle, using the following chart.

Selector Lever Position	Range (% Duty Cycle)
P	8.0 — 25.8
R	30.50 — 39.31
N	40.54 — 52.49
D	54.35 — 71.15
M	65.15 — 82
2	70.55 — 85.61
1	75.25 — 88.91

- Is the TR_FREQ between 100 to 150 Hz?

Is the TR_DC within range?

Does the TR_DC and TR_FREQ remain steady when the harness is wiggled or the vehicle driven?

Yes

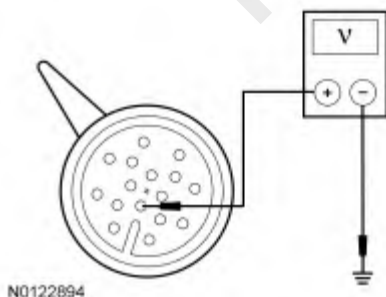
The problem is not in the TR sensor system. REFER to [Diagnosis By Symptom](#) in this section for further diagnosis.

No

GO to [C4](#) .

C4 CHECK TR SENSOR VPWR CIRCUIT FOR POWER

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1575 .
- Inspect the connector for damaged or pushed out terminals, corrosion, loose wires and missing or damaged seals.
- Ignition ON.
- Measure the voltage between the transmission vehicle harness C1575-12, circuit LE111 (VT/GN) harness side and ground.



- Is the voltage less than 9.5 volts?

Yes

INSPECT and REPAIR the transmission vehicle harness circuit LE111 (VT/GN) for an open. If an open circuit is not found, REPLACE the PCM, REFER to [Section 303-14](#) . PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy](#) in this section. CLEAR the DTCs. TEST the system for normal operation.

No

GO to [C5](#) .

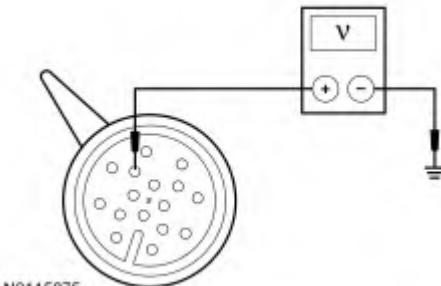
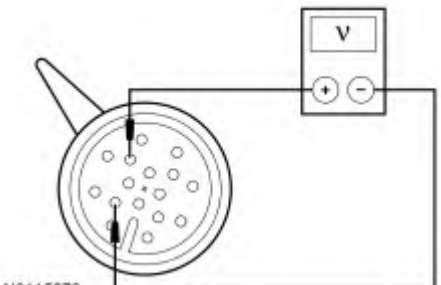
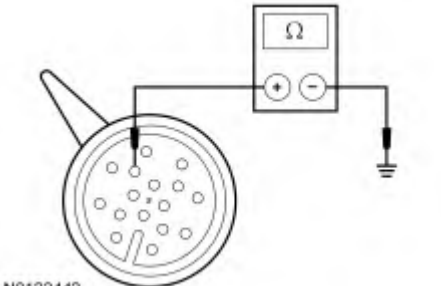
C5 CHECK TR SENSOR SIGNAL CIRCUIT

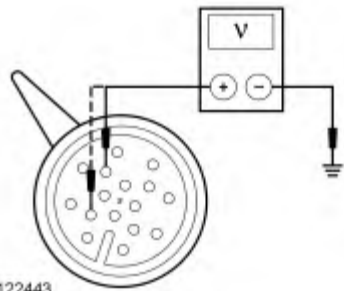
- Measure the voltage between the transmission vehicle harness C1575-4, circuit VET32 (VT) harness side and ground.

Yes

GO to [C6](#) .

No

 N0115875 Is the voltage greater than 4.8 volts?	INSPECT and REPAIR vehicle harness circuit VET32 (VT) for an open. If an open circuit is not found, REPLACE the PCM, REFER to Section 303-14. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy in this section. CLEAR the DTCs. TEST the system for normal operation.
C6 CHECK <u>TR</u> SENSOR GROUND CIRCUIT - Measure the voltage between the transmission vehicle harness C1575-4 circuit VET32 (VT) and C1575-11 circuit RET24 (BN/BU).  N0115876 - Is the voltage greater than 4.8 volts?	Yes GO to C7. No INSPECT and REPAIR transmission vehicle harness circuit RET24 (BN/BU) for an open. If an open circuit is not found, REPLACE the PCM, REFER to Section 303-14. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy in this section. CLEAR the DTCs. TEST the system for normal operation.
C7 CHECK <u>TR</u> SENSOR POWER CIRCUIT FOR A SHORT TO GROUND - Ignition OFF. - Disconnect: PCM C175T . - Disconnect: PCM C1381T . - Disconnect: PCM C1551E . - Inspect the connector for damaged or pushed out terminals, corrosion, loose wires and missing or damaged seals. - Measure the resistance between the transmission vehicle harness C1575-4 circuit VET32 (VT) and ground.  N0122442 - Is the resistance greater than 10,000 ohms?	Yes GO to C8. No REPAIR transmission vehicle harness circuit VET32 (VT) for a short to ground. CLEAR the DTCs. TEST the system for normal operation.
C8 CHECK <u>TR</u> SENSOR CIRCUITS FOR A SHORT TO POWER	

• Connect: PCM C175T . • Connect: PCM C1381T . • Connect: PCM C1551E . • Ignition ON. • Measure the voltage between the transmission vehicle harness C1575-4, circuit VET32 (VT) and C1575-11, circuit RET24 (BN/BU) to ground.  N0122443 • Is voltage greater than 9.8 volts?	Yes REPAIR the transmission vehicle harness circuit which measured greater than 9.8 volts. CLEAR the DTCs. TEST the system for normal operation. No GO to C9.
C9 CHECK <u>TR</u> SENSOR TO MANUAL VALVE • Drain the transmission fluid and remove the transmission fluid pan. Refer to Fluid Pan, Gasket and Filter in this section. • Check the connection between the <u>TR</u> sensor and the manual control valve. Refer to Transmission — Early Build or Transmission — Late Build in this section. • Inspect the molded leadframe for metallic contamination, refer to Shift Solenoids (SS). • Is the <u>TR</u> sensor connected to the manual control valve shaft?	Yes REPLACE molded leadframe. REFER to Shift Solenoids in this section. No CONNECT the <u>TR</u> sensor to the manual control valve, REFER to Transmission — Early Build or Transmission — Late Build in this section. CLEAN any debris from the molded leadframe. RUN the Key ON Engine OFF (KOEO) self-test. If DTCs return, REPLACE the molded leadframe, REFER to Shift Solenoids (SS) in this section.

PINPOINT TEST D: TSS SENSOR

NOTE: Refer to the Transmission Vehicle Harness Connector illustration within the [Transmission Connector Layouts](#) procedure in this section.

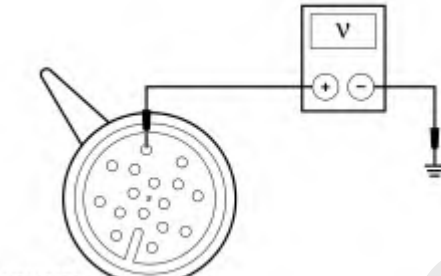
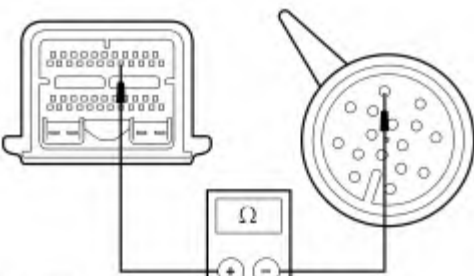
NOTE: Refer to the Transmission Leadframe Connector illustration within the [Transmission Connector Layouts](#) procedure in this section.

NOTE: If the scan tool is unable to access the transmission PIDs, refer to Powertrain Control/Emissions Diagnosis (PC/ED) manual.

NOTE: Always drive the vehicle in a safe manner according to driving conditions and obey all traffic laws.

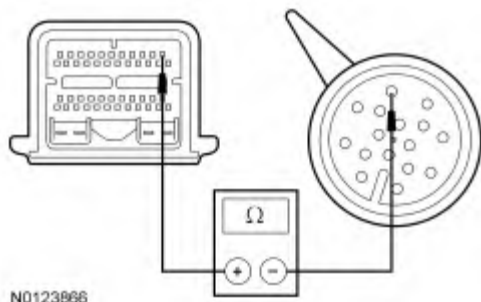
NOTE: Read and record all DTCs.

NOTE: If DTCs P0705, P0706, P0707, P0708, P0709, P1702, P1705 and/or P1921 are set, diagnose those DTCs first.

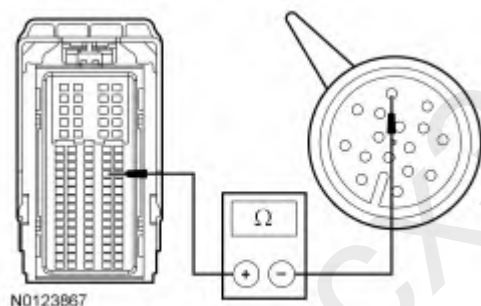
Test Step	Result / Action to Take
D1 DRIVE CYCLE TEST • Connect the scan tool. • Enter the following diagnostic mode on the scan tool: TSS PID: TSS_SRC . • Monitor the TSS_SRC PID while road testing the vehicle. Drive the vehicle so the transmission upshifts and downshifts through all the gears. • Does the TSS sensor rpm increase and decrease with engine rpm and vehicle speed?	Yes REFER to Shift Point Road Test in this section for further diagnosis. No GO to D2 .
D2 CHECK TSS SENSOR SIGNAL CIRCUIT FOR POWER • Ignition OFF. • Disconnect: Transmission Vehicle Harness C1575 . • Ignition ON. • Measure the voltage between the transmission vehicle harness C1575-1 and ground.  N0115878 • Is the voltage less than 4.8 volts?	Yes GO to D3 . No GO to D6 .
D3 CHECK THE TSS SENSOR SIGNAL CIRCUIT FOR AN OPEN • Ignition OFF. • Disconnect: PCM C175T . • Inspect the connector for damaged or pushed out terminals, corrosion, loose wires and missing or damaged seals. • Vehicles equipped with a 3.7L engine, measure the resistance between the transmission vehicle harness C1575-1 circuit VET33 (WH/OG) and PCM C175T-16.  N0123865 • Disconnect: PCM C1381T . • Inspect the connector for damaged or pushed out terminals, corrosion, loose wires and missing or	Yes GO to D4 . No INSPECT and REPAIR transmission vehicle harness TSS signal circuit for an open. If an open circuit is not found, REPLACE the PCM, REFER to Section 303-14 . PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy in this section. TEST the system for normal operation.

damaged seals.

- Vehicles equipped with a 5.0L or 6.2L engine, measure the resistance between the transmission vehicle harness C1575-1 circuit VET33 (WH/OG) and PCM C1381T-1.



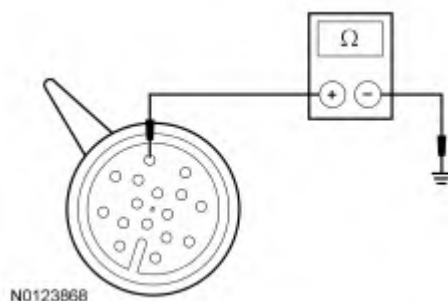
- Disconnect: PCM C1551E .
- Inspect the connector for damaged or pushed out terminals, corrosion, loose wires and missing or damaged seals.
- Vehicles equipped with a 3.5L engine, measure the resistance between the transmission vehicle harness C1575-1 circuit RET33 (WH/VT) and PCM C1551E-27.



- Is the resistance less than 5 ohms?

D4 CHECK THE TSS SENSOR SIGNAL CIRCUIT FOR A SHORT TO GROUND

- Measure the resistance between the transmission vehicle harness C1575-1 and ground.

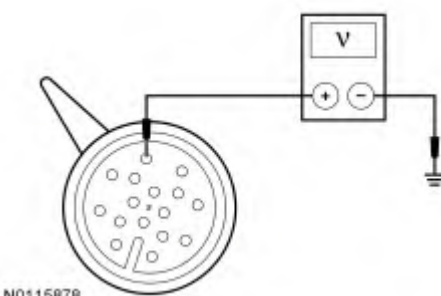
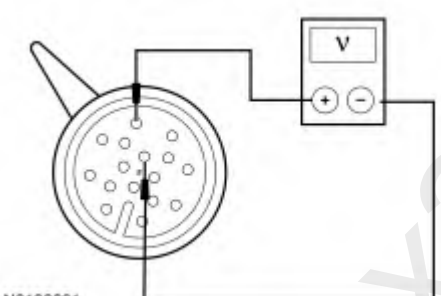


- Is the resistance greater than 10,000 ohms?

D5 CHECK THE TSS SENSOR SIGNAL CIRCUIT FOR A SHORT TO POWER

Yes
GO to [D5](#).

No
INSPECT and REPAIR transmission vehicle harness TSS signal circuit for a short to ground. If a short to ground is not found, REPLACE the PCM, REFER to [Section 303-14](#) . PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy](#) in this section. TEST the system for normal operation.

• Connect: PCM C175T . • Connect: PCM C1381T . • Connect: PCM C1551E . • Ignition ON. • Measure for voltage between the transmission vehicle harness C1575-1, and ground.  N0115878 • Is voltage greater than 5.1 volts?	Yes INSPECT and REPAIR transmission vehicle harness <u>TSS</u> signal circuit for a short to power. If a short to power is not found, REPLACE the PCM, REFER to Section 303-14 . PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy in this section. TEST the system for normal operation. No GO to D6 .
D6 CHECK THE <u>TSS</u> SENSOR GROUND CIRCUIT • Measure the voltage between the transmission vehicle harness C1575-1 and C1575-5.  N0133891 • Is voltage less than 4.8 volts?	Yes REPAIR the transmission vehicle harness signal return circuit for an open. If an open is not found, REPLACE the PCM, REFER to Section 303-14 . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy in this section. TEST the system for normal operation. No REPLACE the molded leadframe, REFER to Shift Solenoids (SS) in this section. CLEAR the DTCs. TEST the system for normal operation.

PINPOINT TEST E: OSS SENSOR

NOTE: Refer to the Transmission Vehicle Harness Connector illustration within the [Transmission Connector Layouts](#) procedure in this section.

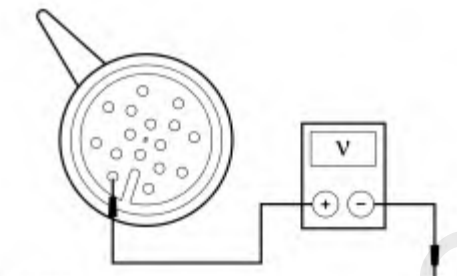
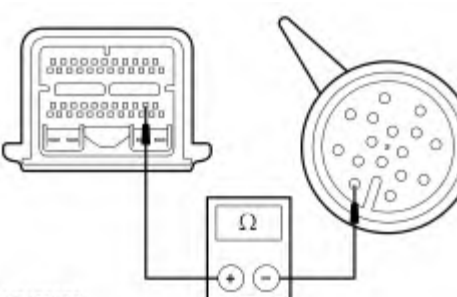
NOTE: Refer to the Transmission Leadframe Connector illustration within the [Transmission Connector Layouts](#) procedure in this section.

NOTE: If the scan tool is unable to access the transmission PIDs, refer to Powertrain Control/Emissions Diagnosis (PC/ED) manual.

NOTE: Always drive the vehicle in a safe manner according to driving conditions and obey all traffic laws.

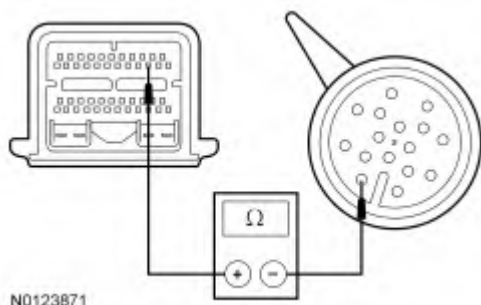
NOTE: Read and record all DTCs.

NOTE: If DTCs P0705, P0706, P0707, P0708, P0709, P1702, P1705 and/or P1921 are set, diagnose those DTCs first.

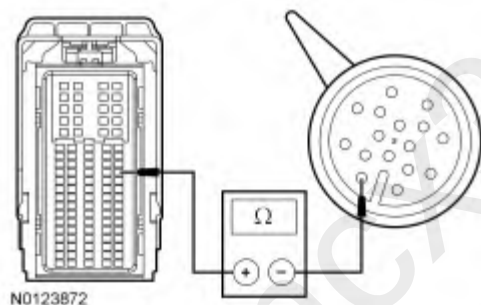
Test Step	Result / Action to Take
E1 DRIVE CYCLE TEST • Connect the scan tool. • Enter the following diagnostic mode on the scan tool: OSS PID: OSS_SRC . • Monitor the Output Shaft Speed (OSS) sensor PID while road testing the vehicle. Drive the vehicle so the transmission upshifts and downshifts through all the gears. • Does the <u>OSS</u> sensor rpm increase and decrease with engine rpm and vehicle speed?	Yes REFER to Shift Point Road Test in this section for further diagnosis. No GO to E2 .
E2 CHECK <u>OSS</u> SENSOR SIGNAL CIRCUIT FOR POWER • Ignition OFF. • Disconnect: Transmission Vehicle Harness C1575 . • Ignition ON. • Measure the voltage between the transmission vehicle harness C1575-15 and ground.  N0123874 • Is the voltage less than 4.8 volts?	Yes GO to E3 . No GO to E6 .
E3 CHECK THE <u>OSS</u> SENSOR SIGNAL CIRCUIT FOR AN OPEN • Ignition OFF. • Disconnect: PCM C175T . • Inspect the connector for damaged or pushed out terminals, corrosion, loose wires and missing or damaged seals. • Vehicles equipped with a 3.7L engine, measure the resistance between the transmission vehicle harness C1575-15 circuit VET26 (BN/GN) and PCM C175T-25.  N0123870 • Disconnect: PCM C1381T . • Inspect the connector for damaged or pushed out	Yes GO to E4 . No INSPECT and REPAIR transmission vehicle harness OSS signal circuit for an open. If an open circuit is not found, REPLACE the PCM, REFER to Section 303-14 . PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy in this section. TEST the system for normal operation.

terminals, corrosion, loose wires and missing or damaged seals.

- Vehicles equipped with a 5.0L or 6.2L engine, measure the resistance between the transmission vehicle harness C1575-15 circuit VET26 (BN/GN) and PCM C1381T-14.



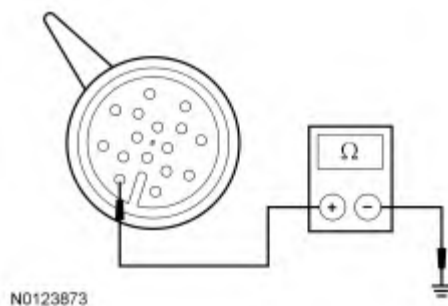
- Disconnect: PCM C1551E .
- Inspect the connector for damaged or pushed out terminals, corrosion, loose wires and missing or damaged seals.
- Vehicles equipped with a 3.5L engine, measure the resistance between the transmission vehicle harness C1575-15 circuit RET04 (YE/OG) and PCM C1551E-12.



- Is the resistance less than 5 ohms?

E4 CHECK THE OSS SENSOR SIGNAL CIRCUIT FOR A SHORT TO GROUND

- Measure the resistance between the transmission vehicle harness C1575-15 and ground.



- Is the resistance greater than 10,000 ohms?

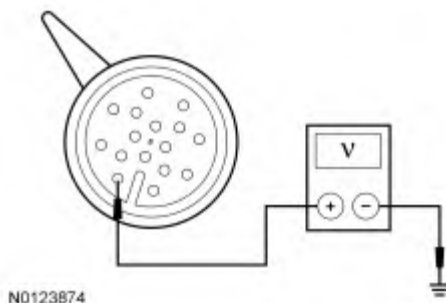
E5 CHECK THE OSS SENSOR SIGNAL CIRCUIT FOR

Yes
GO to [E5](#).

No
INSPECT and REPAIR transmission vehicle harness OSS signal circuit for a short to ground. If a short to ground is not found, REPLACE the PCM, REFER to [Section 303-14](#) . PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy](#) in this section. TEST the system for normal operation.

A SHORT TO POWER

- Connect: PCM C175T .
- Connect: PCM C1381T .
- Connect: PCM C1551E .
- Ignition ON.
- Measure for voltage between the transmission vehicle harness C1575-15, and ground.



- Is voltage greater than 5.1 volts?

Yes

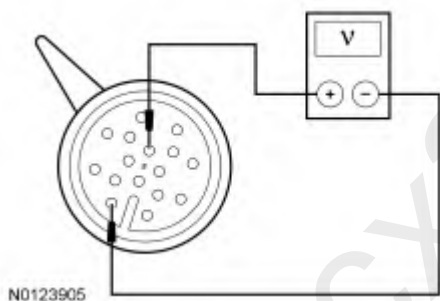
INSPECT and REPAIR transmission vehicle harness OSS signal circuit for a short to power. If a short to power is not found, REPLACE the PCM, REFER to [Section 303-14](#) . PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy](#) in this section. TEST the system for normal operation.

No

GO to [E6](#) .

E6 CHECK THE OSS SENSOR GROUND CIRCUIT

- Measure the voltage between the transmission vehicle harness C1575-15 and C1575-5.



- Is voltage less than 4.8 volts?

Yes

REPAIR the transmission vehicle harness signal return circuit for an open. If an open is not found, REPLACE the PCM, REFER to [Section 303-14](#) . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy](#) in this section. TEST the system for normal operation.

No

REPLACE the molded leadframe, REFER to [Main Control](#) in this section. CLEAR the DTCs. TEST the system for normal operation.

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