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2002 FORD Excursion OEM Service and Repair Workshop Manual

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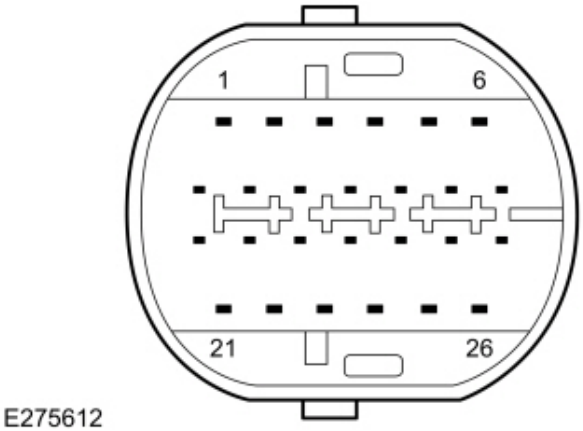
 Transmission component side, pin 21	Ω	Ground

Is the resistance greater than 10,000 ohms on the suspect circuit?

Yes	GO to A10

No	INSTALL a new transmission internal wiring harness (both pieces). REFER to: Transmission Internal Wiring Harness (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Removal and Installation).

A10 CHECK THE SOLENOID CONTROL CIRCUIT FOR AN OPEN WITH THE TRANSMISSION VEHICLE HARNESS CONNECTED

- Connect Transmission vehicle harness C168A .
- Measure the resistance of the suspect solenoid control circuit using the table below:

Positive Lead	Measurement / Action	Negative Lead
SSA (shift solenoid A) C1843-2	Ω	C1381T-35
SSF (shift solenoid F) C1848-2	Ω	C1381T-34

SSC (shift solenoid C) C1845-1	Ω	C1381T-2
SSB (shift solenoid B) C1844-1	Ω	C1381T-2
SSE (shift solenoid E) C1847-1	Ω	C1381T-2
SSD (shift solenoid D) C1846-1	Ω	C1381T-2

Is the resistance less than 3 ohms on the suspect circuit?

Yes	INSTALL a new solenoid. REFER to: Shift Solenoids (SS) (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Removal and Installation).

No	There is a terminal fitment issue. REPAIR any loose, damaged or bent terminals.

PINPOINT TEST B : TRANSMISSION FLUID TEMPERATURE SENSOR

Refer to Wiring Diagrams Cell 30for schematic and connector information.

Normal Operation and Fault Conditions The TFT (transmission fluid temperature) sensor is a temperature dependent resistor that is in contact with transmission fluid in the transmission sump area. The PCM (powertrain control module) monitors the voltage drop across the TFT (transmission fluid temperature) sensor, which changes as transmission fluid temperature varies. The PCM (powertrain control module) uses the TFT (transmission fluid temperature) sensor signal as an input for its strategy for shifting and TCC (torque converter clutch) operation. The PCM (powertrain control module) also uses the TFT (transmission fluid temperature) sensor signal for transmission fault detection and diagnostics. **DTC Fault Trigger Conditions**

DTC (diagnostic	Description	Fault Trigger Condition

- Access the PCM (powertrain control module) and monitor the TFT_V (Transmission Fluid Temperature) (V) PID (parameter identification)

Does the TFT PID (parameter identification) display approximately -40°C (-40°F) and the TFT_V PID (parameter identification) display 4.96 to 5.10 volts?

Yes	GO to B2

No	GO to B3

B2 CHECK THE TFT (TRANSMISSION FLUID TEMPERATURE) SENSOR SIGNAL RETURN CIRCUIT

- Connect a fused jumper to the transmission vehicle harness:

Positive Lead	Measurement / Action	Negative Lead
C168A-13		C168A-20

Does the TFT (transmission fluid temperature) PID (parameter identification) display approximately 190°C (374°F) and the TFT_V PID (parameter identification) display approximately 0 volts?

Yes	GO to B10

No	GO to B3

B3 CHECK THE TFT (TRANSMISSION FLUID TEMPERATURE) SENSOR INPUT SIGNAL CIRCUIT FOR VOLTAGE

- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead

Positive Lead	Measurement / Action	Negative Lead
C168A-13	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to B6

No	REPAIR the short to ground.

B6 CHECK THE TFT (TRANSMISSION FLUID TEMPERATURE) SENSOR INPUT SIGNAL CIRCUIT FOR A SHORT TO POWER

- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C168A-13	V	Ground

Is any voltage present?

Yes	REPAIR the short to power.

No	 Guided Routine available in the on-line Workshop Manual. After programming the new PCM (powertrain control module), CARRY OUT the transmission strategy download. REFER to: Transmission Strategy Download

Yes	GO to B9

No	REPAIR the short to ground.

B9 CHECK THE TFT (TRANSMISSION FLUID TEMPERATURE) SENSOR SIGNAL RETURN CIRCUIT FOR A SHORT TO POWER

- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C168A-20	V	Ground

Is any voltage present?

Yes	REPAIR the short to power.

No	 Guided Routine available in the on-line Workshop Manual. After programming the new PCM (powertrain control module), CARRY OUT the transmission strategy download. REFER to: Transmission Strategy Download (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, General Procedures).

B10 CHECK THE TFT (TRANSMISSION FLUID TEMPERATURE) SENSOR RESISTANCE AT THE TRANSMISSION BULKHEAD CONNECTOR

- Ignition OFF.

Does the resistance match the specification on the temperature chart?

Yes	GO to B12

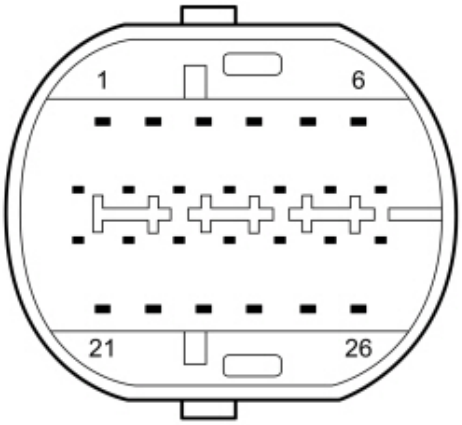
No	GO to B11

B11 CHECK THE TFT (TRANSMISSION FLUID TEMPERATURE) SENSOR RESISTANCE

- Remove the main control valve body.
  REFER to: Main Control Valve Body(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Removal and Installation).
- Disconnect TFT (transmission fluid temperature) sensor C1842 .
- Measure and record the resistance of the TFT (transmission fluid temperature) sensor.
- Compare the measured resistance to the current temperature of the TFT (transmission fluid temperature) sensor using the following chart.

°C	°F	Resistance (ohms)
-50 to -40	-58 to -40	41k-97k
-39 to -20	-39 to -4	14k-52k
-19 to -1	-3 to 31	5.5k-17k
0 to 20	32 to 68	2.3k-6.4k
21 to 40	69 to 104	1.1k-2.7k
41 to 70	105 to 158	0.4k-1.3k
71 to 90	159-194	236-445
91 to 110	195-230	140-247
111 to 130	231-266	87-145
131 to 150	267-302	55-90

Does the resistance match the specification on the temperature chart?

 Transmission component side, pin 20	Ω	Ground

Are both resistances greater than 10,000 ohms?

Yes	GO to B14

No	GO to B13

B13 CHECK THE TFT (TRANSMISSION FLUID TEMPERATURE) SENSOR FOR A SHORT TO GROUND

- Remove the main control valve body.
  REFER to: Main Control Valve Body(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Removal and Installation).
- Disconnect TFT (transmission fluid temperature) sensor C1842 .
- Measure:

Positive Lead	Measurement / Action	Negative Lead
TFT (transmission fluid temperature) sensor component side pin 1	Ω	Ground
TFT (transmission fluid temperature) sensor component side pin 2	Ω	Ground

0 to 20	32 to 68	2.3k-6.4k
21 to 40	69 to 104	1.1k-2.7k
41 to 70	105 to 158	0.4k-1.3k
71 to 90	159-194	236-445
91 to 110	195-230	140-247
111 to 130	231-266	87-145
131 to 150	267-302	55-90

Does the resistance match the specification on the temperature chart?

Yes	CONNECT all electrical connectors. CLEAR the DTC (diagnostic trouble code) . CARRY OUT the KOEO (key on, engine off) and KOER (key on, engine running) self-tests. If the DTC (diagnostic trouble code) returns,  Guided Routine available in the on-line Workshop Manual. After programming the new PCM (powertrain control module) , CARRY OUT the transmission strategy download. REFER to: Transmission Strategy Download (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, General Procedures). If the DTC (diagnostic trouble code) does not return, the fault is no longer present and might have been caused by a terminal fitment issue.

No	There is a terminal fitment issue. REPAIR any loose, damaged or bent terminals.

PINPOINT TEST C : TRANSMISSION RANGE SENSOR

	Performance: No Sub Type Information	
PCM (powertrain control module) P2801:00	Transmission Range Sensor 'B' Circuit Range/Performance: No Sub Type Information	This DTC (diagnostic trouble code) indicates the frequency of TR (transmission range) sensor B is out of range (expected to be 125 Hz +/- 50 Hz). This could be caused by an open or a short in the TR (transmission range) sensor power or ground circuits.
PCM (powertrain control module) P2802:00	Transmission Range Sensor 'B' Circuit Low: No Sub Type Information	This DTC (diagnostic trouble code) indicates the duty cycle of TR (transmission range) sensor B is out of range low (less than 7%). This could be caused by an open circuit or a short to ground in the TR (transmission range) sensor B circuit.
PCM (powertrain control module) P2803:00	Transmission Range Sensor 'B' Circuit High: No Sub Type Information	This DTC (diagnostic trouble code) indicates the duty cycle of TR (transmission range) sensor B is out of range high (greater than 93%). This could be caused by a short to power in the TR (transmission range) sensor B circuit.
PCM (powertrain control module) P2804:00	Transmission Range Sensor 'B' Circuit Intermittent: No Sub Type Information	This DTC (diagnostic trouble code) illuminates the wrench light in conjunction with P2801, P2802 and/or P2803. Resolve the more specific DTC (diagnostic trouble code) first.
PCM (powertrain control module) P2805:00	Transmission Range Sensor 'A'/ 'B' Correlation: No Sub Type Information	This DTC (diagnostic trouble code) indicates both TR (transmission range) sensors are within range, but the sum of their duty cycles is out of range (total duty cycle should be 96% to 104%).

Possible Sources

- Connectors damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals
- Circuit open or shorted
- Transmission internal wiring harness
- TR (transmission range) sensor
- PCM (powertrain control module)

C1 CHECK THE TR (TRANSMISSION RANGE) SENSOR VREF CIRCUIT FOR VOLTAGE