

External Controls

Principles of Operation

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.
3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

Mechanical	Electrical
Transmission selector lever cable	Brake Shift Interlock Actuator (BSIA)
Manual control lever	Wiring harness
Selector lever	Terminals
Selector lever knob	Connectors
	SelectShift™ switches

DTC Chart - BCM

DTC	Description	Action
B1319:11	Brake Shift Interlock (BSI) Output Circuit Short To Ground	GO to Pinpoint Test A

B1319:15	Brake Shift Interlock (BSI) Output Circuit Short To Battery or Open	GO to Pinpoint Test A
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DTC Chart - PCM

DTC	Description	Action
P0815	Upshift Switch Circuit	For the 6R80 transmission, GO to Pinpoint Test B For the 10R80 transmission, GO to Pinpoint Test F
P0816	Downshift Switch Circuit	For the 6R80 transmission, GO to Pinpoint Test B For the 10R80 transmission, GO to Pinpoint Test F
P0826	Up and Down Switch Circuit	For the 6R80 transmission, GO to Pinpoint Test B For the 10R80 transmission, GO to Pinpoint Test F
P1780	Transmission Control Switch (O/D Cancel) Circuit Out of Self-Test Range	For the 6R80 transmission, GO to Pinpoint Test C For the 10R80 transmission, GO to Pinpoint Test G

DTC Chart - TCM

DTC	Description	Action
P0815	Upshift Switch Circuit	GO to Pinpoint Test D
P0816	Downshift Switch Circuit	GO to Pinpoint Test D
P0826	Up and Down Switch Circuit	GO to Pinpoint Test D
P1780	Transmission Control Switch (O/D Cancel) Circuit Out of Self-Test Range	GO to Pinpoint Test E

Symptom Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Symptom	Possible Sources	Action
Selector lever difficult to move - requires excessive effort	Selector lever cable binding at transmission	VERIFY the selector lever cable is fully seated in the cable bracket on the transmission.
	Selector lever cable binding at selector lever	VERIFY the selector lever cable is fully seated in the cable bracket at the front of the selector lever.
	Selector lever cable incorrectly routed	VERIFY the selector lever cable is properly routed and all retaining clips are present and secure.
Brake shift interlock system does not release/lock correctly	Selector lever cable not secured to the bracket at the transmission	VERIFY the selector lever cable is fully seated in the cable bracket on the transmission.
Brake shift interlock system does not release/lock correctly	Selector lever cable not secured to the bracket at the selector lever	VERIFY the selector lever cable is fully seated in the cable bracket at the front of the selector lever .

	• Circuitry open, shorted to ground or shorted to power	• GO to Pinpoint Test A
	• Brake Shift Interlock Actuator (BSIA) solenoid	• INSTALL a new selector lever assembly. REFER to: Brake Shift Interlock Actuator - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls, Removal and Installation). REFER to: Brake Shift Interlock Actuator - Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls, Removal and Installation).
• SelectShift™SelectShift™ Does Not Operate Correctly	• Selector lever not fully engaging in M position • Selector lever damaged • For vehicles equipped with the 6R80 transmission, PCM	• For vehicles equipped with the 6R80 transmission, GO to Pinpoint Test B • For vehicles equipped with the 10R80 transmission, 3.5L, GO to Pinpoint Test D

	For vehicles equipped with the 10R80 transmission, TCM	For vehicles equipped with the 10R80 transmission, PCM, GO to Pinpoint Test F
Paddle shifter do not operate correctly	- Selector lever not fully engaging in M position - Selector lever damaged - PCM	GO to Pinpoint Test H
Selector lever linkage is out of correct gear relationship	Selector lever linkage out of adjustment	REFER to: Selector Lever Cable Adjustment - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls) . REFER to: Selector Lever Cable Adjustment - Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls) .

Loose selector lever cable bracket	CHECK the selector lever cable bracket. TIGHTEN to specification as necessary.
Loose or out of alignment selector lever bezel	CHECK the selector lever bezel alignment. ALIGN or INSTALL a new selector lever bezel if necessary. REFER to: Selector Lever Assembly - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls, Removal and Installation). REFER to: Selector Lever Assembly - Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls, Removal and Installation).

• Selector lever binding	• Selector lever bezel damaged	• CHECK the selector lever bezel for damage. If necessary, INSTALL a new selector lever bezel. REFER to: Selector Lever Assembly - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls, Removal and Installation). REFER to: Selector Lever Assembly - Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls, Removal and Installation).
	• Selector lever damaged	• CHECK the selector lever for damage. If necessary, INSTALL a new selector lever assembly. REFER to: Selector Lever Assembly - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls, Removal and

	Installation). REFER to: Selector Lever Assembly - Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls, Removal and Installation).
• Selector lever cable damaged	• CHECK the selector lever cable for damage. If necessary, INSTALL a new selector lever cable. REFER to: Selector Lever Cable - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls) . REFER to: Selector Lever Cable - Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls) .

	Internal transmission components damaged	CHECK the manual control lever and internal transmission components for damage. REFER to: Main Control Valve Body (307-01 Automatic Transmission - 6-Speed Automatic Transmission - 6R80) . REFER to: Main Control Valve Body (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, Overhaul).
Brake shift interlock override does not release the selector lever	Brake shift interlock override damaged	INSPECT the selector lever for damage. If necessary, INSTALL a new selector lever. REFER to: Selector Lever Assembly - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls, Removal and Installation). REFER to: Brake Shift Interlock Actuator - Vehicles

		With: Column Shift (307-05 Automatic Transmission External Controls, Removal and Installation). REFER to: Selector Lever Assembly - Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls, Removal and Installation). REFER to: Brake Shift Interlock Actuator - Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls, Removal and Installation).
• Vibration — a high frequency (20-80 Hz) that is felt through the seat or selector lever. Changes with engine speed	• Selector lever cable incorrectly routed, grounded out or loose	• CHECK the selector lever cable. REFER to: Selector Lever Cable - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls) . REFER to: Selector Lever Cable - Vehicles With: Floor Shift (307-05 Automatic Transmission

		External Controls) .
The ignition key cannot be returned to the OFF position or the ignition key can be turned to the OFF position when the selector lever is not in P	Selector lever cable binding at the transmission	VERIFY the selector lever cable is fully seated in the cable bracket on the transmission.
	Selector lever cable binding at the selector lever	VERIFY the selector lever cable is fully seated in the cable bracket at the front of the selector lever.
	Selector lever cable incorrectly routed	VERIFY the selector lever cable is properly routed and all retaining clips are present and secure.
	- Wiring, terminals or connectors - Ignition lock cylinder - Key removal inhibit solenoid (part of the ignition switch) - Park detect switch (part of the selector lever)	REFER to: Steering Wheel and Column Electrical Components (211-05 Steering Wheel and Column Electrical Components) . REFER to: Selector Lever Cable - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls) . REFER to: Selector Lever Cable -

	• Selector lever cable • Mechanical damage to the selector lever, selector lever cable or selector lever knob	Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls) . REFER to: Selector Lever Cable Adjustment - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls) . REFER to: Selector Lever Cable Adjustment - Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls) .
• The PRNDL indicator does not illuminate P	• Selector lever cable binding at the transmission	• VERIFY the selector lever cable is fully seated in the cable bracket on the transmission.
	• Selector lever cable binding at the selector lever	• VERIFY the selector lever cable is fully seated in the cable bracket at the front of the selector lever.

	• Selector lever cable incorrectly routed	• VERIFY the selector lever cable is properly routed and all retaining clips are present and secure.
	• Wiring, terminals or connectors • PCM concern • IPC • Park detect switch (part of the selector lever assembly)	• REFER to: Selector Lever Cable Adjustment - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls) . REFER to: Selector Lever Cable Adjustment - Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls) . REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes) .

Pinpoint Tests

DTCs B1319:11, B1319:15

Refer to Wiring Diagrams Cell 37 for schematic and connector information.

Normal Operation and Fault Conditions

The BCM provides power to the Brake Shift Interlock Actuator (BSIA). When the BCM receives a brake pedal applied input, voltage is applied to the brake shift interlock actuator. When the actuator is energized, the plunger is pulled inward allowing the selector lever to move from the park position.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
B1319:11	Brake Shift Interlock Output Circuit Short To Ground	Short to ground in the Brake Shift Interlock Actuator (BSIA) circuitry.
B1319:15	Brake Shift Interlock Output Circuit Short To Battery or Open	Short to power or open in the Brake Shift Interlock Actuator (BSIA) circuitry.

Possible Sources

- Connectors damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals
- Brake Shift Interlock Actuator (BSIA)
- BCM

PINPOINT TEST A : DTCS B1319:11, B1319:15

A1 CHECK THE STOPLAMPS

- Apply the brake pedal and observe the stoplamps.

Do the stoplamps illuminate?

Yes	GO to A2 If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.
No	REFER to: Stoplamps (417-01 Exterior Lighting) .

A2 CHECK THE BRAKE SHIFT INTERLOCK ACTUATOR POWER CIRCUIT FOR VOLTAGE

- Connect BCM C2280B.
- Ignition ON.

Is the voltage greater than 11 volts with the brake pedal applied and 0 volts with the brake pedal not applied?

Yes	GO to A3
No	If the voltage was greater than 11 volts with the brake pedal applied or not applied, GO to A4 Otherwise, GO to A5

A3 CHECK THE BRAKE SHIFT INTERLOCK ACTUATOR POWER CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect Column Shift C2008.
- Disconnect Floor Shifter C3245.
- Disconnect BCM C2280B.
- Inspect for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	INSTALL a new the Brake Shift Interlock Actuator (BSIA). REFER to: Brake Shift Interlock Actuator - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls, Removal and Installation). REFER to: Selector Lever Cable - Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls) .
No	REPAIR the circuit.

A4 CHECK THE BRAKE SHIFT INTERLOCK ACTUATOR POWER CIRCUIT FOR A SHORT TO VOLTAGE

- Connect BCM C2280B.
- Ignition ON.

Is any voltage detected?

Yes	REPAIR the circuit.
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No	GO to A7
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A5 CHECK THE BRAKE SHIFT INTERLOCK ACTUATOR GROUND CIRCUIT FOR AN OPEN

Is the resistance less than 3 ohms?

Yes	GO to A6
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No	REPAIR the circuit.
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A6 CHECK THE BRAKE SHIFT INTERLOCK ACTUATOR POWER CIRCUIT FOR SHORT TO GROUND

Is the resistance greater than 10,000 ohms?

Yes	GO to A7
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No	REPAIR the circuit.
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A7 CHECK FOR CORRECT BCM OPERATION

- Ignition OFF.
- Disconnect and inspect all BCM connectors.
- Check for the following:
 - corrosion (install new connector or terminals - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Connect all BCM connectors. Make sure they seat and latch correctly.
- Operate the system and verify the concern is still present.

Is the concern still present?

Yes	 Click here to access Guided Routine (BCM).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

SelectShift™ Does Not Operate Correctly (6R80)

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

Normal Operation and Fault Conditions

When the transmission selector lever is in the (D) position, the vehicle is not moving, and either the plus (+) or minus (-) SelectShift™ switch is pressed, the IPC displays all available gear positions 1st, 2nd, 3rd, 4th, 5th, and 6th, with 1st gear highlighted. If the plus (+) switch is then pressed, the available gear positions are no longer displayed, until either the plus (+) or minus (-) switch is pressed again. The SelectShift™ switch is a momentary contact switch that is located on the column shift selector lever or the floor shift selector lever knob. To activate the select shift feature, place the selector lever into the M (manual) position and press the plus (+) or minus (–) on the column shift selector lever or floor shift selector lever knob. When the selector lever is in the (D) position the SelectShift™ transmission allows the driver to progressively lock out overdrive gears but keeps the transmission shifting automatically through lower gears. When towing in busy traffic or hilly areas, this prevents the transmission from shift hunting when loads cannot be pulled in overdrive gears. When the selector lever is moved to the (M) position the driver has control over transmission shifting by manually selecting which gear to operate in.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0815	Upshift Switch Circuit	The PCM detects a voltage high signal when an upshift is requested.
P0816	Downshift Switch Circuit	The PCM detects a voltage high signal when a downshift is requested.
P0826	Up and Down Switch Circuit	The PCM detects an incorrect shift request and switch inputs do not match lever position (ie switches active in P, R or N where they should be open).

Possible Sources

- Circuitry open/shorted
- Selector lever assembly
- Selector lever knob
- Floor shift lever
- PCM

PINPOINT TEST B : SELECTSHIFT™ DOES NOT OPERATE CORRECTLY (6R80)

B1 RETRIEVE AND RECORD ALL DTCS

- Enter the following diagnostic mode: PCM self-test.

Are DTCs P0815, P0816, P0826 present?

Yes	CLEAR the DTC. Using the diagnostic scan tool, perform the KOER self-test. If DTC For DTC P0815, GO to B3 For DTC P0816, GO to B7 For DTC P0826, GO to B2
No	The system is operating correctly at this time. The concern may have been caused by a loose connector.

B2 VERIFY SELECTOR LEVER GEAR POSITION

- Enter the following diagnostic mode: PCM Datalogger.
- MONITOR the PID TR while moving the gearshift selector through all of the gears.

Does the PID gear position agree with the gearshift position?

Yes	System is functioning properly at this time. If any symptoms are present go to the Symptom Chart.
No	To diagnose the TR sensor, REFER to: Diagnosis By Symptom (307-01A Automatic Transmission - 6-Speed Automatic Transmission - 6R80, Diagnosis and Testing).

B3 CHECK THE UPSHIFT CIRCUIT FOR VOLTAGE

- Disconnect For vehicles equipped with column shift, selector lever, C2135.
- Disconnect For vehicles equipped with floor shift, selector lever, C3245.
- Ignition ON.

Is the voltage greater than 11 volts?

Yes	GO to B12
No	For vehicles equipped with column shift, GO to B4 For vehicles equipped with floor shift, GO to B5

B4 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR AN OPEN (COLUMN SHIFT)

- Ignition OFF.
- Disconnect PCM C1551B.
- Inspect the connectors for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to B6
No	REPAIR the circuit.

B5 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR AN OPEN (FLOOR SHIFT)

- Ignition OFF.
- Disconnect PCM C1551B.
- Inspect the connectors for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to B6
No	REPAIR the circuit.

B6 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR A SHORT TO GROUND

Is the resistance greater than 10,000 ohms?

Yes	INSTALL a new PCM. REFER to: Powertrain Control Module (PCM) (303-14B Electronic Engine Controls - 3.3L Duratec - V6, Removal and Installation). PERFORM the Transmission Strategy Download procedure. REFER to: Transmission Strategy Download (307-01A Automatic Transmission - 6-Speed Automatic Transmission - 6R80, General Procedures).
No	REPAIR the circuit.

B7 CHECK THE DOWNSHIFT CIRCUIT FOR VOLTAGE

- Disconnect For vehicles equipped with column shift, selector lever, C2135.
- Disconnect For vehicles equipped with floor shift, selector lever, C3245.
- Ignition ON.

Is the voltage greater than 11 volts?

Yes	GO to B11
No	GO to B8

B8 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR AN OPEN (COLUMN SHIFT)

- Ignition OFF.
- Disconnect PCM.
- Inspect the connectors for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to B10
No	REPAIR the circuit.

B9 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR AN OPEN (FLOOR SHIFT)

- Ignition OFF.
- Disconnect PCM C1551B.
- Inspect the connectors for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to B10
No	REPAIR the circuit.

B10 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR A SHORT TO GROUND

Is the resistance greater than 10,000 ohms?

Yes	INSTALL a new PCM. REFER to: Powertrain Control Module (PCM) (303-14B Electronic Engine Controls - 3.3L Duratec - V6, Removal and Installation). PERFORM the Transmission Strategy Download procedure. REFER to: Transmission Strategy Download (307-01A Automatic Transmission - 6-Speed Automatic Transmission - 6R80, General Procedures).
No	REPAIR the circuit.

B11 CHECK THE SIGNAL RETURN CIRCUIT FOR A SHORT TO GROUND

- Disconnect PCM.
- Ignition ON.

Is the resistance greater than 10,000 ohms?

Yes	GO to B12
No	REPAIR the circuit.

B12 CHECK THE SIGNAL RETURN CIRCUIT FOR AN OPEN

- Connect PCM.
- Ignition ON.

Is the resistance less than 3 ohms?

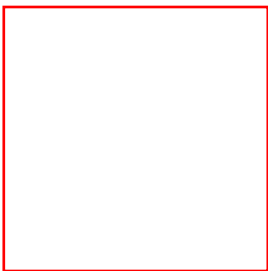
Yes	GO to B13
No	REPAIR the circuit.

B13 TEST SELECTSHIFT™ SWITCHES

- Ignition OFF.
- Disconnect For vehicles equipped with column shift, C2135.
- Disconnect For vehicles equipped with floor shift, C3245.
- For vehicles equipped with column shift, measure while pressing the upshift and downshift switch:

Click to display connectors

Positive Lead	Measurement / Action	Negative Lead
Selector lever, upshift switch, pin 3, component side	Ω	Selector lever switch, pin 4, component side

Selector lever downshift switch, pin 5, component side		Selector lever switch, pin 4, component side
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- For vehicles equipped with floor shift, measure while pressing the upshift and downshift switch:

Click to display connectors

Positive Lead	Measurement / Action	Negative Lead
Selector lever upshift switch, pin 9, component side	Ω	Selector lever switch, pin 8, component side
Selector lever downshift switch, pin 10, component side		Selector lever switch, pin 8, component side

Are the resistances less than 3 ohms?

Yes	INSTALL a new PCM. REFER to: Powertrain Control Module (PCM) (303-14B Electronic Engine Controls - 3.3L Duratec - V6, Removal and Installation). PERFORM the Transmission Strategy Download procedure. REFER to: Transmission Strategy Download (307-01A Automatic Transmission - 6-Speed Automatic Transmission - 6R80, General Procedures).
No	INSTALL a new selector lever. REFER to: Selector Lever Assembly - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls, Removal and Installation). REFER to: Selector Lever Assembly - Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls, Removal and Installation).

Transmission Control Switch Inoperative Or Does Not Operate Correctly (6R80)

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

Normal Operation

The transmission control switch is a momentary contact switch located on the selector lever. When the switch is pressed the contacts close sending a voltage signal to the PCM and notifies the module to disable the overdrive gear. The PCM sends a message over the MS-CAN to the IPC which illuminates the tow haul indicator light in the IPC. When the switch is depressed again sportmode is enabled, a third button push enables the overdrive gear in the transmission and sends a message to the IPC extinguishing the tow haul light.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P1780	Transmission Control Switch (O/D Cancel) Circuit Out of Self-Test Range	This DTC sets when the transmission control switch circuit self test is out of range (runs during KOER on-demand self-test only).

Possible Sources

- Circuitry open/shorted
- Transmission control switch
- PCM

PINPOINT TEST C : TRANSMISSION CONTROL SWITCH INOPERATIVE OR DOES NOT OPERATE CORRECTLY (6R80)

C1 KOER (KEY ON, ENGINE RUNNING) SELF-TEST

- Using a diagnostic scan tool, perform a KOER self-test.

Is the DTC P1780 set?

Yes	GO to C2
No	No trouble found with the Tow/Haul system. If the Tow/Haul or Sport lamp do not illuminate, REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes) .

C2 CHECK FOR POWER AT TRANSMISSION CONTROL SWITCH

- Ignition OFF.
- Disconnect Selector Lever Assembly Column shift, C2135.
- Disconnect Selector Lever Assembly Floor Shift, C3245.
- Ignition ON.

Is the voltage 11 volts or greater?

Yes	GO to C3
No	VERIFY the BJB fuse 35 (5A) is OK. If OK, REPAIR the open circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

C3 CHECK GROUND CIRCUIT TO PCM

- Ignition ON.

Is the resistance less than 3 ohms?

Yes	INSTALL a new tow/haul switch. REFER to: Selector Lever Knob (307-05 Automatic Transmission External Controls, Removal and Installation).
No	GO to C4

C4 TEST THE GROUND CIRCUIT FOR AN OPEN

- Disconnect PCM C1551B.

Is the resistance less than 3 ohms?

Yes	INSTALL a new PCM. REFER to: Powertrain Control Module (PCM) (303-14B Electronic Engine Controls - 3.3L Duratec - V6, Removal and Installation). PERFORM the Transmission Strategy Download procedure. REFER to: Transmission Strategy Download (307-01A Automatic Transmission - 6-Speed Automatic Transmission - 6R80, General Procedures).
No	REPAIR the circuit.

SelectShift™ Does Not Operate Correctly (10R80) 3.5L GTDI

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

Normal Operation and Fault Conditions

The SelectShift™ switch is a momentary contact switch that is located on the column shift selector lever or the floor shift selector lever knob. To activate the select shift feature, place the selector lever into the M (manual) position and press the plus (+) or minus (–) on the column shift selector lever or floor shift selector lever knob. When the selector lever is in the (D) position the SelectShift™ transmission allows the driver to progressively lock out overdrive gears but keeps the transmission shifting

automatically through lower gears. When towing in busy traffic or hilly areas, this prevents the transmission from shift hunting when loads cannot be pulled in overdrive gears. When the selector lever is moved to the (M) position the driver has control over transmission shifting by manually selecting which gear to operate in.

Possible Sources

- Circuitry open/shorted
- Selector lever assembly
- Selector lever knob
- Floor shift lever
- TCM

**PINPOINT TEST D : SELECTSHIFT™ DOES NOT OPERATE CORRECTLY (10R80)
3.5L GTDI**

D1 VERIFY SELECTOR LEVER GEAR POSITION	
• Enter the following diagnostic mode: TCM Datalogger. • MONITOR the PID TR while moving the gearshift selector through all of the gears.	
Does the PID gear position agree with the gearshift position?	
Yes	System is functioning properly at this time. If symptoms are present go to the Symptom Chart.
No	To diagnose the TR sensor, REFER to: Diagnosis By Symptom (307-01A Automatic Transmission - 6-Speed Automatic Transmission - 6R80, Diagnosis and Testing).
D2 CHECK THE UPSHIFT CIRCUIT FOR VOLTAGE	

- Disconnect For vehicles equipped with column shift, selector lever, C2135.
- Disconnect For vehicles equipped with floor shift, selector lever, C3245.
- Ignition ON.

Is the voltage greater than 11 volts?

Yes	GO to D11
No	For vehicles equipped with column shift, GO to D3 For vehicles equipped with floor shift, GO to D4

D3 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR AN OPEN (COLUMN SHIFT)

- Ignition OFF.
- Disconnect TCM C1822.
- Inspect the connectors for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to D5
No	REPAIR the circuit.

D4 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR AN OPEN (FLOOR SHIFT)

- Ignition OFF.
- Disconnect TCM.
- Inspect the connectors for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to D5
No	REPAIR the circuit.

D5 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR A SHORT TO GROUND

Is the resistance greater than 10,000 ohms?

Yes	INSTALL a new TCM. REFER to: Transmission Control Module (TCM) - 3.0L Power Stroke Diesel/3.5L EcoBoost (272kW/370PS) (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, Removal and Installation). PERFORM the Transmission Strategy Download procedure. REFER to: Transmission Strategy Download (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, General Procedures).
No	REPAIR the circuit.

D6 CHECK THE DOWNSHIFT CIRCUIT FOR VOLTAGE

- Disconnect For vehicles equipped with column shift, selector lever, C2135.
- Disconnect For vehicles equipped with floor shift, selector lever, C3245.
- Ignition ON.

Is the voltage greater than 11 volts?

Yes	GO to D10
No	GO to D7

D7 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR AN OPEN (COLUMN SHIFT)

- Ignition OFF.
- Disconnect TCM C1822.
- Inspect the connectors for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to D9
No	REPAIR the circuit.

D8 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR AN OPEN (FLOOR SHIFT)

- Ignition OFF.
- Disconnect TCM.
- Inspect the connectors for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to D9
No	REPAIR the circuit.

D9 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR A SHORT TO GROUND

Is the resistance greater than 10,000 ohms?

Yes	INSTALL a new TCM. REFER to: Transmission Control Module (TCM) - 3.0L Power Stroke Diesel/3.5L EcoBoost (272kW/370PS) (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, Removal and Installation). PERFORM the Transmission Strategy Download procedure. REFER to: Transmission Strategy Download (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, General Procedures).
No	REPAIR the circuit.

D10 CHECK THE SIGNAL RETURN CIRCUIT FOR A SHORT TO GROUND

- Disconnect TCM C1822.
- Ignition ON.

Is the resistance greater than 10,000 ohms?

Yes	GO to D11
No	REPAIR the circuit.

D11 CHECK THE SIGNAL RETURN CIRCUIT FOR AN OPEN

Is the resistance less than 3 ohms?

Yes	GO to D12
No	REPAIR the circuit.

D12 TEST SELECTSHIFT™ SWITCHES

- Ignition OFF.
- Disconnect For vehicles equipped with column shift, C2135.
- Disconnect For vehicles equipped with floor shift, C3245.
- For vehicles equipped with column shift, measure while pressing the upshift and downshift switch:

Click to display connectors

Positive Lead	Measurement / Action	Negative Lead
Selector lever, upshift switch, pin 3, component side	Ω	Selector lever switch, pin 4, component side

Selector lever downshift switch, pin 5, component side		Selector lever switch, pin 4, component side
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- For vehicles equipped with floor shift, measure while pressing the upshift and downshift switch:

Click to display connectors

Positive Lead	Measurement / Action	Negative Lead
Selector lever upshift switch, pin 9, component side	Ω	Selector lever switch, pin 8, component side
Selector lever downshift switch, pin 10, component side		Selector lever switch, pin 8, component side

Are the resistances less than 3 ohms?

Yes	INSTALL a new TCM. REFER to: Transmission Control Module (TCM) - 3.0L Power Stroke Diesel/3.5L EcoBoost (272kW/370PS) (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, Removal and Installation). PERFORM the Transmission Strategy Download procedure. REFER to: Transmission Strategy Download (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, General Procedures).
No	INSTALL a new selector lever. REFER to: Selector Lever Assembly - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls, Removal and Installation). REFER to: Selector Lever Assembly - Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls, Removal and Installation).

Transmission Control Switch Inoperative Or Does Not Operate Correctly (10R80) 3.5L GTDI

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

Normal Operation

The transmission control switch is a momentary contact switch located on the selector lever. When the switch is pressed the contacts close sending a voltage signal to the TCM and notifies the module to disable the overdrive gear. The TCM sends a message over the MS-CAN to the IPC which illuminates the tow haul indicator light in the IPC. When the switch is depressed again sportmode is enabled, a third button push enables the overdrive gear in the transmission and sends a message to the IPC extinguishing the tow haul light.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P1780	Transmission Control Switch (O/D Cancel) Circuit Out of Self-Test Range	This DTC sets when the transmission control switch circuit self test is out of range (runs during KOER on-demand self-test only).

Possible Sources

- Circuitry open/shorted
- Transmission control switch
- TCM

PINPOINT TEST E : TRANSMISSION CONTROL SWITCH INOPERATIVE OR DOES NOT OPERATE CORRECTLY (10R80) 3.5L GTDI

E1 KOER (KEY ON, ENGINE RUNNING) SELF-TEST

- Using a diagnostic scan tool, perform a KOER self-test.

Is the DTC P1780 set?

Yes	GO to E2
No	No trouble found with the Tow/Haul system. If the Tow/Haul light does not illuminate, REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes) .

E2 CHECK FOR VOLTAGE AT TOW HAUL SWITCH

- Ignition OFF.
- Disconnect Selector Lever Assembly Column shift, C2135.
- Disconnect Selector Lever Assembly Floor Shift, C3245.
- Ignition ON.

Is the voltage 11 volts or greater?

Yes	GO to E3
No	VERIFY the BJB fuse 35 (5A) is OK. If OK, REPAIR the open circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

E3 CHECK GROUND CIRCUIT TO TCM

- Ignition ON.

Is the resistance less than 3 ohms?

Yes	INSTALL a new tow/haul switch. REFER to: Selector Lever Knob (307-05 Automatic Transmission External Controls, Removal and Installation).
No	GO to E4

E4 TEST THE GROUND CIRCUIT FOR AN OPEN

- Disconnect TCM C1822.

Is the resistance less than 3 ohms?

Yes	INSTALL a new TCM. REFER to: Transmission Control Module (TCM) - 3.0L Power Stroke Diesel/3.5L EcoBoost (272kW/370PS) (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, Removal and Installation). PERFORM the Transmission Strategy Download procedure. REFER to: Transmission Strategy Download (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, General Procedures).
No	REPAIR the circuit.

SelectShift™ Does Not Operate Correctly (10R80) 2.7L, 5.0L

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

Normal Operation and Fault Conditions

The SelectShift™ switch is a momentary contact switch that is located on the column shift selector lever or the floor shift selector lever knob. To activate the select shift feature, place the selector lever into the M (manual) position and press the plus (+) or minus (–) on the column shift selector lever or floor shift selector lever knob. When the selector lever is in the (D) position the SelectShift™ transmission

allows the driver to progressively lock out overdrive gears but keeps the transmission shifting automatically through lower gears. When towing in busy traffic or hilly areas, this prevents the transmission from shift hunting when loads cannot be pulled in overdrive gears. When the selector lever is moved to the (M) position the driver has control over transmission shifting by manually selecting which gear to operate in.

Possible Sources

- Circuitry open/shorted
- Selector lever assembly
- Selector lever knob
- Floor shift lever
- PCM

**PINPOINT TEST F : SELECTSHIFT™ DOES NOT OPERATE CORRECTLY (10R80)
2.7L, 5.0L**

F1 VERIFY SELECTOR LEVER GEAR POSITION	
• Enter the following diagnostic mode: PCM Datalogger. • MONITOR the PID TR while moving the gearshift selector through all of the gears.	
Does the PID gear position agree with the gearshift position?	
Yes	System is functioning properly at this time. If symptoms are present go to the Symptom Chart.
No	To diagnose the TR sensor, REFER to: Diagnosis By Symptom (307-01A Automatic Transmission - 6-Speed Automatic Transmission - 6R80, Diagnosis and Testing).
F2 CHECK THE UPSHIFT CIRCUIT FOR VOLTAGE	

- Disconnect For vehicles equipped with column shift, selector lever, C2135.
- Disconnect For vehicles equipped with floor shift, selector lever, C3245.
- Ignition ON.

Is the voltage greater than 11 volts?

Yes	GO to F10
No	For vehicles equipped with column shift, GO to F3 For vehicles equipped with floor shift, GO to F4

F3 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR AN OPEN (COLUMN SHIFT)

- Ignition OFF.
- Disconnect For vehicles equipped with the 2.7L, PCM C1232B.
- Disconnect For vehicles equipped with the 5.0L, PCM C1381B.
- Inspect the connectors for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to F5
No	REPAIR the circuit.

F4 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR AN OPEN (FLOOR SHIFT)

- Ignition OFF.
- Disconnect PCM.
- Inspect the connectors for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to F5
No	REPAIR the circuit.

F5 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR A SHORT TO GROUND

Is the resistance greater than 10,000 ohms?

Yes	INSTALL a new PCM. REFER to: Powertrain Control Module (PCM) (303-14A Electronic Engine Controls - 2.7L EcoBoost (238kW/324PS), Removal and Installation). REFER to: Powertrain Control Module (PCM) (303-14D Electronic Engine Controls - 5.0L 32V Ti-VCT, Removal and Installation). PERFORM the Transmission Strategy Download procedure. REFER to: Transmission Strategy Download (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, General Procedures).
No	REPAIR the circuit.

F6 CHECK THE DOWNSHIFT CIRCUIT FOR VOLTAGE

- Disconnect For vehicles equipped with column shift, selector lever, C2135.
- Disconnect For vehicles equipped with floor shift, selector lever, C3245.
- Ignition ON.

Is the voltage greater than 11 volts?

Yes	GO to F10
No	GO to F7

F7 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR AN OPEN (COLUMN SHIFT)

- Ignition OFF.
- Disconnect TCM C1822.
- Inspect the connectors for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to F9
No	REPAIR the circuit.

F8 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR AN OPEN (FLOOR SHIFT)

- Ignition OFF.
- Disconnect PCM.
- Inspect the connectors for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to F9
No	REPAIR the circuit.

F9 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR A SHORT TO GROUND

Is the resistance greater than 10,000 ohms?

Yes	INSTALL a new PCM. REFER to: Powertrain Control Module (PCM) (303-14A Electronic Engine Controls - 2.7L EcoBoost (238kW/324PS), Removal and Installation). REFER to: Powertrain Control Module (PCM) (303-14D Electronic Engine Controls - 5.0L 32V Ti-VCT, Removal and Installation). PERFORM the Transmission Strategy Download procedure. REFER to: Transmission Strategy Download (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, General Procedures).
No	REPAIR the circuit.

F10 CHECK THE SIGNAL RETURN CIRCUIT FOR A SHORT TO GROUND

- Disconnect PCM For the 2.7L, C1232B (If not already disconnected) .
- Disconnect PCM For the 5.0L, C1381B (If not already disconnected) .
- Ignition ON.

Is the resistance greater than 10,000 ohms?

Yes	GO to F11
No	REPAIR the circuit.

F11 CHECK THE SIGNAL RETURN CIRCUIT FOR AN OPEN (COLUMN SHIFT)

- Ignition OFF.
- Disconnect TCM C1822.
- Inspect the connectors for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to F13
No	REPAIR the circuit.

F12 CHECK THE SIGNAL RETURN CIRCUIT FOR AN OPEN (FLOOR SHIFT)

- Ignition OFF.
- Disconnect PCM.
- Inspect the connectors for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to F13
No	REPAIR the circuit.

F13 TEST SELECTSHIFT™ SWITCHES

- Ignition OFF.
- Disconnect For vehicles equipped with column shift, C2135.
- Disconnect For vehicles equipped with floor shift, C3245.
- For vehicles equipped with column shift, measure while pressing the upshift and downshift switch:

Click to display connectors

Positive Lead	Measurement / Action	Negative Lead
Selector lever, upshift switch, pin 3, component side	Ω	Selector lever switch, pin 4, component side
Selector lever downshift switch, pin 5, component side		Selector lever switch, pin 4, component side

- For vehicles equipped with floor shift, measure while pressing the upshift and downshift switch:

Click to display connectors

Positive Lead	Measurement / Action	Negative Lead
Selector lever upshift switch, pin 9, component side	Ω	Selector lever switch, pin 8, component side
Selector lever downshift switch, pin 10, component side		Selector lever switch, pin 8, component side

Are the resistances less than 3 ohms?

Yes	INSTALL a new PCM. REFER to: Powertrain Control Module (PCM) (303-14A Electronic Engine Controls - 2.7L EcoBoost (238kW/324PS), Removal and Installation). REFER to: Powertrain Control Module (PCM) (303-14D Electronic Engine Controls - 5.0L 32V Ti-VCT, Removal and Installation). PERFORM the Transmission Strategy Download procedure. REFER to: Transmission Strategy Download (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, General Procedures).
No	INSTALL a new selector lever. REFER to: Selector Lever Assembly - Vehicles With: Column Shift (307-05 Automatic Transmission External Controls, Removal and Installation). REFER to: Selector Lever Assembly - Vehicles With: Floor Shift (307-05 Automatic Transmission External Controls, Removal and Installation).

Transmission Control Switch Inoperative Or Does Not Operate Correctly (10R80) 2.7L, 5.0L Engines

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

Normal Operation

The transmission control switch is a momentary contact switch located on the selector lever. When the switch is pressed the contacts close sending a voltage signal to the PCM and notifies the module to

disable the overdrive gear. The PCM sends a message over the MS-CAN to the IPC which illuminates the tow haul indicator light in the IPC. When the switch is depressed again, it enables the overdrive gear in the transmission and sends a message to the IPC extinguishing the tow haul light.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P1780	Transmission Control Switch (O/D Cancel) Circuit Out of Self-Test Range	This DTC sets when the transmission control switch circuit self test is out of range (runs during KOER on-demand self-test only).

Possible Sources

- Circuitry open/shorted
- Transmission control switch (Also known as the tow haul switch)
- PCM

PINPOINT TEST G : TRANSMISSION CONTROL SWITCH INOPERATIVE OR DOES NOT OPERATE CORRECTLY (10R80) 2.7L, 5.0L ENGINES

G1 KOER (KEY ON, ENGINE RUNNING) SELF-TEST

- Using a diagnostic scan tool, perform a KOER self-test.

Is the DTC P1780 set?

Yes	GO to G2
No	No trouble found with the Tow/Haul system. If the Tow/Haul light does not illuminate, REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes) .

G2 CHECK FOR POWER AT TRANSMISSION CONTROL SWITCH

- Ignition OFF.
- Disconnect Selector Lever Assembly Column shift, C2135.
- Disconnect Selector Lever Assembly Floor Shift, C3245.
- Ignition ON.

Is the voltage 11 volts or greater?

Yes	GO to G3
No	VERIFY the BJB fuse 19 (5A) is OK. If OK, REPAIR the open circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

G3 CHECK GROUND CIRCUIT TO PCM

- Ignition ON.

Is the resistance less than 3 ohms?

Yes	INSTALL a new tow/haul switch. REFER to: Selector Lever Knob (307-05 Automatic Transmission External Controls, Removal and Installation).
No	GO to G4

G4 TEST THE GROUND CIRCUIT FOR AN OPEN

- Disconnect PCM For the 2.7L engine, C1232B.
- Disconnect PCM For the 5.0L engine, C1381B.

Is the resistances less than 3 ohms?

Yes	INSTALL a new PCM. REFER to: Powertrain Control Module (PCM) (303-14A Electronic Engine Controls - 2.7L EcoBoost (238kW/324PS), Removal and Installation). REFER to: Powertrain Control Module (PCM) (303-14D Electronic Engine Controls - 5.0L 32V Ti-VCT, Removal and Installation). PERFORM the Transmission Strategy Download procedure. REFER to: Transmission Strategy Download (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, General Procedures).
No	REPAIR the circuit.

Paddle Shifter Do Not Operate Correctly

Refer to Wiring Diagrams Cell 29 for schematic and connector information.

Normal Operation and Fault Conditions

The paddle shift switch is integral to the steering wheel. When the (M) button is selected, the upshift/downshift feature becomes activated and allows the operator to upshift or downshift without removing their hands from the steering wheel. If a new switch is required install a new paddle shift assembly.

Possible Sources

- Circuitry open/shorted
- Paddle shift switch
- TCM

PINPOINT TEST H : PADDLE SHIFTER DO NOT OPERATE CORRECTLY

H1

- Road test the vehicle and place the rotary gear shift in the (M) position. Use the paddle shifters to upshift and downshift the transmission.

Do the paddle shifters work properly?

Yes	The paddle shifters are working properly at this time. INSPECT harness connectors for loose terminals or corrosion.
No	For the upshift paddle switch concern, GO to H2 For the downshift paddle switch concern, GO to H7 If both paddle switches are inoperative, GO to H11

H2 CHECK THE PADDLE SHIFT SWITCH

- Disconnect Upper Clockspring C218B.
- Measure:

Click to display connectors

Positive Lead	Measurement / Action	Negative Lead
C218B, Switch side resistance pin 12.	Ω	C218B, Switch side resistance pin 13.

Is the resistance less than 1.5 ohms with upshift selected and greater than 10,000 ohms when released?

Yes	GO to H3
No	INSTALL a new upshift paddle switch. REFER to: Upshift Paddle Switch (307-05 Automatic Transmission External Controls, Removal and Installation).

H3 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR VOLTAGE

- Ignition OFF.
- Inspect the connector for damaged or pushed-out terminals.
- Ignition ON.

Is the voltage greater than 11 volts?

Yes	GO to H6
No	GO to H4

H4 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect TCM C1822.
- Inspect the connector for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to H5
No	REPAIR the circuit.

H5 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR A SHORT TO GROUND

Is the resistance greater than 10,000 ohms?

Yes	GO to H6
No	REPAIR the circuit.

H6 CHECK THE SIGNAL RETURN CIRCUIT FOR AN OPEN

- Connect TCM C1822.
- Ignition ON.

Is the resistance less than 3 ohms?

Yes	GO to H12
No	REPAIR the circuit. If an open circuit is not found, INSTALL a new TCM. REFER to: Transmission Control Module (TCM) - 3.0L Power Stroke Diesel/3.5L EcoBoost (272kW/370PS) (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, Removal and Installation). PERFORM the Transmission Strategy Download procedure. REFER to: Transmission Strategy Download (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, General Procedures).

H7 CHECK THE PADDLE SHIFT DOWNSHIFT SWITCH

- Disconnect Upper Clockspring C218B.
- Measure:

Click to display connectors

Positive Lead	Measurement / Action	Negative Lead
C218B, Switch side resistance pin 5.	Ω	C218B, Switch side resistance pin 13.

Is the resistance less than 1.5 ohms with downshift selected and greater than 10,000 ohms when released?

Yes	GO to H8
No	INSTALL a new paddle shift downshift switch. REFER to: Downshift Paddle Switch (307-05 Automatic Transmission External Controls, Removal and Installation).

H8 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR VOLTAGE

- Ignition OFF.
- Inspect the connector for damaged or pushed-out terminals.
- Ignition ON.

Is the voltage greater than 11 volts?

Yes	GO to H11
No	GO to H9

H9 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect Upper Clockspring C218B.
- Inspect the connector for damaged or pushed-out terminals.

Is the resistance less than 3 ohms?

Yes	GO to H10
No	GO to H12

H10 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR A SHORT TO GROUND

Is the resistance greater than 10,000 ohms?

Yes	GO to H11
No	GO to H12

H11 CHECK THE SIGNAL RETURN CIRCUIT FOR AN OPEN

- Connect TCM C1822.
- Ignition ON.

Is the resistance less than 3 ohms?

Yes	GO to H12
No	REPAIR the circuit. If an open circuit is not found, INSTALL a new TCM. REFER to: Transmission Control Module (TCM) - 3.0L Power Stroke Diesel/3.5L EcoBoost (272kW/370PS) (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, Removal and Installation). PERFORM the Transmission Strategy Download procedure. REFER to: Transmission Strategy Download (307-01B Automatic Transmission - 10-Speed Automatic Transmission - 10R80, General Procedures).

H12 CHECK THE CIRCUITS BETWEEN THE TCM AND THE SCCM FOR AN OPEN

- Ignition ON.

Is the resistance less than 3 ohms?

Yes	GO to H13
No	REPAIR the circuit.

H13 CHECK THE SCCM FOR AN OPEN

- Ignition ON.

Is the resistance less than 3 ohms?

Yes	INSTALL a new clockspring. REFER to: Clockspring (501-20B Supplemental Restraint System, Removal and Installation).
No	INSTALL a new SCCM. REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation).