External Controls

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical and electrical damage.

Visual Inspection Chart

Mechanical	Electrical
• Selector lever linkage binding • BSIA • Selector lever cable	• SJB fuse 5 (10A) • Wiring harness (circuitry) • Loose connections, damaged or pushed-out terminals

3. If the concern is not visually evident, determine the symptom. GO to Symptom Chart .

DTC Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices. Refer to Diagnostic Methods in Section 100-00 for information about these practices.

DTC Chart - SJB

DTC	Description	Action
B2572	BSIA Output Circuit Failure	GO to Pinpoint Test A.

DTC Chart - PCM

DTC	Description	Action
P0815	Upshift Switch Circuit	GO to Pinpoint Test B.
P0816	Downshift Switch Circuit	GO to Pinpoint Test B.

Symptom Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices. Refer to Diagnostic Methods in Section 100-00 for information about these practices.

In most circumstances, the PCM sets DTCs to help guide with diagnostics. Refer to the DTC Chart before using the symptom chart. The Condition column lists the vehicle condition. The Source column lists a detailed vehicle condition. The Action column lists the action to be performed to determine the cause of the condition. Each action lists the components that can caused the system and the individual components in that system. The components are listed in order of disassembly. Use the list of components and the required action to focus on disassembly inspections for the root cause of the concern.

Symptom Chart

Condition	Possible Causes	Action
• The BSIA system does not release/lock correctly	• Refer to Diagnostic Routine • BSIA damaged • Selector lever cable	• GO to Pinpoint Test A. • Install a new selector lever assembly. REFER to Selector Lever. • Selector Lever Cable Adjustment.
• The selector lever is out of correct gear relationship	• Selector lever cable and bracket installation • Selector lever cable out of adjustment	• CHECK the selector lever cable bracket. TIGHTEN as necessary. • ADJUST the selector cable. REFER to Selector Lever Cable Adjustment.
• Excessive selector lever effort	• Selector lever cable • Selector cable and bracket installation	• INSTALL a new selector lever cable. REFER to Selector Lever Cable and Bracket. • ADJUST the selector cable. REFER to Selector Lever Cable Adjustment.
• Selector lever will not shift	• Selector lever cable • Broken selector level cable	• INSTALL a new selector lever cable. REFER to Selector Lever Cable and Bracket. • INSTALL a new selector lever cable. REFER to Selector Lever Cable and Bracket.
• 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. REPAIR as necessary. REFER to Selector Lever Cable and Bracket.
• Selectshift™ Is Inoperative Or Does Not Operate Correctly	• Wiring, terminals or connectors • SelectShift™ switch • PCM	• GO to Pinpoint Test B

Pinpoint Tests

Pinpoint Test A: B2572

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

Normal Operation and Fault Conditions

The BSIA system is controlled by the SJB and is activated when the SJB receives a brake pedal applied input.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
B2572	BSIA Output Circuit Failure	If an open, short to ground or short to power is detected on the BSIA output circuit.

Possible Sources

- Circuitry open, shorted to ground or shorted to power
- BSIA
- SJB

PINPOINT TEST A : B2572

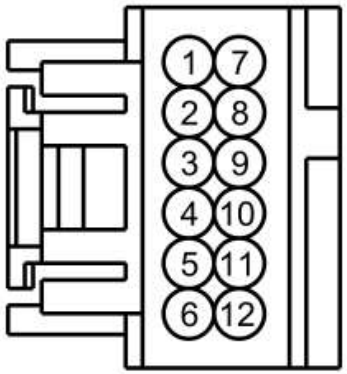
A1 RETRIEVE AND RECORD ALL DTCS
• Ignition ON. • Using a scan tool, retrieve DTCs. **Was DTC B2572 set?**

Yes	GO to A2.
No	The issue may not be the BSIA system. GO to Symptom Chart.

A2 CHECK THE BSIA POWER CIRCUIT FOR AN OPEN

- Disconnect: Transmission Shift Selector C307 .
- Inspect for damaged or pushed-out terminals.
- Apply and release the brake pedal.
- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C307 Pin 1	CET53 (BU/OG)	—	Ground



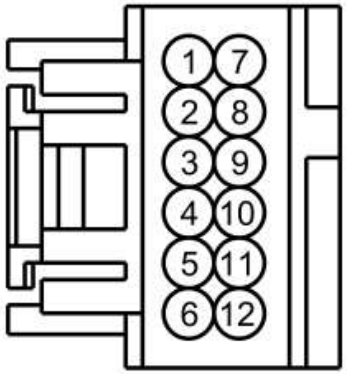
Is the voltage greater than 10 volts with the brake pedal applied and 0 volt with the brake pedal released?

Yes	GO to A3.
No	GO to A4.

A3 CHECK THE BSIA GROUND CIRCUIT FOR AN OPEN

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C307 Pin 5	GD139 (BK/YE)	—	Ground



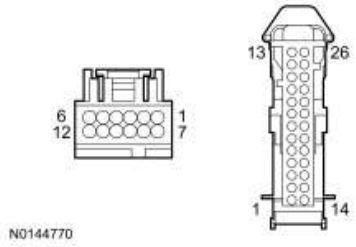
Is the resistance less than 5 ohms?

Yes	INSTALL a new selector lever assembly. REFER to Selector Lever.
No	REPAIR the circuit.

A4 CHECK THE BSIA POWER CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect: SJB C2280C .
- Inspect for damaged or pushed-out terminals.
- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C307 Pin 1	CET53 (BU/OG)	C2280C Pin 23	CET53 (BU/OG)



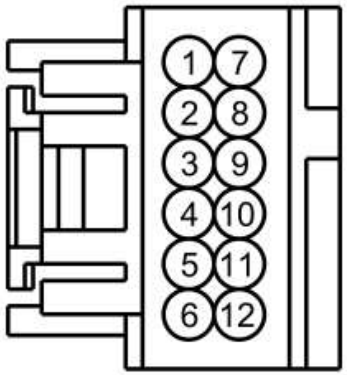
Is the resistance less than 5 ohms?

Yes	GO to A5.
No	REPAIR the circuit.

A5 CHECK THE BSIA POWER CIRCUIT FOR A SHORT TO GROUND

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C307 Pin 1	CET53 (BU/OG)	—	Ground



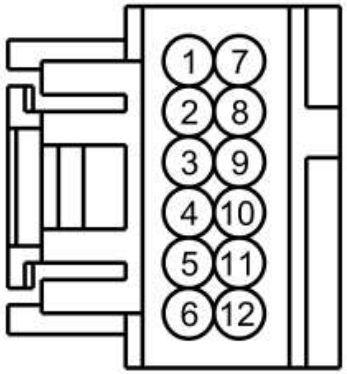
Is the resistance greater than 10,000 ohms?

Yes	GO to A6.
No	REPAIR the circuit.

A6 CHECK THE BSIA POWER CIRCUIT FOR A SHORT VOLTAGE

- Ignition ON.
- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C307 Pin 1	CET53 (BU/OG)	—	Ground



Is any voltage present?

Yes	REPAIR the circuit.
No	INSTALL a new selector lever. REFER to Selector Lever.

Pinpoint Test B: DTC P0815, P0816

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

Normal Operation and Fault Conditions

The SelectShift™ switch is a toggle switch integral to the selector lever knob. When the selector lever is placed in the sport mode position, the upshift/downshift feature becomes activated. If a new switch is required install a new selector lever knob.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0815	Upshift Switch Circuit	Sets when a open or short circuit to the upshift switch occurs.
P0816	Downshift Switch Circuit	Sets when a open or short circuit to the downshift switch occurs.

Possible Sources

- Circuitry open, shorted to ground or shorted to power
- SelectShift™ switch
- PCM

PINPOINT TEST B : P0815, P0816

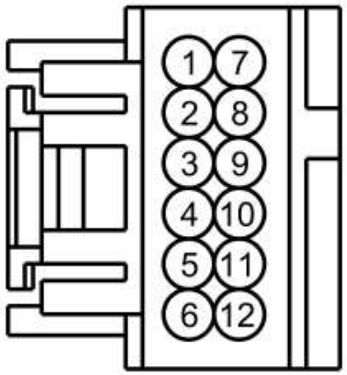
B1 RETRIEVE AND RECORD ALL DTCS
• Ignition ON. • Using a scan tool, retrieve DTCs. **Is DTC P0815 set?**

Yes	CLEAR the DTC. PERFORM the KOEO self-test. If DTC P0815 returns, GO to B2.
No	CLEAR the DTC. PERFORM the KOEO self-test. If DTC P0816 returns, GO to B7. If the vehicle displays the symptom, the upshift switch is inoperative, GO to B2. If the vehicle displays the symptom, the downshift switch is inoperative, GO to B7. If the vehicle displays the symptom, both upshift and downshift switches are inoperative, GO to B10.

B2 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR VOLTAGE

- Ignition OFF.
- Disconnect: Transmission Shift Selector C307 .
- Inspect for damaged or pushed-out terminals.
- Ignition ON.
- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C307 Pin 9	CET35 (BN)	—	Ground



Is the voltage greater that 10 volts?

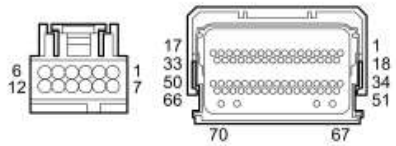
Yes	GO to B5.
No	GO to B3.

B3 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect: PCM C175B (5.0L) .
- Disconnect: PCM C1381B (3.7L Ti-VCT) .
- Inspect for damaged or pushed-out terminals.
- Measure the **resistance** between.

Positive Lead	Negative Lead

Pin	Circuit	Pin	Circuit
C307 Pin 9	CET35 (BN)	C175B Pin 23	CET35 (BN)



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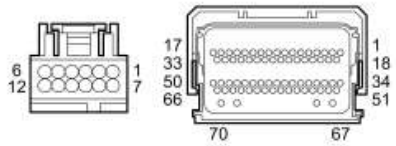
- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C307 Pin 9	CET35 (BN)	C1381B Pin 23	CET35 (BN)



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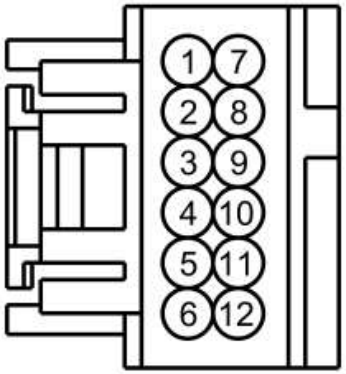
Is the resistance less than 5 ohms?

Yes	GO to B4.
No	REPAIR the circuit.

B4 CHECK THE UPSHIFT SIGNAL CIRCUIT FOR A SHORT TO GROUND

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C307 Pin 9	CET35 (BN)	—	Ground



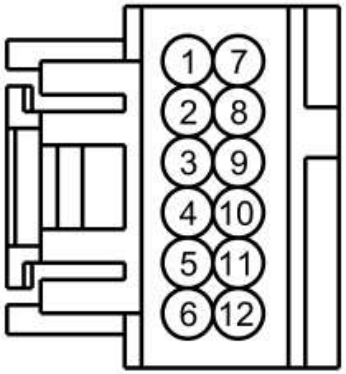
Is the resistance greater than 10,000 ohms?

Yes	INSTALL a new 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 Section 307-01.
No	REPAIR the circuit.

B5 CHECK THE SIGNAL RETURN CIRCUIT FOR AN OPEN

- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C307 Pin 9	CET35 (BN)	C307 Pin 11	RE405 (GN/WH)



Is voltage greater than 10 volts?

Yes	GO to B6.
No	REPAIR the circuit. If no open is found, INSTALL a new 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 Section 307-01.

B6 CHECK THE SELECTSHIFT™ SWITCH

- Disconnect: SelectShift™ Switch from the Selector Lever Assembly .
- Measure the **component side resistance** while cycling the SelectShift™ upshift switch.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
9	—	11	—

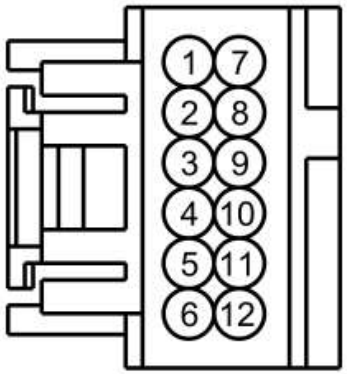
Is the resistance less than 1.5 ohms when applied and greater than 10,000 ohms when released?

Yes	INSTALL a new selector lever. REFER to Selector Lever.
No	INSTALL a new SelectShift™ switch. REFER to Selector Lever Knob.

B7 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR VOLTAGE

- Ignition OFF.
- Disconnect: Transmission Shift Selector C307 .
- Inspect for damaged or pushed-out terminals.
- Ignition ON.
- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C307 Pin 10	CET42 (GN/VT)	—	Ground



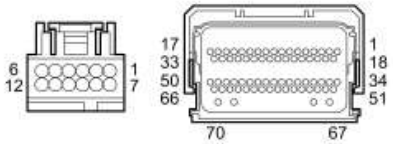
Is the voltage greater that 10 volts?

Yes	GO to B10.
No	GO to B8.

B8 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect: PCM C175B (5.0L) .
- Disconnect: PCM C1381B (3.7L Ti-VCT) .
- Inspect for damaged or pushed-out terminals.
- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C307 Pin 10	CET42 (GN/VT)	C175B Pin 24	CET42 (GN/VT)



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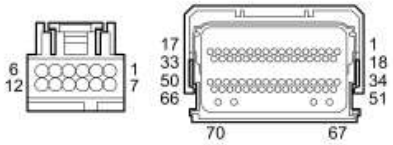
- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C307 Pin 10	CET42 (GN/VT)	C1381B Pin 24	CET42 (GN/VT)



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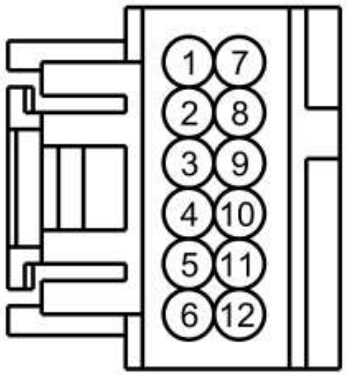
Is the resistance less than 5 ohms?

Yes	GO to B9.
No	REPAIR the circuit.

B9 CHECK THE DOWNSHIFT SIGNAL CIRCUIT FOR A SHORT TO GROUND

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C307 Pin 10	CET42 (GN/VT)	—	Ground



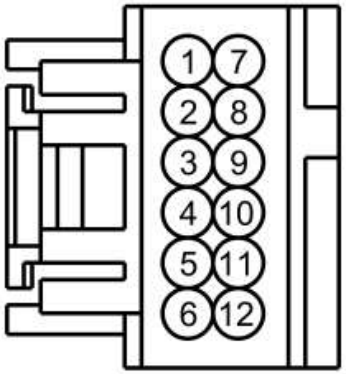
Is the resistance greater than 10,000 ohms?

Yes	INSTALL a new 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 Section 307-01.
No	REPAIR the circuit.

B10 CHECK THE SIGNAL RETURN CIRCUIT FOR AN OPEN

- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C307 Pin 10	CET42 (GN/VT)	C307 Pin 11	RE405 (GN/WH)



Is voltage greater than 10 volts?

Yes	GO to B11.
No	REPAIR the circuit. If no open is found, INSTALL a new 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 Section 307-01.

B11 CHECK THE SELECTSHIFT™ SWITCH

- Disconnect: SelectShift™ Switch from the Selector Lever Assembly .
- Measure the **component side resistance** while cycling the SelectShift™ downshift switch.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
10	—	11	—

Is the resistance less than 1.5 ohms when applied and greater than 10,000 ohms when released?

Yes	INSTALL a new selector lever. REFER to Selector Lever.
No	INSTALL a new SelectShift™ switch. REFER to Selector Lever Knob.