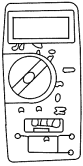
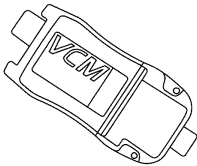
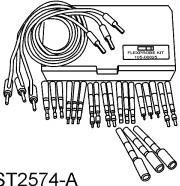


## DIAGNOSIS AND TESTING

### Instrument Cluster

#### Special Tool(s)

 <p>ST1137-A</p>	73III Automotive Meter 105-R0057 or equivalent
 <p>ST2834-A</p>	Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) software with appropriate hardware, or equivalent scan tool
 <p>ST2574-A</p>	Flex Probe Kit 105-R025C or equivalent

#### Principles of Operation

When installing a new instrument cluster, it is necessary to upload the module configuration information to the scan tool. Following installation of the instrument cluster, download the module configuration information from the scan tool into the new instrument cluster. Refer to Section 418-01.

The following items are configurable:

- Speedometer calibration
- Brake system (base, anti-lock brake system (ABS), ABS/traction control [TC])
- Door ajar
- Shift indicator lamp
- Daytime running lamps (DRL)
- Door ajar warning chime
- Overspeed warning chime
- Back-up warning chime
- Key in warning chime
- Security system

The instrument cluster receives the information over the controller area network (CAN) circuits. The instrument cluster carries out a display prove-out to verify that the warning/indicator lamps and monitored systems are operating correctly. When the ignition switch is turned to the ON position, the charging system warning indicator, the low oil pressure warning indicator, and the malfunction indicator lamp (MIL) illuminate until the engine is started and operating normally. The safety belt warning indicator proves out for 65 seconds or until the safety belt is fastened.

Each time the ignition switch is turned from the OFF to the ON positions, the following instrument cluster warning indicators prove out for 3 seconds:

- ABS warning indicator
- Air bag warning indicator (6 seconds)
- BRAKE warning indicator
- Fail safe cooling warning indicator
- Low fuel warning indicator
- Traction control indicator
- Anti-theft indicator
- Check fuel cap warning indicator
- Wrench warning indicator
- Tire pressure monitoring system (TPMS) warning indicator

#### Instrument Cluster Gauges

##### Tachometer

The instrument cluster receives the tachometer data from the powertrain control module (PCM) over the communication network and commands the tachometer pointer between 0 and 7,000 rpm (4.0L engines), or between 0 and 8,000 rpm (4.6L engines) according to the data.

##### Speedometer

The instrument cluster receives the vehicle speed information from the PCM over the communication network and displays it on the speedometer gauge. If the instrument cluster receives no vehicle speed signal after 1 second, the speedometer defaults to 0.

## DIAGNOSIS AND TESTING (Continued)

### Odometer

The instrument cluster receives an odometer message from the PCM and stores the mileage in memory. When the instrument cluster fails to receive the odometer message for more than 2 seconds, the odometer displays dashes.

### Fuel Gauge

The instrument cluster receives the fuel level signal from the fuel level sensor, part of the fuel pump module. The fuel level sensor measures variable resistance in the fuel tank depending on the current fuel level. When the fuel level is low, the resistance in the unit is low (15 ohms  $\pm$  2 ohms). When the fuel level is high, the resistance in the unit is high (160 ohms  $\pm$  4 ohms).

The instrument cluster uses 4 different operating modes to calculate the fuel level:

- Key OFF fueling
- Anti-slosh (default mode)
- Key ON fueling
- Recovery

After a fuel fill up, the time for the fuel gauge to move from empty (E) to full (F) ranges from 2 seconds to 55 minutes depending on which operating mode the fuel gauge is in.

The key OFF fueling mode (2 seconds to read empty [E] to full [F]) requires 3 conditions be met:

- The key must be in the OFF position throughout the entire refueling of the vehicle.
- At least 15% of the vehicle's fuel capacity must be added to the fuel tank.
- The instrument cluster must receive a valid key ON fuel sender reading within 1 second of the key being put into the RUN position. The key ON sample readings are considered valid if the fuel sender reading is between 15 ohms  $\pm$  2 ohms and 160 ohms  $\pm$  4 ohms.
- If these conditions are not met, the fuel gauge stays in the anti-slosh mode, which results in a slow to read full (F) event.

The default fuel gauge mode is called the anti-slosh mode. To prevent fuel gauge changes from fuel slosh (gauge instability due to changes in fuel sender readings caused by fuel moving around in the tank), the fuel gauge takes approximately 55 minutes to go from empty (E) to full (F).

The key ON fueling mode (approximately 90 seconds to read empty [E] to full [F]) requires 3 conditions be met:

- The transmission is in PARK (P) (automatic transmissions), or the parking brake applied (manual transmissions).
- The key is in the RUN position.
- At least 15% of the vehicle's fuel capacity must be added to the fuel tank.

In key ON fueling mode, a 30 second timer activates after the transmission is put into the PARK (P) position (automatic transmissions) or when the parking brake is applied (manual transmissions). When the 30 second time has elapsed and at least 15% of the vehicle's fuel capacity has been added, the fuel gauge response time is 90 seconds to read from empty (E) to full (F). When the transmission is shifted out of PARK (P) or the parking brake is released, the fuel gauge strategy reverts to the anti-slosh mode. The key ON fueling mode prevents slow to read full events from happening if the customer refuels the vehicle with the key in the RUN position.

Recovery mode is incorporated into the instrument cluster strategy to recover from missing fuel level inputs during a refueling event. Missing fuel level input result from intermittent opens in the fuel sender or its circuits. Recovery mode (empty [E] to full [F] approximately 20 minutes) is initiated when the following 2 conditions are met:

- The instrument cluster is in the anti-slosh (default) mode.
- The actual fuel level in the tank is greater than what is being displayed by the fuel gauge.

### Engine Coolant Temperature Gauge

The PCM receives the engine coolant temperature status through hardwired circuitry to the engine coolant temperature (ECT) sensor. The instrument cluster receives the engine coolant temperature data from the PCM over the communication network. The instrument cluster monitors the engine coolant temperature data received from the PCM and commands the engine coolant temperature gauge pointer.

### Voltage Gauge

The voltage gauge displays the system battery voltage as measured at the instrument cluster run input circuit.

## DIAGNOSIS AND TESTING (Continued)

### Oil Pressure Gauge

The smart junction box (SJB) is hardwired to the oil pressure switch. The oil pressure switch unit consists of a diaphragm and contact points, which are normally open. When there is low (under 41 kPa [6 psi]) or no oil pressure, the oil pressure switch remains open, removing the ground to the SJB. When sufficient oil pressure exists, the oil pressure switch closes providing a ground signal to the SJB. The SJB monitors the oil pressure ground signal and sends a message to the instrument cluster to operate the oil pressure gauge according to the engine oil pressure.

### Boost Gauge (GT 500 Only)

The boost gauge measures the amount of engine boost provided by the supercharger in pounds per square inch (PSI). The instrument cluster receives the boost gauge data from the powertrain control module (PCM) over the high speed controller area network (CAN) communication bus lines.

### Indicators

#### Low Fuel Warning Indicator

The low fuel warning indicator is controlled by the instrument cluster and warns the driver when the fuel level is 1/16 of a tank or lower.

#### Check Fuel Cap Warning Indicator

The PCM monitors pressure in the fuel evaporative system and detects massive or critical losses of pressure. When a critical loss of pressure in the fuel evaporative system is detected, the PCM provides a message over the communication network and the instrument cluster illuminates the check fuel cap warning indicator.

#### BRAKE Warning Indicator

The brake warning indicator alerts the driver if any of the following brake system conditions are present: the parking brake is set, the brake fluid level is low, the ABS module detects a base brake system failure, there is a loss of communication between the instrument cluster and the SJB, or there is a loss of communication between the instrument cluster and the ABS module.

### Safety Belt Warning Indicator

The safety belt warning indicator informs the driver that his/her safety belt and/or the front passengers safety belt is unbuckled. The first 65 seconds after the ignition switch transitions from OFF or ACC to RUN or START, the safety belt warning indicator and the associated chime are used as a reminder to the driver that the front row safety belts are not buckled. In this first 65 seconds the indicator illuminates when the driver and/or front passenger safety belt is unbuckled (with a person in the seat) and turns off whenever the safety belt(s) in the occupied front row seat(s) is buckled. The indicator illuminates again if a safety belt is unbuckled after both are buckled and the 65 seconds has not yet expired. After 65 seconds, the indicator turns off regardless of the front row safety belts status.

### Anti-Lock Brake System (ABS) Warning Indicator

The ABS warning indicator informs the driver of a malfunction in the ABS system. Inputs are provided by the ABS module over the communication network. For additional information, refer to Section 206-09.

### Malfunction Indicator Lamp (MIL)

The MIL is illuminated when a DTC is detected by the PCM. The instrument cluster receives the MIL data from the PCM through the communication network.

### Wrench Warning Indicator

The PCM monitors the electronic throttle control (ETC) system and provides the instrument cluster with the ETC status over the communication network. When a system concern is detected, the PCM provides the instrument cluster with a signal commanding the instrument cluster to illuminate the wrench indicator or display a message if equipped with a message center.

### High Beam Indicator

When the high beams are turned on, the SJB sends a signal to the instrument cluster through the communication network to illuminate the high beam indicator.

### Turn Indicators

The SJB sends a message to the instrument cluster over the communication network when the multifunction switch is in the RH and LH turn signal position. When the multifunction switch is in the RH or LH turn signal position, the instrument cluster flashes the RH or LH turn indicators.

**DIAGNOSIS AND TESTING (Continued)****Air Bag Warning Indicator**

The air bag warning indicator is used to provide a status of the supplemental restraint system. The instrument cluster receives a message from the restraint control module (RCM) over the hard wired circuits. If an air bag system concern is detected, a DTC is logged and the RCM sends a message to the instrument cluster to illuminate the air bag warning indicator.

**Speed Control Indicator**

The instrument cluster receives the speed control data from the PCM through the communication network. When the speed control is engaged, the PCM provides a signal to the instrument cluster to illuminate the speed control indicator.

**Charging System Warning Indicator**

The PCM constantly monitors the generator regulator output. When the PCM detects a continuous high or low output signal, or when the ignition switch is ON and the engine is OFF, the PCM sends a message over the communication network to the instrument cluster to illuminate the charging system warning indicator. When the ignition switch is in the ON position, with the engine running, and the PCM determines that the set point for the regulator has been met, the PCM sends a message to the instrument cluster to turn off the charging system warning indicator.

**Failsafe Cooling Warning Indicator**

The failsafe cooling warning indicator informs the driver the engine coolant is overheating due to loss of engine coolant fluid or other cause, and the PCM is taking on limp home strategy. The other purpose is to inform the driver the engine cannot be cooled enough with the limp home strategy and the engine is about to be shut down by the PCM. The failsafe cooling information is sent from the PCM to the instrument cluster to illuminate the failsafe cooling warning indicator.

**Overdrive Off (O/D OFF) Indicator**

The instrument cluster receives the overdrive off signal from the PCM through the communication network. When the transmission overdrive is selected off, the overdrive off switch provides a ground signal to the PCM. The PCM, upon receipt of the overdrive off ground signal, provides an overdrive off signal to the instrument cluster and the instrument cluster illuminates the overdrive off indicator.

**Daytime Running Lamp (DRL) Indicator**

When the DRL is on, the SJB sends a message over the communication network, to the instrument cluster, illuminating the DRL indicator.

**Low Oil Pressure Warning Indicator**

The SJB is hardwired to the oil pressure switch. The oil pressure switch unit consists of a diaphragm and contact points, which are normally open. When there is low (under 41 kPa [6 psi]) or no oil pressure, the oil pressure switch remains open, removing the ground to the SJB. When sufficient oil pressure exists, the oil pressure switch closes, providing a ground signal to the SJB. The SJB monitors the oil pressure ground signal and sends a message to the instrument cluster to turn the indicator on or off according to the engine oil pressure.

**Door/Trunk Ajar Warning Indicator**

The door ajar indicator informs the driver that one or more doors, or the decklid is open while the ignition switch is in the RUN position. When a door or decklid is ajar, the SJB sends a message to the instrument cluster to illuminate the door ajar indicator.

**Traction Control Indicator**

The traction control indicator flashes when the vehicle traction control is in active mode or is being controlled by the ABS module. The instrument cluster receives the traction control signal from the ABS module through the communication network. The instrument cluster monitors the traction control signal, and when the ABS module detects a traction control concern, the instrument cluster illuminates the traction control indicator.

**Anti-Theft Indicator**

The anti-theft indicator is used to deter potential thefts of the vehicle by providing a conspicuous indicator that flashes every 2 seconds with the ignition off when the passive anti-theft system (PATS) is armed. The instrument cluster receives the anti-theft status from the PCM over the high speed CAN communication bus lines.

**Shift Indicator (GT 500 Only)**

The shift indicator is used to inform the driver of shift points that provide the highest fuel economy. The PCM uses engine throttle position, engine load and engine rpm information to determine what the optimum shift point is to provide the greatest fuel economy.

## DIAGNOSIS AND TESTING (Continued)

### Performance Shift Warning Indicator (GT 500 Only)

The performance shift warning indicator shares the SVT logo on the tachometer. The performance shift indicator is configurable on or off and uses engine rpm to determine when to illuminate. The SVT logo is normally backlight in red when the performance indicator is configured off. When the performance shift warning indicator is configured on, the SVT logo red backlighting is turned off. When a preset engine rpm is reached, the SVT logo illuminates orange to alert the driver of the selected shift point. The performance shift warning indicator can be configured on or off through the message center. Refer to Section 413-08, Message Center Configuration.

### Tire Pressure Monitoring System (TPMS) Warning Indicator

The tire pressure warning indicator alerts the driver that one or more of the tires on the vehicle has low tire pressure or is flat. The tire pressure monitoring system (TPMS) system consists of a tire pressure sensor and a transmitter located on each tire. The SJB receives the data from each tire and transmits the status over the medium speed CAN communication bus lines to the instrument cluster to indicate whether the low tire pressure warning indicator telltale should be illuminated, flashed, or turned off.

### Inspection and Verification

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

#### Visual Inspection Chart

Mechanical	Electrical
<ul style="list-style-type: none"> <li>• Fuel tank</li> <li>• Engine coolant level</li> <li>• Engine oil level</li> <li>• Brake fluid level</li> </ul>	<ul style="list-style-type: none"> <li>• Smart junction box (SJB) fuse(s):               <ul style="list-style-type: none"> <li>— 8 (10A)</li> <li>— 16 (5A)</li> <li>— 19 (5A)</li> </ul> </li> <li>• Circuitry</li> <li>• Instrument cluster</li> </ul>

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. **NOTE:** Make sure to use the latest scan tool software release.

If the cause is not visually evident, connect the scan tool to the data link connector (DLC).

5. **NOTE:** The vehicle communication module (VCM) LED prove-out confirms power and ground from the DLC are provided to the VCM.

If the scan tool does not communicate with the VCM:

- Check the VCM connection to the vehicle.
  - Check the scan tool connection to the VCM.
  - Refer to Section 418-00, No Power To The Scan Tool, to diagnose no communication with the scan tool.
6. If the scan tool does not communicate with the vehicle:
    - Verify the ignition key is in the ON position.
    - Verify the scan tool operation with a known good vehicle.
    - Refer to Section 418-00 to diagnose no response from the powertrain control module (PCM).
  7. Carry out the network test:
    - If the scan tool responds with no communication for one or more modules, refer to Section 418-00.
    - If the network test passes, retrieve and record the continuous memory DTCs.
  8. Clear the continuous DTCs and carry out the self-test diagnostics for the instrument cluster, anti-lock brake system (ABS) module, powertrain control module (PCM), smart junction box (SJB) and restraints control module (RCM).
  9. If the DTCs retrieved are related to the concern, go to the Instrument Cluster Diagnostic Trouble Code (DTC) Index, the Smart Junction Box (SJB) Diagnostic Trouble Code (DTC) Index, or the Powertrain Control Module (PCM) Diagnostic Trouble Code (DTC) Index.
  10. If no DTCs related to the concern are retrieved, GO to [Symptom Chart](#).

**DIAGNOSIS AND TESTING (Continued)****Instrument Cluster Diagnostic Trouble Code (DTC) Index**

<b>DTC</b>	<b>Description</b>	<b>Action</b>
B1202	Fuel Sender Circuit Open (fuel pump module sender)	GO to Pinpoint Test A.
B1204	Fuel Sender Circuit Short To Ground (fuel pump module sender)	GO to Pinpoint Test A.
B1205	EIC Switch-1 Assembly Circuit Failure	If equipped with a base instrument cluster, VERIFY that the instrument cluster bezel is aligned correctly and the SELECT/RESET button is not binding. REPAIR as necessary. If the switch is not binding, INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. If equipped with a message center, REFER to Section 413-08.
B1317	Battery Voltage High	CLEAR the DTCs. REPEAT the self-test. If DTC B1317 is retrieved, REFER to Section 414-00 to diagnose the charging system for overcharging.
B1318	Battery Voltage Low	CLEAR the DTCs. REPEAT the self-test. If DTC B1318 is retrieved, REFER to Section 414-00 to diagnose the charging system for low voltage.
B1342	ECU is Faulted	INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.
B1556	Ignition RUN/START Circuit Open	GO to Pinpoint Test AD.
B1557	Ignition RUN/START Circuit Short to Battery	GO to Pinpoint Test AE.
B2143	NVM Memory Failure	CLEAR the DTCs. REPEAT the self-test. If the DTC is still present, INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.
B2477	Module Configuration Error	RECONFIGURE the module. REFER to Section 418-01. CLEAR the DTCs. REPEAT the self-test. If DTC B2477 returns, INSTALL a new instrument cluster. REFER to Instrument Cluster in this section.
B2627	Fuel Sender Circuit Open #2 (remote fuel sender)	GO to Pinpoint Test A.
B2628	Fuel Sender Circuit Short to Ground #2 (remote fuel sender)	GO to Pinpoint Test A.
B2879	Fuel Tank Jet Pump Fault	GO to Pinpoint Test A.
U0073	Control Module Communication Off Bus	REFER to Section 418-00.
U2050	No Application Present	REFLASH the instrument cluster. If the DTC occurs after a software reflash, REFLASH the instrument cluster again. If the DTC reappears after each attempt to reflash, INSTALL a new instrument cluster. REFER to Section 413-01. TEST the system for normal operation.
All other DTCs	—	REFER to Section 419-10.

**DIAGNOSIS AND TESTING (Continued)****Smart Junction Box (SJB) Diagnostic Trouble Code (DTC) Index**

DTC	Description	Action
B1201	Fuel Sender Circuit Failure (fuel pump module sender)	GO to Pinpoint Test A.
B1202	Fuel Sender Circuit Open (fuel pump module sender)	GO to Pinpoint Test A.
B2479	Brake Park Switch Circuit Short to Ground	GO to Pinpoint Test K.
B2627	Fuel Sender Circuit Open #2 (remote fuel sender)	GO to Pinpoint Test A.
B2628	Fuel Sender Circuit Short to Ground #2 (remote fuel sender)	GO to Pinpoint Test A.
C1189	Brake Fluid Level Sensor Input Short Circuit to Ground	GO to Pinpoint Test K.
All other DTCs	—	REFER to Section 419-10.

**Powertrain Control Module (PCM) Diagnostic Trouble Code (DTC) Index**

DTC	Description	Action
P0457	Evaporative Emission System Leak Detected (fuel cap loose/off)	GO to Pinpoint Test J.
All other DTCs	—	REFER to the <a href="#">Powertrain Control/Emissions Diagnosis (PC/ED) manual</a> .

**Symptom Chart****Symptom Chart**

Condition	Possible Sources	Action
<ul style="list-style-type: none"> <li>No communication with the instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>Fuse(s)</li> <li>Circuitry</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>REFER to Section 418-00.</li> </ul>
<ul style="list-style-type: none"> <li>Incorrect fuel gauge indication</li> </ul>	<ul style="list-style-type: none"> <li>Circuitry</li> <li>Fuel tank</li> <li>Fuel pump module</li> <li>Remote fuel sender</li> <li>Smart junction box (SJB)</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test A.</li> </ul>
<ul style="list-style-type: none"> <li>The boost gauge is inoperative (GT 500 only)</li> </ul>	<ul style="list-style-type: none"> <li>Powertrain control module (PCM)</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test B.</li> </ul>
<ul style="list-style-type: none"> <li>Incorrect temperature gauge indication</li> </ul>	<ul style="list-style-type: none"> <li>PCM</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test C.</li> </ul>
<ul style="list-style-type: none"> <li>Incorrect voltage gauge indication</li> </ul>	<ul style="list-style-type: none"> <li>PCM</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test D.</li> </ul>
<ul style="list-style-type: none"> <li>The tachometer is inoperative</li> </ul>	<ul style="list-style-type: none"> <li>PCM</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test E.</li> </ul>
<ul style="list-style-type: none"> <li>Incorrect oil pressure gauge indication</li> </ul>	<ul style="list-style-type: none"> <li>Circuitry</li> <li>Engine oil pressure switch</li> <li>SJB</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test F.</li> </ul>
<ul style="list-style-type: none"> <li>The speedometer/odometer is inoperative</li> </ul>	<ul style="list-style-type: none"> <li>PCM</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test G.</li> </ul>

**DIAGNOSIS AND TESTING (Continued)****Symptom Chart (Continued)**

<b>Condition</b>	<b>Possible Sources</b>	<b>Action</b>
<ul style="list-style-type: none"> <li>The safety belt warning indicator is inoperative/does not operate correctly</li> </ul>	<ul style="list-style-type: none"> <li>Circuitry</li> <li>Restraint control module (RCM)</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test H.</li> </ul>
<ul style="list-style-type: none"> <li>The O/D off indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>PCM</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test I.</li> </ul>
<ul style="list-style-type: none"> <li>The check fuel cap warning indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>PCM</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test J.</li> </ul>
<ul style="list-style-type: none"> <li>The brake warning indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>Circuitry</li> <li>Parking brake switch</li> <li>Brake fluid level switch</li> <li>Anti-lock brake system (ABS) module</li> <li>SJB</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test K.</li> </ul>
<ul style="list-style-type: none"> <li>The charging system warning indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>Charging system</li> <li>PCM</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test L.</li> </ul>
<ul style="list-style-type: none"> <li>The high beam indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>SJB</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test M.</li> </ul>
<ul style="list-style-type: none"> <li>The turn signal indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>SJB</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test N.</li> </ul>
<ul style="list-style-type: none"> <li>The anti-lock brake system (ABS) warning indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>ABS module</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test O.</li> </ul>
<ul style="list-style-type: none"> <li>The low oil pressure warning indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>Circuitry</li> <li>Engine oil pressure switch</li> <li>SJB</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test P.</li> </ul>
<ul style="list-style-type: none"> <li>The malfunction indicator lamp (MIL) is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>PCM</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test Q.</li> </ul>
<ul style="list-style-type: none"> <li>The air bag warning indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>Circuitry</li> <li>Restraints control module (RCM)</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test R.</li> </ul>
<ul style="list-style-type: none"> <li>The speed control indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>PCM</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test S.</li> </ul>
<ul style="list-style-type: none"> <li>The wrench warning indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>PCM</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test T.</li> </ul>
<ul style="list-style-type: none"> <li>The failsafe cooling warning indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>PCM</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test U.</li> </ul>
<ul style="list-style-type: none"> <li>The door ajar warning indicator is inoperative/does not operate correctly</li> </ul>	<ul style="list-style-type: none"> <li>SJB</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test V.</li> </ul>
<ul style="list-style-type: none"> <li>The traction control indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>ABS module</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test W.</li> </ul>
<ul style="list-style-type: none"> <li>The daytime running lamps (DRL) indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>SJB</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test X.</li> </ul>
<ul style="list-style-type: none"> <li>The low fuel warning indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test Y.</li> </ul>



**DIAGNOSIS AND TESTING (Continued)****Symptom Chart (Continued)**

Condition	Possible Sources	Action
<ul style="list-style-type: none"> <li>The performance shift warning indicator is never/always on (GT 500 only)</li> </ul>	<ul style="list-style-type: none"> <li>PCM</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test Z.</li> </ul>
<ul style="list-style-type: none"> <li>The shift indicator is never/always on (GT 500 only)</li> </ul>	<ul style="list-style-type: none"> <li>PCM</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test AA.</li> </ul>
<ul style="list-style-type: none"> <li>The tire pressure monitoring system (TPMS) warning indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>TPMS concern</li> <li>SJB</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test AB.</li> </ul>
<ul style="list-style-type: none"> <li>The anti-theft indicator is never/always on</li> </ul>	<ul style="list-style-type: none"> <li>PCM</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test AC.</li> </ul>
<ul style="list-style-type: none"> <li>The instrument cluster is inoperative</li> </ul>	<ul style="list-style-type: none"> <li>Fuse(s)</li> <li>Circuitry</li> <li>Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test AD.</li> </ul>

**Pinpoint Tests****Pinpoint Test A: Incorrect Fuel Gauge Indication**

Refer to [Wiring Diagrams Cell 60, Instrument Cluster for schematic and connector information.](#)

**NOTE:** The fuel pump module may also be called the fuel tank unit.

**NOTE:** The remote fuel sender may also be called the fuel sender or fuel level sensor.

**Normal Operation**

The fuel tank is a saddle tank design with variable resistance senders in each side of the tank. The fuel pump module and the remote fuel sender are driven by floats that provide resistances related to the fuel level on each side of the tank to the smart junction box (SJB). The fuel pump module and the remote fuel sender uses an approximate resistance range between 15 ohms  $\pm$  2 ohms at empty (E) and 160 ohms  $\pm$  4 ohms at full (F). The fuel pump module is hardwired to the SJB through the signal circuit 1356 (LG/VT) and the return circuit 1357 (LB/YE). The remote fuel sender is hardwired to the SJB through the signal circuit 29 (YE/WH) and the return circuit 1357 (LB/YE). The SJB monitors the resistance readings that are sent to the SJB from the fuel pump module and the remote fuel sender and sends the instrument cluster a message over the communication network to command the fuel gauge with a corresponding movement of the pointer. If the remote fuel sender is open, the fuel gauge defaults to the fuel pump sender value only and the fuel gauge indicates E to 1/2 tank. If the fuel pump sender is open, the fuel gauge defaults to the empty position.

**DIAGNOSIS AND TESTING (Continued)**

**NOTE:** For system testing during the pinpoint test, make sure to use only the SJB self-test and SJB DTCs B1201, B1202, B2627 and B2628. Once the repairs are complete, clear the SJB and instrument cluster DTCs.

The only the instrument cluster DTC used for diagnosis is B2879.

DTC B1201 — sets in the SJB on-demand if the SJB detects a short to ground on the input from circuit 1356 (LG/VT) or if circuit 1356 (LG/VT) is shorted to circuit 1357 (LB/YE).

DTC B1202 — sets in the SJB on-demand if the SJB detects an open or short to voltage on the input from circuits 1356 (LG/VT) or 1357 (LB/YE).

DTC B2627 — sets in the SJB on-demand if the SJB detects an open or short to voltage on the input from circuits 29 (YE/WH) or 1357 (LB/YE).

DTC B2628 — sets in the SJB on-demand if the SJB detects a short to ground on the input from circuit 29 (YE/WH) or if circuit 29 (YE/WH) is shorted to circuit 1357 (LB/YE).

DTC B1202 — is a continuous DTC set in the instrument cluster if the message from the SJB indicates an open or short to voltage on the input from circuits 1356 (LG/VT) or 1357 (LB/YE) for 33 seconds.

DTC B1204 — is a continuous DTC set in the instrument cluster if the message from the SJB indicates a short to ground on the input from circuit 1356 (LG/VT) or if circuit 1356 (LG/VT) is shorted to circuit 1357 (LB/YE) for 33 seconds.

DTC B2627 — is a continuous DTC set in the instrument cluster if the message from the SJB indicates an open or short to voltage on the input from circuits 29 (YE/WH) or 1357 (LB/YE).

DTC B2628 — is a continuous DTC set in the instrument cluster if the message from the SJB indicates a short to ground on the input from circuit 29 (YE/WH) or if circuit 29 (YE/WH) is shorted to circuit 1357 (LB/YE).

**NOTE:** Normal operation of the fuel delivery system allows the remote side of the fuel tank (the side opposite the fuel filler hose inlet) to have less fuel than the fuel pump module side of the tank (the side with the fuel filler hose inlet).

DTC B2879 — is a continuous DTC set in the instrument cluster if the fuel level message from the SJB indicates a large discrepancy in the amount of fuel between the fuel pump module and the remote fuel sender sides of the tank. The fuel level in the remote fuel sender side of the tank (the side opposite the fuel filler hose inlet) has significantly more fuel than the fuel pump module side of the tank (the side with the fuel filler hose inlet).

**Possible Causes**

- Circuit 29 (YE/WH) short to circuit 1357 (LB/YE)
- Circuit 29 (YE/WH) open, short to ground or voltage
- Circuit 1356 (LG/VT) open, short to ground or voltage
- Circuit 1356 (LG/VT) short to circuit 1357 (LB/YE)
- Circuit 1357 (LB/YE) open or voltage
- Fuel pump module
- Remote fuel sender
- SJB
- Fuel tank
- Instrument cluster

**PINPOINT TEST A: INCORRECT FUEL GAUGE INDICATION**

 **CAUTION:** Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

Test Step		Result / Action to Take
<b>A1</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER FUEL GAUGE ACTIVE COMMAND USING THE SCAN TOOL</b>	
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster fuel level control active command and scroll the fuel level at: 0%, 50%, and 100%.</li> <li>• <b>Does the fuel gauge needle start at empty (E), move to half at 50%, and full (F) at 100%?</b></li> </ul>	<p><b>Yes</b> GO to <b>A2</b>.</p> <p><b>No</b> GO to <b>A22</b>.</p>

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

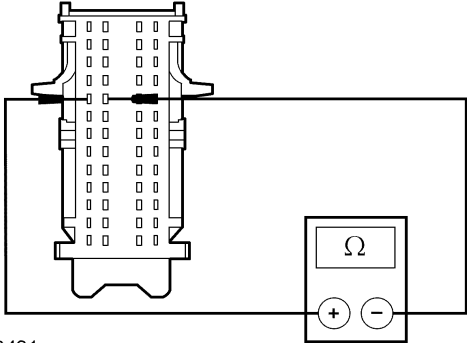
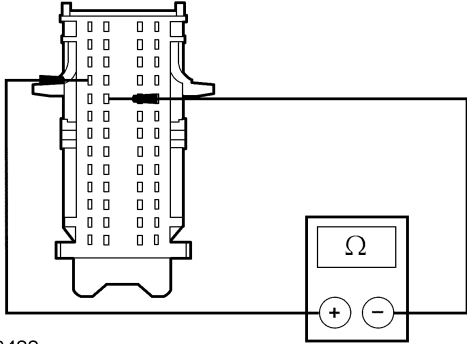
**PINPOINT TEST A: INCORRECT FUEL GAUGE INDICATION (Continued)**

	Test Step	Result / Action to Take
A2	<p><b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND INSTRUMENT CLUSTER AND SJB SELF-TESTS</b></p>	<p><b>Yes</b>                      For DTCs B1201 or B2628, GO to <b>A3</b>.                      If both DTCs B1202 and B2627 are retrieved, GO to <b>A7</b>.                      For DTC B1202, GO to <b>A8</b>.                      For DTC B2627, GO to <b>A13</b>.                      For DTC B2879 (instrument cluster only), GO to <b>A17</b>.</p> <p><b>No</b>                      GO to <b>A17</b>.</p>
A3	<p><b>CHECK THE FUEL SENDER FOR A SHORT TO GROUND</b></p> <p><b>NOTE:</b> The fuel pump module may also be called the fuel tank unit.  <b>NOTE:</b> The remote fuel sender may also be called the fuel sender or fuel level sensor.</p> <ul style="list-style-type: none"> <li>• Disconnect: Fuel Pump Module <b>C433</b> (4.0L and 4.6L) or <b>C4331</b> (5.4L) (DTC B1201 or B1204) or Remote Fuel Sender <b>C434</b> (DTC B2628).</li> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: SJB On-Demand Self-Test.</li> <li>• <b>NOTE:</b> Make sure to use only the SJB self-test and SJB retrieved DTCs for this step. Once the repairs are complete, clear the SJB and instrument cluster DTCs.</li> </ul> <p><b>NOTE:</b> It is normal for DTCs B1201 and B2628 to be present during this step and should be ignored.                      Clear the SJB DTCs. Repeat the SJB on-demand self-test.</p> <ul style="list-style-type: none"> <li>• <b>Is DTC B1202 or B2627 retrieved?</b></li> </ul>	<p><b>Yes</b>                      For DTC B1201, GO to <b>A20</b>.                      For DTC B2628, INSTALL a new remote fuel sender. REFER to Section 310-01. CLEAR the DTCs. REPEAT the self-test.</p> <p><b>No</b>                      GO to <b>A4</b>.</p>
A4	<p><b>CHECK CIRCUITS 29 (YE/WH) OR 1356 (LG/VT) FOR A SHORT TO GROUND</b></p> <ul style="list-style-type: none"> <li>• Key in OFF position.</li> <li>• Disconnect: SJB <b>C2280c</b>.</li> <li>• Measure the resistance between the SJB <b>C2280c-43</b>, circuit 29 (YE/WH), harness side and ground; or between the SJB <b>C2280c-44</b>, circuit 1356 (LG/VT), harness side and ground.</li> </ul> <div data-bbox="297 1291 782 1633" style="text-align: center;"> <p>The diagram shows a cross-section of a multi-pin connector. A wire from a multimeter is connected to one of the terminals. Another wire from the multimeter is connected to a ground symbol. The multimeter display shows the Greek letter Omega (Ω) and two terminals labeled '+' and '-'.</p> </div> <p>N0053425</p> <ul style="list-style-type: none"> <li>• <b>Is the resistance greater than 10,000 ohms?</b></li> </ul>	<p><b>Yes</b>                      For DTC B1201, GO to <b>A5</b>.                      For DTC B2628, GO to <b>A6</b>.</p> <p><b>No</b>                      REPAIR the circuit in question. CLEAR the DTCs. REPEAT the self-test.</p>

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

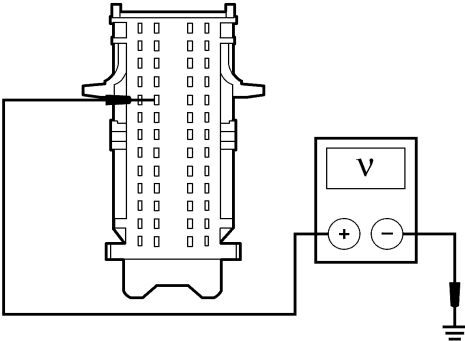
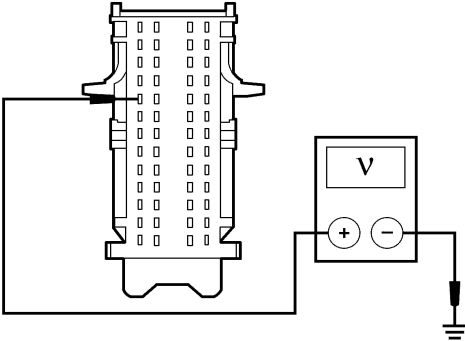
**PINPOINT TEST A: INCORRECT FUEL GAUGE INDICATION (Continued)**

Test Step		Result / Action to Take
<b>A5</b>	<p><b>CHECK CIRCUITS 1356 (LG/VT) AND 1357 (LB/YE) FOR A SHORT TOGETHER</b></p> <ul style="list-style-type: none"> <li>Measure the resistance between the SJB C2280c-31, circuit 1357 (LB/YE), harness side and the SJB C2280c-44, circuit 1356 (LG/VT), harness side.</li> </ul>  <p>N0053431</p> <ul style="list-style-type: none"> <li><b>Is the resistance greater than 10,000 ohms?</b></li> </ul>	<p><b>Yes</b> GO to <b>A21</b>.</p> <p><b>No</b> REPAIR the circuit in question. CLEAR the DTCs. REPEAT the self-test.</p>
<b>A6</b>	<p><b>CHECK CIRCUITS 29 (YE/WH) AND 1357 (LB/YE) FOR A SHORT TOGETHER</b></p> <ul style="list-style-type: none"> <li>Measure the resistance between the SJB C2280c-43, circuit 29 (YE/WH), harness side and the SJB C2280c-31, circuit 1357 (LB/YE), harness side.</li> </ul>  <p>N0053488</p> <ul style="list-style-type: none"> <li><b>Is the resistance greater than 10,000 ohms?</b></li> </ul>	<p><b>Yes</b> GO to <b>A21</b>.</p> <p><b>No</b> REPAIR the circuit in question. CLEAR the DTCs. REPEAT the self-test.</p>
<b>A7</b>	<p><b>CHECK THE FUEL LEVEL RETURN CIRCUITRY</b></p> <p><b>NOTE:</b> Make sure to use only the SJB self-test and SJB retrieved DTCs for this step. Once the repairs are complete, clear the SJB and instrument cluster DTCs.</p> <ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: SJB C2280c.</li> <li>Key in ON position.</li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

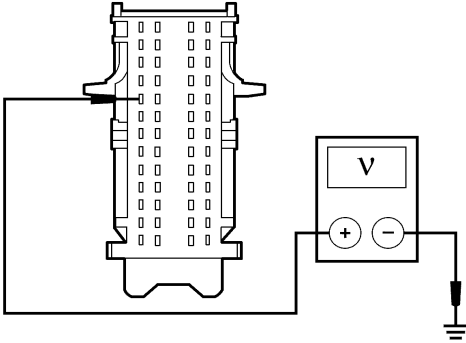
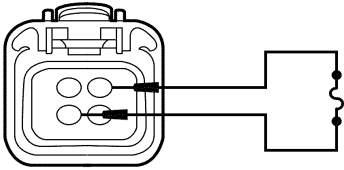
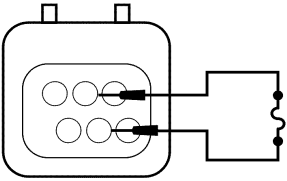
**PINPOINT TEST A: INCORRECT FUEL GAUGE INDICATION (Continued)**

Test Step		Result / Action to Take
<b>A7</b>	<p><b>CHECK THE FUEL LEVEL RETURN CIRCUITRY (Continued)</b></p> <ul style="list-style-type: none"> <li>Measure the voltage between the SJB <a href="#">C2280c-31</a>, circuit 1357 (LB/YE), harness side and ground.</li> </ul>  <p>N0053427</p> <ul style="list-style-type: none"> <li><b>Is any voltage present?</b></li> </ul>	<p><b>Yes</b> REPAIR circuit 1357 (LB/YE) for a short to voltage. CLEAR the DTCs. REPEAT the self-test.</p> <p><b>No</b> REPAIR circuit 1357 (LB/YE) for an open. CLEAR the DTCs. REPEAT the self-test.</p>
<b>A8</b>	<p><b>CHECK THE FUEL PUMP MODULE CIRCUITRY FOR A SHORT TO VOLTAGE</b></p> <p><b>NOTE:</b> Make sure to use only the SJB self-test and SJB retrieved DTCs for this step. Once the repairs are complete, clear the SJB and instrument cluster DTCs.</p> <ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: SJB <a href="#">C2280c</a>.</li> <li>Key in ON position.</li> <li>Measure the voltage between the SJB <a href="#">C2280c-44</a>, circuit 1356 (LG/VT), harness side and ground.</li> </ul>  <p>N0053428</p> <ul style="list-style-type: none"> <li><b>Is any voltage present?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">A9</a>.</p> <p><b>No</b> GO to <a href="#">A10</a>.</p>
<b>A9</b>	<p><b>CHECK CIRCUIT 1356 (LG/VT) FOR A SHORT TO VOLTAGE</b></p> <ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: Fuel Pump Module <a href="#">C433</a> (4.0L and 4.6L) or <a href="#">C4331</a> (5.4L).</li> <li>Key in ON position.</li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

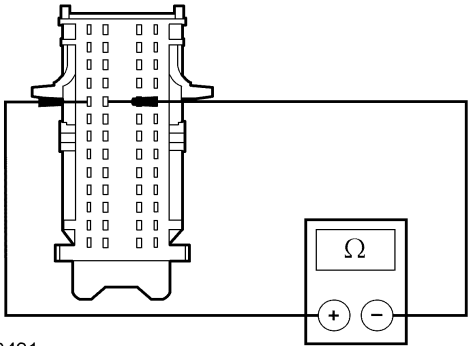
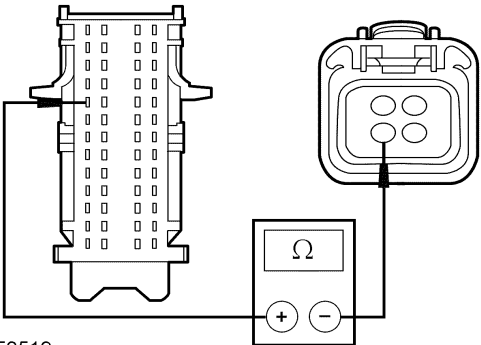
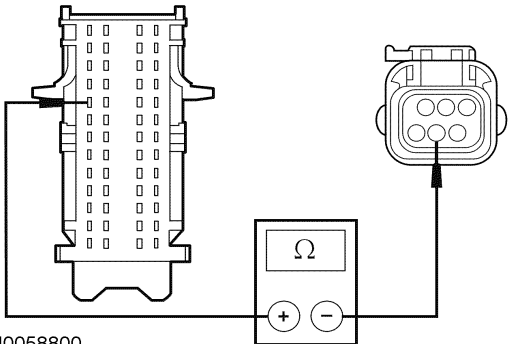
**PINPOINT TEST A: INCORRECT FUEL GAUGE INDICATION (Continued)**

Test Step		Result / Action to Take
<b>A9</b>	<p><b>CHECK CIRCUIT 1356 (LG/VT) FOR A SHORT TO VOLTAGE (Continued)</b></p> <ul style="list-style-type: none"> <li>Measure the voltage between the SJB <a href="#">C2280c-44</a>, circuit 1356 (LG/VT), harness side and ground.</li> </ul>  <p style="text-align: center;">N0053428</p> <ul style="list-style-type: none"> <li><b>Is any voltage present?</b></li> </ul>	<p><b>Yes</b> REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.</p> <p><b>No</b> INSTALL a new fuel pump module. REFER to Section 310-01. CLEAR the DTCs. REPEAT the self-test.</p>
<b>A10</b>	<p><b>CHECK THE FUEL PUMP MODULE CIRCUITRY FOR AN OPEN</b></p> <ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: Fuel Pump Module <a href="#">C433</a>.</li> <li>On 4.0L and 4.6L engines, connect a fused (5A) jumper wire between the fuel pump module <a href="#">C433-2</a>, circuit 1357 (LB/YE), harness side and the fuel pump module <a href="#">C433-4</a>, circuit 1356 (LG/VT), harness side.</li> </ul>  <p style="text-align: center;">N0053518</p> <ul style="list-style-type: none"> <li>On 5.4L engines, connect a fused (5A) jumper wire between the fuel pump module <a href="#">C4331-2</a>, circuit 1357 (LB/YE), harness side and the fuel pump module <a href="#">C4331-5</a>, circuit 1356 (LG/VT), harness side.</li> </ul>  <p style="text-align: center;">N0058799</p>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

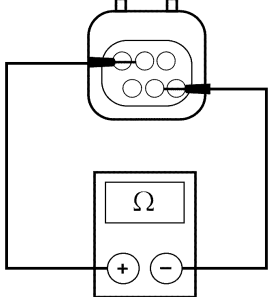
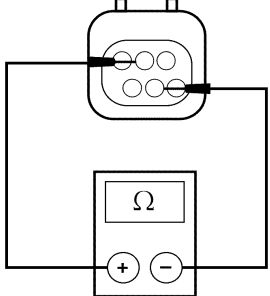
**PINPOINT TEST A: INCORRECT FUEL GAUGE INDICATION (Continued)**

Test Step		Result / Action to Take
<b>A10</b>	<p><b>CHECK THE FUEL PUMP MODULE CIRCUITRY FOR AN OPEN (Continued)</b></p> <ul style="list-style-type: none"> <li>Measure the resistance between the SJB C2280c-31, circuit 1357 (LB/YE), harness side; and between the SJB C2280c-44, circuit 1356 (LG/VT), harness side.</li> </ul>  <p>N0053431</p> <ul style="list-style-type: none"> <li>Is the resistance less than 5 ohms?</li> </ul>	<p><b>Yes</b> REMOVE the jumper wire. GO to <b>A12</b>.</p> <p><b>No</b> REMOVE the jumper wire. GO to <b>A11</b>.</p>
<b>A11</b>	<p><b>CHECK CIRCUIT 1356 (LG/VT) FOR AN OPEN</b></p> <ul style="list-style-type: none"> <li>On 4.0L and 4.6L engines, measure the resistance between the SJB C2280c-44, circuit 1356 (LG/WH), harness side and the fuel pump module C433-4, circuit 1356 (LG/WH), harness side.</li> </ul>  <p>N0053519</p> <ul style="list-style-type: none"> <li>On 5.4L engines, measure the resistance between the SJB C2280c-44, circuit 1356 (LG/WH), harness side and the fuel pump module C4331-5, circuit 1356 (LG/WH), harness side.</li> </ul>  <p>N0058800</p> <ul style="list-style-type: none"> <li>Is the resistance less than 5 ohms?</li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

**PINPOINT TEST A: INCORRECT FUEL GAUGE INDICATION (Continued)**

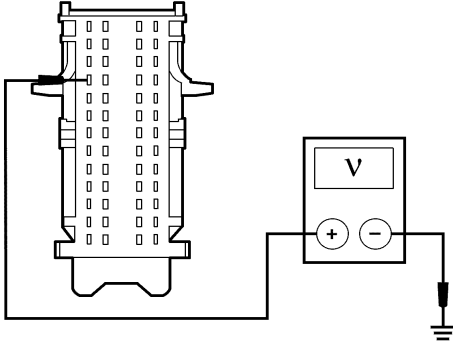
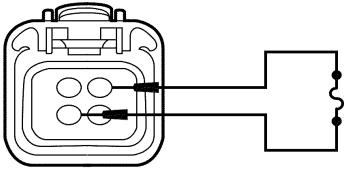
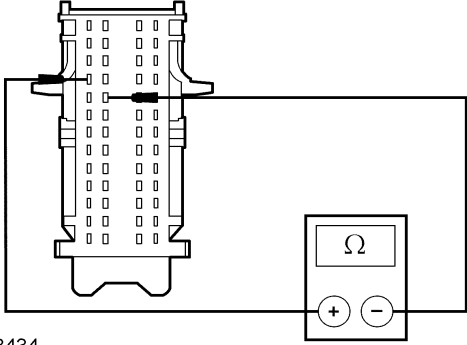
Test Step	Result / Action to Take
<p><b>A12 CHECK THE FUEL PUMP MODULE FOR AN OPEN</b></p> <p><b>NOTE:</b> The fuel pump module resistance varies from <math>15 \pm 2</math> ohms when empty (E) to <math>160 \pm 4</math> ohms when full (F).</p> <ul style="list-style-type: none"> <li>On 4.0L and 4.6L engines, measure the resistance between the fuel pump module C433 pin 2, component side and the fuel pump module C433 pin 4, component side.</li> </ul>  <p>N0058801</p> <ul style="list-style-type: none"> <li>On 5.4L engines, measure the resistance between the fuel pump module C4331 pin 2, component side and the fuel pump module C4331 pin 5, component side.</li> </ul>  <p>N0058801</p> <ul style="list-style-type: none"> <li><b>Is the resistance between 15 and 160 ohms?</b></li> </ul>	<p><b>Yes</b> GO to <b>A21</b>.</p> <p><b>No</b> GO to <b>A20</b>.</p>
<p><b>A13 CHECK CIRCUIT 29 (YE/WH) FOR A SHORT TO VOLTAGE</b></p> <p><b>NOTE:</b> Make sure to use only the SJB self-test and SJB retrieved DTCs for this step. Once the repairs are complete, clear the SJB and instrument cluster DTCs.</p> <ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: SJB <b>C2280c</b>.</li> <li>Key in ON position.</li> </ul>	

(Continued)



**DIAGNOSIS AND TESTING (Continued)**

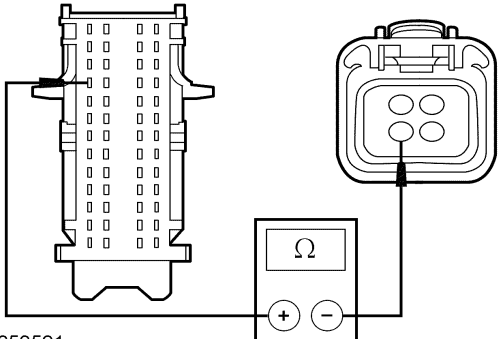
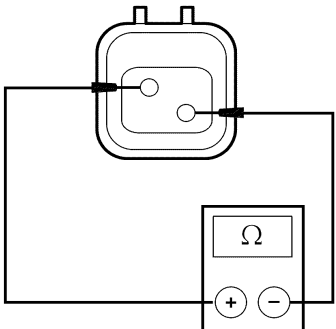
**PINPOINT TEST A: INCORRECT FUEL GAUGE INDICATION (Continued)**

Test Step		Result / Action to Take
<b>A13</b>	<b>CHECK CIRCUIT 29 (YE/WH) FOR A SHORT TO VOLTAGE (Continued)</b>	
<ul style="list-style-type: none"> <li>Measure the voltage between the SJB C2280c-43, circuit 29 (YE/WH), harness side and ground.</li> </ul>  <p>N0053433</p> <ul style="list-style-type: none"> <li><b>Is any voltage present?</b></li> </ul>		<p><b>Yes</b> REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.</p> <p><b>No</b> GO to <b>A14</b>.</p>
<b>A14</b>	<b>CHECK THE REMOTE FUEL SENDER CIRCUITRY FOR AN OPEN</b>	
<ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: Remote Fuel Sender C434.</li> <li>Connect a fused (5A) jumper wire between the remote fuel sender C434-2, circuit 1357 (LB/YE), harness side and the remote fuel sender C434-4, circuit 29 (YE/WH), harness side.</li> </ul>  <p>N0053518</p> <ul style="list-style-type: none"> <li>Measure the resistance between the SJB C2280c-31, circuit 1357 (LB/YE), harness side; and between the SJB C2280c-43, circuit 29 (YE/WH), harness side.</li> </ul>  <p>N0053434</p> <ul style="list-style-type: none"> <li><b>Is the resistance less than 5 ohms?</b></li> </ul>		<p><b>Yes</b> REMOVE the jumper wire. GO to <b>A16</b>.</p> <p><b>No</b> REMOVE the jumper wire. GO to <b>A15</b>.</p>

(Continued)

## DIAGNOSIS AND TESTING (Continued)

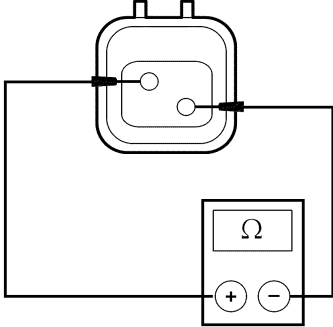
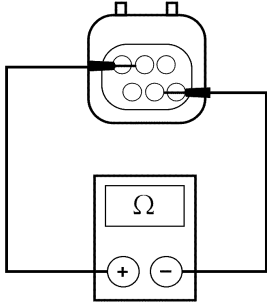
## PINPOINT TEST A: INCORRECT FUEL GAUGE INDICATION (Continued)

Test Step		Result / Action to Take
<b>A15</b>	<b>CHECK CIRCUIT 29 (YE/WH) FOR AN OPEN</b> <ul style="list-style-type: none"> <li>Measure the resistance between the SJB C2280c-43, circuit 29 (YE/WH), harness side and the remote fuel sender C433-4, circuit 29 (YE/WH), harness side.</li> </ul>  <p>N0053521</p> <ul style="list-style-type: none"> <li>Is the resistance less than 5 ohms?</li> </ul>	<p><b>Yes</b> REPAIR circuit 1357 (LB/YE) for an open. CLEAR the DTCs. REPEAT the self-test.</p> <p><b>No</b> REPAIR circuit 29 (YE/WH) for an open. CLEAR the DTCs. REPEAT the self-test.</p>
<b>A16</b>	<b>CHECK THE REMOTE FUEL SENDER FOR AN OPEN</b> <p><b>NOTE:</b> The fuel pump module resistance varies from <math>19 \pm 2</math> ohms when empty (E) to <math>160 \pm 4</math> ohms when full (F).</p> <ul style="list-style-type: none"> <li>Measure the resistance between the remote fuel sender C434 pin 2, component side and the remote fuel sender C434 pin 4, component side.</li> </ul>  <p>N0053522</p> <ul style="list-style-type: none"> <li>Is the resistance between 19 and 160 ohms?</li> </ul>	<p><b>Yes</b> GO to <b>A21</b>.</p> <p><b>No</b> INSTALL a new remote fuel sender. REFER to Section 310-01. CLEAR the DTCs. REPEAT the self-test.</p>
<b>A17</b>	<b>INSPECT THE FUEL TANK</b> <ul style="list-style-type: none"> <li>Check the fuel tank for any damage or deformation.</li> <li>Is the fuel tank OK?</li> </ul>	<p><b>Yes</b> GO to <b>A18</b>.</p> <p><b>No</b> VERIFY that the fuel pump module or remote fuel sender are not damaged. INSTALL a new fuel tank. REFER to Section 310-01. CLEAR the DTCs. REPEAT the self-test.</p>
<b>A18</b>	<b>INSPECT THE FUEL PUMP MODULE, REMOTE FUEL SENDER AND FUEL TRANSFER TUBES</b> <ul style="list-style-type: none"> <li>Remove the fuel pump module and remote fuel sender. Refer to Section 310-01.</li> <li>Inspect the fuel transfer tube, connections, fuel pump module and remote sender for any damage or deformation.</li> <li>Are the fuel transfer tube, connections, fuel pump module and the remote fuel sender OK?</li> </ul>	<p><b>Yes</b> GO to <b>A19</b>.</p> <p><b>No</b> REPAIR or INSTALL a new fuel tank (for fuel transfer tube concerns), fuel pump module or remote fuel sender as necessary. REFER to Section 310-01. CLEAR the DTCs. REPEAT the self-test.</p>

(Continued)

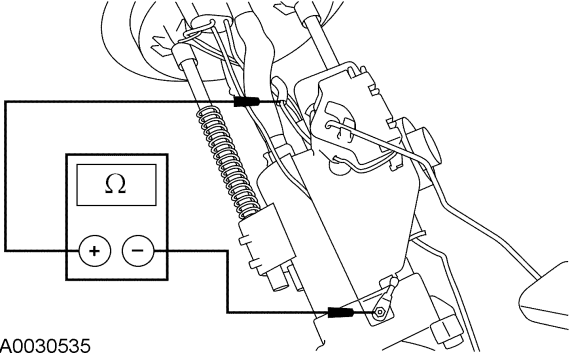
**DIAGNOSIS AND TESTING (Continued)**

**PINPOINT TEST A: INCORRECT FUEL GAUGE INDICATION (Continued)**

	Test Step	Result / Action to Take
<p><b>A19</b></p>	<p><b>CHECK THE FUEL PUMP MODULE AND REMOTE FUEL SENDER RESISTANCE READINGS</b></p> <p><b>NOTE:</b> The fuel pump module and remote fuel sender resistance values vary from <math>15 \pm 2</math> ohms when empty (E) to <math>160 \pm 4</math> ohms when full (F).</p> <ul style="list-style-type: none"> <li>For the fuel pump module, measure the resistance between the fuel pump module C433 pin 4 (4.0L and 4.6L) or C4331 pin 5 (5.4L), component side and the fuel pump module C433 pin 2 (4.0L and 4.6L) or C4331 pin 2 (5.4L), component side while slowly moving the float arm from the bottom to the top of travel.</li> </ul>  <p>N0053522</p> <ul style="list-style-type: none"> <li>For the remote fuel sender, measure the resistance between the remote fuel sender C434 pin 4, component side and the remote fuel sender C434 pin 2, component side while slowly moving the float arm from the bottom to the top of travel.</li> </ul>  <p>N0058801</p> <ul style="list-style-type: none"> <li><b>Does the resistance start at approximately 15 ohms with the float at the bottom of the travel and slowly increase to approximately 160 ohms at the top of the travel?</b></li> </ul>	<p><b>Yes</b>                  INSTALL a new fuel tank. REFER to Section 310-01. CLEAR the DTCs. REPEAT the self-test.</p> <p><b>No</b>                  For the fuel pump module, GO to <b>A20</b>.                  For the remote fuel sender, INSTALL a new remote fuel sender. REFER to Section 310-01. CLEAR the DTCs. REPEAT the self-test.</p>
<p><b>A20</b></p>	<p><b>CHECK THE FUEL LEVEL SENSOR</b></p> <ul style="list-style-type: none"> <li><b>NOTE:</b> The fuel level sensor resistance will measure between <math>15 \text{ ohms} \pm 2</math> ohms at the lower stop position and <math>160 \text{ ohms} \pm 4</math> ohms at the upper stop position. Remove the fuel pump module. Refer to Section 310-01.</li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST A: INCORRECT FUEL GAUGE INDICATION (Continued)**

Test Step		Result / Action to Take
<b>A20</b>	<b>CHECK THE FUEL LEVEL SENSOR (Continued)</b>	
	<ul style="list-style-type: none"> <li>• <b>NOTE:</b> Disconnect the fuel level sensor input wire from the fuel level sensor for this measurement. Measure the resistance between the fuel level sensor input wire and the fuel level sensor ground while slowly moving the float arm between the lower stop and the upper stop position.</li> </ul>  <p>A0030535</p> <ul style="list-style-type: none"> <li>• <b>Does the resistance slowly increase within specification from approximately 15 ohms to 160 ohms?</b></li> </ul>	<p><b>Yes</b> INSTALL a new fuel pump module. REFER to Section 310-01. TEST the system for normal operation.</p> <p><b>No</b> INSTALL a new fuel level sensor. REFER to Section 310-01. TEST the system for normal operation.</p>
<b>A21</b>	<b>CHECK FOR CORRECT SJB OPERATION</b>	
	<ul style="list-style-type: none"> <li>• Disconnect all the SJB connectors.</li> <li>• Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all the SJB connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new SJB. REFER to Section 419-10. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p>
<b>A22</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>• Disconnect the instrument cluster connector.</li> <li>• Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect the instrument cluster connector and make sure it seats correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p>

**DIAGNOSIS AND TESTING (Continued)**

**Pinpoint Test B: The Boost Gauge Is Inoperative (GT 500 Only)**

**Possible Causes**

- PCM
- Instrument cluster

**Normal Operation**

The boost gauge measures the amount of engine boost provided by the supercharger in pounds per square inch (PSI). The instrument cluster receives the boost gauge data from the powertrain control module (PCM) over the high speed controller area network (CAN) communication bus lines. If the boost gauge status message is invalid or missing for more than 5 seconds, the boost gauge indication is zero. If the message is invalid or missing for less than 5 seconds, the boost gauge displays the last valid data received. The missing or invalid data may make the gauge appear sluggish or unresponsive to engine boost changes.

**PINPOINT TEST B: THE BOOST GAUGE IS INOPERATIVE (GT 500 ONLY)**

Test Step		Result / Action to Take
<b>B1</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND PCM SELF-TESTS</b>	<p><b>Yes</b> REFER to the <a href="#">Powertrain Control/Emissions Diagnosis (PC/ED) manual</a>.</p> <p><b>No</b> GO to <b>B2</b>.</p>
	<ul style="list-style-type: none"> <li>• Check for recorded PCM DTCs from the continuous and on-demand self-tests.</li> <li>• <b>Are there any DTCs retrieved?</b></li> </ul>	
<b>B2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER GAUGES ACTIVE COMMAND USING THE SCAN TOOL</b>	<p><b>Yes</b> GO to <b>B3</b>.</p> <p><b>No</b> GO to <b>B4</b>.</p>
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster boost gauge active command and monitor the gauge.</li> <li>• <b>Does the boost gauge sweep correctly?</b></li> </ul>	
<b>B3</b>	<b>CHECK FOR CORRECT PCM OPERATION</b>	<p><b>Yes</b> INSTALL a PCM. REFER to Section 303-14. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>• Disconnect all PCM connectors.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all PCM connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	
<b>B4</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>• Disconnect all instrument cluster connectors.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all instrument cluster connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	

**DIAGNOSIS AND TESTING (Continued)**

**Pinpoint Test C: Incorrect Temperature Gauge Indication**

**Normal Operation**

The engine coolant temperature (ECT) sensor unit monitors the coolant temperature and is hardwired directly to the powertrain control module (PCM). The status of the engine coolant temperature is sent from the PCM to the instrument cluster over the communication network.

**Possible Causes**

- PCM
- Instrument cluster

**PINPOINT TEST C: INCORRECT TEMPERATURE GAUGE INDICATION**

Test Step		Result / Action to Take
<b>C1</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND PCM SELF-TESTS</b>	<p><b>Yes</b> REFER to the <a href="#">Powertrain Control/Emissions Diagnosis (PC/ED) manual</a>.</p> <p><b>No</b> GO to <b>C2</b>.</p>
	<ul style="list-style-type: none"> <li>• Check for recorded PCM DTCs from the continuous and on-demand self-tests.</li> <li>• <b>Are any DTCs recorded?</b></li> </ul>	
<b>C2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER COOLANT TEMPERATURE GAUGE ACTIVE COMMAND USING THE SCAN TOOL</b>	<p><b>Yes</b> GO to <b>C4</b>.</p> <p><b>No</b> GO to <b>C3</b>.</p>
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster temperature gauge active command and scroll in 2 increments of 0%, and 100%.</li> <li>• <b>Does the temperature gauge start at C (cold) when at 0%, and move to H (hot) at 100%?</b></li> </ul>	
<b>C3</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>• Disconnect the instrument cluster connector.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect the instrument cluster connector and make sure it seats correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	
<b>C4</b>	<b>CHECK FOR CORRECT PCM OPERATION</b>	<p><b>Yes</b> INSTALL a new PCM. REFER to Section 303-14. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>• Disconnect all the PCM connectors.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all the PCM connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	

**Pinpoint Test D: Incorrect Voltage Gauge Indication**

**Normal Operation**

The voltage gauge displays the system battery voltage as measured at the instrument cluster RUN input circuit.

**Possible Causes**

- PCM
- Instrument cluster

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST D: INCORRECT VOLTAGE GAUGE INDICATION**

Test Step		Result / Action to Take
<b>D1</b>	<b>CHECK THE CHARGING SYSTEM FOR CORRECT OPERATION</b>	<b>Yes</b> GO to <b>D2</b> .  <b>No</b> REPAIR the charging system. REFER to Section 414-00.
	<ul style="list-style-type: none"> <li>Check the charging system. Refer to Section 414-00.</li> <li><b>Does the charging system operate correctly?</b></li> </ul>	
<b>D2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER VOLTMETER ACTIVE COMMAND USING THE SCAN TOOL</b>	<b>Yes</b> GO to Pinpoint Test <b>AD</b> .  <b>No</b> GO to <b>D3</b> .
	<ul style="list-style-type: none"> <li>Key in ON position.</li> <li>Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>Select the instrument cluster voltmeter active command and scroll the voltmeter in 2 increments 0%, and 100%.</li> <li><b>Does the voltmeter start at L (low) when at 0%, and move to H (high) at 100%?</b></li> </ul>	
<b>D3</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	<b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.  <b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.
	<ul style="list-style-type: none"> <li>Disconnect the instrument cluster connector.</li> <li>Check for:             <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect the instrument cluster connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	

**Pinpoint Test E: The Tachometer Is Inoperative****Possible Causes**

- PCM
- Instrument cluster

**Normal Operation**

Engine rpm data is provided to the instrument cluster by the powertrain control module (PCM) through the communication network.

**PINPOINT TEST E: THE TACHOMETER IS INOPERATIVE**

Test Step		Result / Action to Take
<b>E1</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND PCM SELF-TESTS</b>	<b>Yes</b> REFER to the <a href="#">Powertrain Control/Emissions Diagnosis (PC/ED) manual</a> .  <b>No</b> GO to <b>E2</b> .
	<ul style="list-style-type: none"> <li>Check for recorded PCM DTCs from the continuous and on-demand self-tests.</li> <li><b>Are any DTCs recorded?</b></li> </ul>	
<b>E2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER TACHOMETER ACTIVE COMMAND USING THE SCAN TOOL</b>	<b>Yes</b> GO to <b>E3</b> .  <b>No</b> GO to <b>E4</b> .
	<ul style="list-style-type: none"> <li>Key in ON position.</li> <li>Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>Select the instrument cluster tachometer active command and scroll in increments of 10% while monitoring the tachometer. The tachometer should increase in increments of approximately 700 rpm (4.0L engine), or 800 rpm (4.6L engine) for each 10% change.</li> <li><b>Does the tachometer gauge increase within specifications?</b></li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

**PINPOINT TEST E: THE TACHOMETER IS INOPERATIVE (Continued)**

Test Step		Result / Action to Take
<b>E3</b>	<b>CHECK FOR CORRECT PCM OPERATION</b>	<p><b>Yes</b> INSTALL a new PCM. REFER to Section 303-14. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>• Disconnect all the PCM connectors.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all the PCM connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	
<b>E4</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>• Disconnect the instrument cluster connector.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect the instrument cluster connector and make sure it seats correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	

**Pinpoint Test F: Incorrect Oil Pressure Gauge Indication**

Refer to [Wiring Diagrams Cell 60, Instrument Cluster for schematic and connector information.](#)

**Normal Operation**

The oil pressure switch is a normally open switch that is hardwired to the smart junction box (SJB) through circuit 208 (GY). When the oil pressure is within normal ranges, the oil pressure switch closes, grounding the signal to the SJB. The SJB then sends a command signal to the instrument cluster through the communication network, to turn off the oil pressure warning indicator. When engine oil pressure is low, the oil pressure switch opens, removing the ground to the SJB. The SJB sends a low oil pressure command to the instrument cluster through the communication network to illuminate the oil pressure warning indicator.

**Possible Causes**

- Circuit 208 (GY) open or short to ground
- Engine oil pressure switch
- SJB
- Instrument cluster

**PINPOINT TEST F: INCORRECT OIL PRESSURE GAUGE INDICATION**

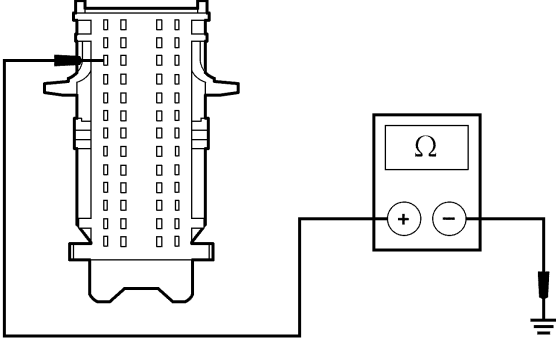
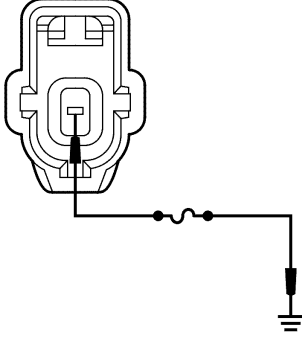
 **CAUTION:** Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

Test Step		Result / Action to Take
<b>F1</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER TACHOMETER ACTIVE COMMAND USING THE SCAN TOOL</b>	<p><b>Yes</b> If the oil pressure gauge always indicates normal, GO to <b>F2</b>.</p> <p>If the oil pressure gauge always indicates low, GO to <b>F4</b>.</p> <p><b>No</b> GO to <b>F8</b>.</p>
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster oil pressure gauge active command on and off.</li> <li>• <b>Does the oil pressure gauge start at the low range and increase to the normal range when selected on?</b></li> </ul>	

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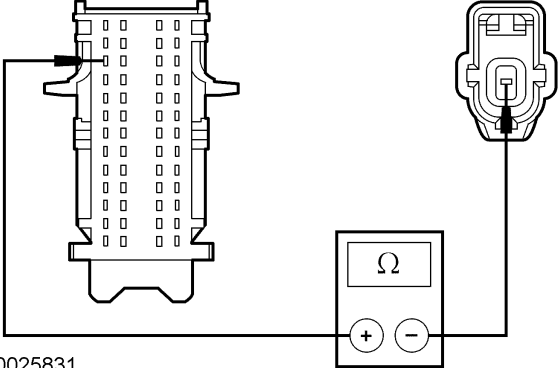


**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST F: INCORRECT OIL PRESSURE GAUGE INDICATION (Continued)**

Test Step		Result / Action to Take
<b>F2</b>	<b>CHECK THE OIL PRESSURE SWITCH</b>	<b>Yes</b> INSTALL a new engine oil pressure switch. TEST the system for normal operation. <b>No</b> GO to <b>F3</b> .
	<ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: Engine Oil Pressure Switch <b>C103</b>.</li> <li>Key in ON position.</li> <li>With the oil pressure switch disconnected, monitor the oil pressure gauge.</li> <li><b>Does the oil pressure gauge indicate low?</b></li> </ul>	
<b>F3</b>	<b>CHECK CIRCUIT 208 (GY) FOR A SHORT TO GROUND</b>	<b>Yes</b> GO to <b>F7</b> . <b>No</b> REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.
	<ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: SJB <b>C2280c</b>.</li> <li>Disconnect: Engine Oil Pressure Switch <b>C103</b>.</li> <li>Measure the resistance between the SJB <b>C2280c-42</b>, circuit 208 (GY), harness side and ground.</li> </ul>  <p>N0012025</p> <ul style="list-style-type: none"> <li><b>Is the resistance greater than 10,000 ohms?</b></li> </ul>	
<b>F4</b>	<b>CHECK THE OIL PRESSURE SWITCH</b>	<b>Yes</b> REMOVE the jumper wire. GO to <b>F5</b> . <b>No</b> REMOVE the jumper wire. GO to <b>F6</b> .
	<ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: Oil Pressure Switch <b>C103</b>.</li> <li>Connect a fused (5A) jumper wire between the oil pressure switch <b>C103-1</b>, circuit 208 (GY), harness side and ground.</li> </ul>  <p>N0002760</p> <ul style="list-style-type: none"> <li>Key in ON position.</li> <li><b>Does the oil pressure gauge indicate normal?</b></li> </ul>	
<b>F5</b>	<b>CHECK CIRCUIT 208 (GY) FOR AN OPEN</b>	
	<ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: SJB <b>C2280c</b>.</li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST F: INCORRECT OIL PRESSURE GAUGE INDICATION (Continued)**

Test Step		Result / Action to Take
<b>F5</b>	<b>CHECK CIRCUIT 208 (GY) FOR AN OPEN (Continued)</b>	
	<ul style="list-style-type: none"> <li>Measure the resistance between the SJB C2280c-42, circuit 208 (GY), harness side and the engine oil pressure switch C103-1, circuit 208 (GY), harness side.</li> </ul>  <p>N0025831</p> <ul style="list-style-type: none"> <li><b>Is the resistance less than 5 ohms?</b></li> </ul>	<p><b>Yes</b> GO to <b>F8</b>.</p> <p><b>No</b> REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.</p>
<b>F6</b>	<b>CHECK THE OIL PRESSURE</b>	
	<ul style="list-style-type: none"> <li>Carry out the engine oil pressure test. Refer to Section 303-00.</li> <li><b>Is the oil pressure within specification?</b></li> </ul>	<p><b>Yes</b> INSTALL a new engine oil pressure switch. TEST the system for normal operation.</p> <p><b>No</b> REFER to Section 303-00.</p>
<b>F7</b>	<b>CHECK FOR CORRECT SJB OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect all the SJB connectors.</li> <li>Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>Connect all the SJB connectors and make sure they seat correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new SJB. REFER to Section 419-10. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p>
<b>F8</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect the instrument cluster connector.</li> <li>Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>Connect the instrument cluster connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p>

**Pinpoint Test G: The Speedometer/Odometer Is Inoperative****Normal Operation**

Vehicle speed information is sent to the powertrain control module (PCM) from the output shaft speed (OSS) sensor. The instrument cluster receives the vehicle speed data from the PCM over the communication network.

**Possible Causes**

- PCM
- Instrument cluster

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST G: THE SPEEDOMETER/ODOMETER IS INOPERATIVE**

Test Step		Result / Action to Take
<b>G1</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND PCM SELF-TESTS</b>	
	<ul style="list-style-type: none"> <li>Check for recorded PCM DTCs from the continuous and on-demand self-tests.</li> <li><b>Are any PCM DTCs recorded?</b></li> </ul>	<p><b>Yes</b> REFER to the <a href="#">Powertrain Control/Emissions Diagnosis (PC/ED) manual</a>.</p> <p><b>No</b> For an inoperative or inaccurate speedometer, GO to <b>G2</b>. For an inoperative odometer, GO to <b>G3</b>.</p>
<b>G2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER SPEEDOMETER ACTIVE COMMAND USING THE SCAN TOOL</b>	
	<ul style="list-style-type: none"> <li>Key in ON position.</li> <li>Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>Select the instrument cluster speedometer active command. Trigger the speedometer and scroll in increments of 10% while monitoring the speedometer. The speedometer should increase in increments of approximately 19 km/h (12 mph) (4.0L engine), or 23 km/h (14 mph) (4.6L engine) for each 10% change.</li> <li><b>Does the speedometer begin at 0 and increase within specifications?</b></li> </ul>	<p><b>Yes</b> GO to <b>G5</b>.</p> <p><b>No</b> GO to <b>G4</b>.</p>
<b>G3</b>	<b>MONITOR THE MESSAGE CENTER CIRCUIT DISPLAYS</b>	
	<ul style="list-style-type: none"> <li>Select the message center active command. Trigger the message center active command and illuminate the display segments.</li> <li><b>Do the message center display segments illuminate correctly?</b></li> </ul>	<p><b>Yes</b> GO to <b>G5</b>.</p> <p><b>No</b> GO to <b>G4</b>.</p>
<b>G4</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect the instrument cluster connector.</li> <li>Check for: <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect the instrument cluster connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
<b>G5</b>	<b>CHECK FOR CORRECT PCM OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect all the PCM connectors.</li> <li>Check for: <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect all the PCM connectors and make sure they seat correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new PCM. REFER to Section 303-14. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>

**Pinpoint Test H: The Safety Belt Warning Indicator Is Inoperative/Does Not Operate Correctly**

Refer to [Wiring Diagrams Cell 60, Instrument Cluster](#) for schematic and connector information.

**Normal Operation**

The safety belt switch is hardwired to the restraints control module (RCM). The instrument cluster receives the safety belt switch status from the RCM through circuit 1083 (LB/PK). When the safety belt is unfastened, the RCM signals the instrument cluster to illuminate the safety belt warning indicator. A safety belt minder chime that is operating correctly indicates the RCM is monitoring and transmitting the correct operation of the safety belt status to the instrument cluster.

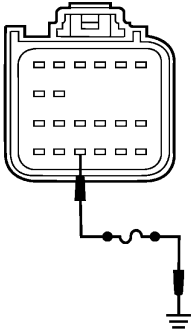
**DIAGNOSIS AND TESTING (Continued)**

**Possible Causes**

- Circuit 1083 (LB/PK) open, short to ground voltage
- RCM
- Instrument cluster

**PINPOINT TEST H: THE SAFETY BELT WARNING INDICATOR IS INOPERATIVE/DOES NOT OPERATE CORRECTLY**

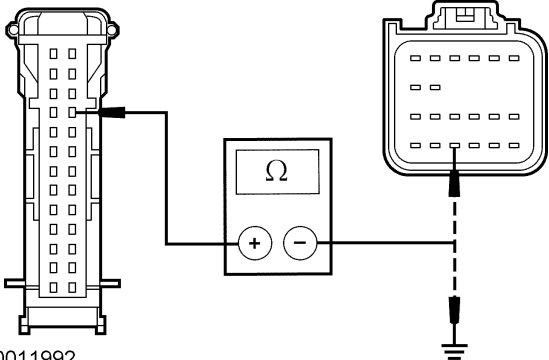
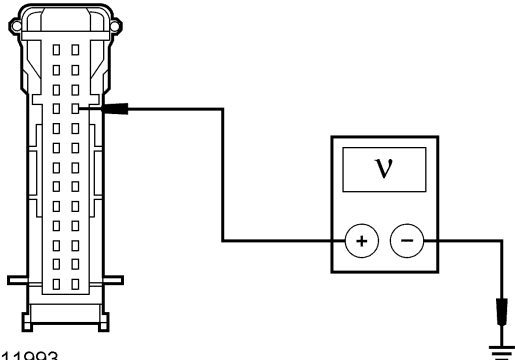
**⚠ CAUTION:** Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

Test Step		Result / Action to Take
<b>H1</b>	<p><b>CHECK THE SAFETY BELT WARNING INDICATOR OPERATION</b></p> <ul style="list-style-type: none"> <li>• Deactivate the supplemental restraint system (SRS). Refer to Section 501-20B.</li> <li>• Key in OFF position.</li> <li>• Disconnect: RCM <a href="#">C2041a</a>.</li> <li>• Connect a fused (10A) jumper wire between the RCM <a href="#">C2041a-22</a>, circuit 1083 (LB/PK), harness side and ground.</li> </ul> <div style="text-align: center;">  <p>A0041080</p> </div> <ul style="list-style-type: none"> <li>• Observe the safety belt warning indicator with the jumper wire connected and disconnected.</li> <li>• Key in ON position.</li> <li>• <b>Does the safety belt warning indicator lamp illuminate with the jumper wire disconnected, and turn off when the jumper wire is connected?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">H5</a>.</p> <p><b>No</b> GO to <a href="#">H2</a>.</p>
<b>H2</b>	<p><b>CHECK CIRCUIT 1083 (LB/PK) FOR AN OPEN OR A SHORT TO GROUND</b></p> <ul style="list-style-type: none"> <li>• Key in OFF position.</li> <li>• Disconnect: Instrument Cluster <a href="#">C220</a>.</li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

**PINPOINT TEST H: THE SAFETY BELT WARNING INDICATOR IS INOPERATIVE/DOES NOT OPERATE CORRECTLY (Continued)**

Test Step		Result / Action to Take
<b>H2</b>	<b>CHECK CIRCUIT 1083 (LB/PK) FOR AN OPEN OR A SHORT TO GROUND (Continued)</b>	
	<ul style="list-style-type: none"> <li>Measure the resistance between the instrument cluster C220-23, circuit 1083 (LB/PK), harness side and the RCM C2041a-22, circuit 1083 (LB/PK), harness side; and between the instrument cluster C220-23, circuit 1083 (LB/PK), harness side and ground.</li> </ul>  <p>N0011992</p> <ul style="list-style-type: none"> <li>Is the resistance less than 5 ohms between the instrument cluster and the RCM, and greater than 10,000 ohms between the instrument cluster and ground?</li> </ul>	<p><b>Yes</b> GO to <b>H3</b>.</p> <p><b>No</b> REPAIR the circuit. ACTIVATE the SRS. REFER to Section 501-20B. TEST the system for normal operation.</p>
<b>H3</b>	<b>CHECK CIRCUIT 1083 (LB/PK) FOR A SHORT TO VOLTAGE</b>	
	<ul style="list-style-type: none"> <li>Key in ON position.</li> <li>Measure the voltage between the instrument cluster C220-23, circuit 1083 (LB/PK), harness side and ground.</li> </ul>  <p>N0011993</p> <ul style="list-style-type: none"> <li>Is any voltage present?</li> </ul>	<p><b>Yes</b> REPAIR the circuit. ACTIVATE the SRS. REFER to Section 501-20B. TEST the system for normal operation.</p> <p><b>No</b> GO to <b>H4</b>.</p>
<b>H4</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect the instrument cluster connector.</li> <li>Check for:                             <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect the instrument cluster connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li>Is the concern still present?</li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. ACTIVATE the SRS. REFER to Section 501-20B. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ACTIVATE the SRS. REFER to Section 501-20B.</p>

(Continued)

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST H: THE SAFETY BELT WARNING INDICATOR IS INOPERATIVE/DOES NOT OPERATE CORRECTLY (Continued)**

Test Step		Result / Action to Take
<b>H5</b>	<b>CHECK FOR CORRECT RCM OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect all the RCM connectors.</li> <li>Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>Connect all the RCM connectors and make sure they seat correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new RCM. REFER to Section 501-20B. ACTIVATE the SRS. REFER to Section 501-20B. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ACTIVATE the SRS. REFER to Section 501-20B.</p>

**Pinpoint Test I: The O/D Off Indicator Is Never/Always On****Normal Operation**

The overdrive (O/D) off function is controlled by the O/D off switch located on the shifter assembly. The O/D off status is transmitted to the instrument cluster from the powertrain control module (PCM) over the communication network.

**Possible Causes**

- PCM
- Instrument cluster

**PINPOINT TEST I: THE O/D OFF INDICATOR IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>I1</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND PCM SELF-TESTS</b>	
	<ul style="list-style-type: none"> <li>Check for recorded PCM DTCs from the continuous and on-demand self-tests.</li> <li><b>Are any PCM DTCs recorded?</b></li> </ul>	<p><b>Yes</b> REFER to the <a href="#">Powertrain Control/Emissions Diagnosis (PC/ED) manual</a>.</p> <p><b>No</b> GO to <b>I2</b>.</p>
<b>I2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	
	<ul style="list-style-type: none"> <li>Key in ON position.</li> <li>Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>Select the instrument cluster O/D OFF active command on and off. Observe the O/D OFF indicator.</li> <li><b>Does the O/D OFF indicator illuminate when selected on, and turn off when selected off?</b></li> </ul>	<p><b>Yes</b> GO to <b>I4</b>.</p> <p><b>No</b> GO to <b>I3</b>.</p>
<b>I3</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect the instrument cluster connector.</li> <li>Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>Connect the instrument cluster connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
<b>I4</b>	<b>CHECK FOR CORRECT PCM OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect all the PCM connectors.</li> <li>Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>Connect all the PCM connectors and make sure they seat correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new PCM. REFER to Section 303-14. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>

**DIAGNOSIS AND TESTING (Continued)**

**Pinpoint Test J: The Check Fuel Cap Warning Indicator Is Never/Always On**

**Normal Operation**

The powertrain control module (PCM) monitors the fuel tank evaporative emission system for significant leaks that occur following refueling of the vehicle. If the PCM detects that the fuel cap has been left off following vehicle refueling, the PCM sends a message to the instrument cluster over the communication network to turn on the check fuel cap warning indicator.

DTC P0457 — sets in the PCM if the PCM detects a fuel tank pressure change greater than -23.7 kPa (-7 in-Hg) of water within 30 seconds after refueling occurs, or if there is an excessive purge (fuel vapor) flow of greater than 0.45 gm/s (0.06 lb) per minute.

**Possible Causes**

- PCM
- Instrument cluster

**PINPOINT TEST J: THE CHECK FUEL CAP WARNING INDICATOR IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>J1</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND PCM SELF-TESTS</b>	
	<ul style="list-style-type: none"> <li>• Check for recorded PCM DTCs from the continuous and on-demand self-tests.</li> <li>• <b>Are any PCM DTCs recorded?</b></li> </ul>	<p><b>Yes</b> REFER to the <a href="#">Powertrain Control/Emissions Diagnosis (PC/ED) manual</a>.</p> <p><b>No</b> GO to <b>J2</b>.</p>
<b>J2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP ACTIVE COMMAND USING THE SCAN TOOL</b>	
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster check fuel cap indicator on and off. Observe the check fuel cap indicator.</li> <li>• <b>Does the check fuel cap indicator illuminate when selected on, and turn off when selected off?</b></li> </ul>	<p><b>Yes</b> GO to <b>J4</b>.</p> <p><b>No</b> GO to <b>J3</b>.</p>
<b>J3</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>• Disconnect the instrument cluster connector.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect the instrument cluster connector and make sure it seats correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
<b>J4</b>	<b>CHECK FOR CORRECT PCM OPERATION</b>	
	<ul style="list-style-type: none"> <li>• Disconnect all the PCM connectors.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all the PCM connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new PCM. REFER to Section 303-14. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>

**Pinpoint Test K: The Brake Warning Indicator Is Never/Always On**

Refer to [Wiring Diagrams Cell 60, Instrument Cluster](#) for schematic and connector information.

Refer to [Wiring Diagrams Cell 13, Power Distribution/SJB](#) for schematic and connector information.

**DIAGNOSIS AND TESTING (Continued)**

**Normal Operation**

When the parking brake is applied, circuit 1309 (RD/YE) to the smart junction box (SJB) is grounded by the parking brake switch through circuit 1205 (BK). The SJB receives the ground signal and sends the instrument cluster a message over the communication network to illuminate the brake warning indicator. When the brake fluid level is low, the brake fluid level switch closes, providing a signal to the SJB on circuit 547 (LG/YE) is routed back to the SJB on the signal return circuit 512 (TN/LG). When a base brake system concern is detected, the anti-lock brake system (ABS) module sends a signal to the instrument cluster over the communication network to illuminate the brake system warning indicator.

DTC B2479 — sets on-demand if the SJB detects that the parking brake is applied during the on-demand self-test or if there is a short to ground on the parking brake input circuit 1309 (RD/YE).

DTC C1189 — sets on-demand or continuously if the SJB detects that the brake fluid is low or there is a short to ground on the brake fluid level input circuit 547 (LG/YE).

**Possible Causes**

- Circuit 512 (TN/LG) open or short to ground
- Circuit 547 (LG/YE) open or short to ground
- Circuit 1205 (BK) open
- Circuit 1309 (RD/YE) open or short to ground
- Parking brake switch
- Brake fluid level switch
- SJB
- Instrument cluster

**PINPOINT TEST K: THE BRAKE WARNING INDICATOR IS NEVER/ALWAYS ON**

 **CAUTION:** Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

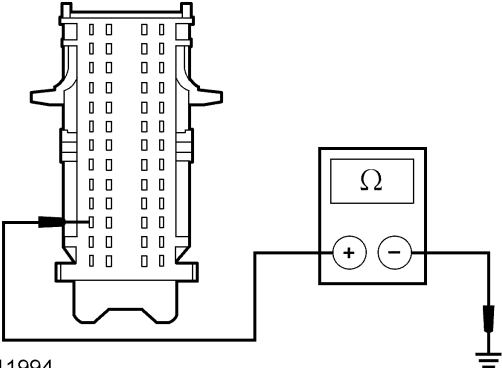
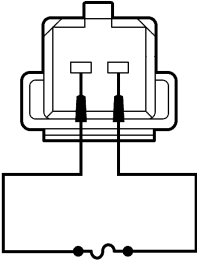
Test Step		Result / Action to Take
<b>K1</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND SJB SELF-TESTS</b>	
	<ul style="list-style-type: none"> <li>• Check for recorded SJB DTCs from the continuous and on-demand self-tests.</li> <li>• <b>Are any SJB DTCs recorded?</b></li> </ul>	<p><b>Yes</b> For DTC B2479, GO to <b>K4</b>. For DTC C1189, GO to <b>K9</b>. All other SJB DTCs, REFER to the Smart Junction Box (SJB) Diagnostic Trouble Code (DTC) Index.</p> <p><b>No</b> GO to <b>K2</b>.</p>
<b>K2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster brake warning indicator active command on and off. Observe the brake warning indicator.</li> <li>• <b>Does the brake warning indicator illuminate when selected on, and turn off when selected off?</b></li> </ul>	<p><b>Yes</b> GO to <b>K3</b>.</p> <p><b>No</b> GO to <b>K13</b>.</p>
<b>K3</b>	<b>CHECK THE PARKING BRAKE SWITCH PID</b>	
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: SJB Parking Brake Switch PID.</li> <li>• Monitor the SJB parking brake switch PID while applying and releasing the parking brake.</li> <li>• <b>Does the PID agree with the parking brake position?</b></li> </ul>	<p><b>Yes</b> GO to <b>K9</b>.</p> <p><b>No</b> If the PID indicates that the parking brake is always applied, GO to <b>K4</b>. If the PID indicates that the parking brake is never applied, GO to <b>K6</b>.</p>

(Continued)



**DIAGNOSIS AND TESTING (Continued)**

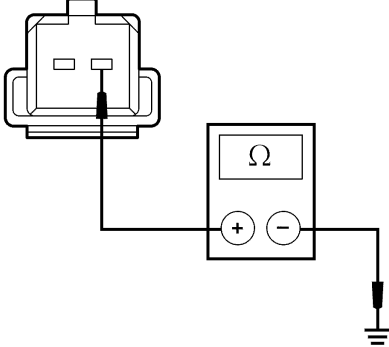
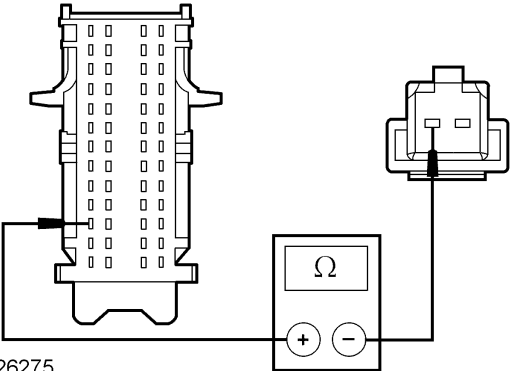
**PINPOINT TEST K: THE BRAKE WARNING INDICATOR IS NEVER/ALWAYS ON (Continued)**

Test Step		Result / Action to Take
<b>K4</b>	<b>CHECK THE PARKING BRAKE SWITCH (INDICATOR ALWAYS ON)</b>	<p><b>Yes</b> GO to <b>K5</b>.</p> <p><b>No</b> INSTALL a new parking brake switch. CLEAR the DTCs. REPEAT the self-test.</p>
	<ul style="list-style-type: none"> <li>Disconnect: Parking Brake Switch <b>C306</b>.</li> <li>Observe the brake warning indicator.</li> <li><b>Does the brake warning indicator continue to illuminate?</b></li> </ul>	
<b>K5</b>	<b>CHECK CIRCUIT 1309 (RD/YE) FOR A SHORT TO GROUND</b>	<p><b>Yes</b> GO to <b>K14</b>.</p> <p><b>No</b> REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.</p>
	<ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: SJB <b>C2280c</b>.</li> <li>Measure the resistance between the SJB <b>C2280c-50</b>, circuit 1309 (RD/YE), harness side and ground.</li> </ul>  <p>N0011994</p> <ul style="list-style-type: none"> <li><b>Is the resistance greater than 10,000 ohms?</b></li> </ul>	
<b>K6</b>	<b>CHECK THE PARKING BRAKE SWITCH (INDICATOR INOPERATIVE)</b>	<p><b>Yes</b> INSTALL a new parking brake switch. CLEAR the DTCs. REPEAT the self-test.</p> <p><b>No</b> REMOVE the jumper wire. GO to <b>K7</b>.</p>
	<ul style="list-style-type: none"> <li>Disconnect: Parking Brake Switch <b>C306</b>.</li> <li>Connect a fused (5A) jumper wire between the parking brake switch <b>C306-1</b>, circuit 1309 (RD/YE), harness side and the parking brake switch <b>C306-2</b>, circuit 1205 (BK), harness side.</li> </ul>  <p>N0002774</p> <ul style="list-style-type: none"> <li><b>Does the brake warning indicator illuminate?</b></li> </ul>	
<b>K7</b>	<b>CHECK CIRCUIT 1205 (BK) FOR AN OPEN</b>	
	<ul style="list-style-type: none"> <li>Key in OFF position.</li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

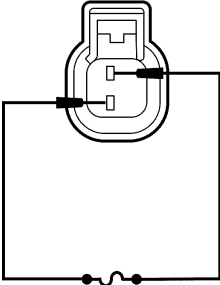

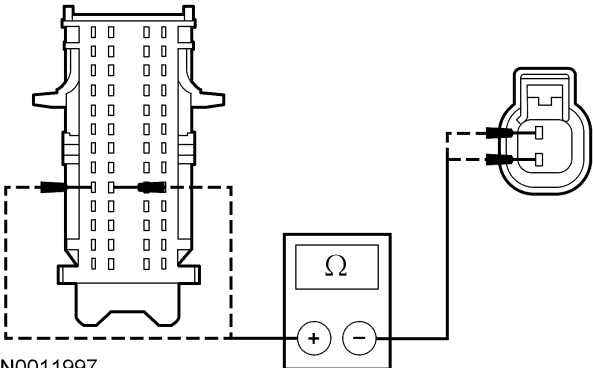
**PINPOINT TEST K: THE BRAKE WARNING INDICATOR IS NEVER/ALWAYS ON (Continued)**

Test Step	Result / Action to Take
<p><b>K7 CHECK CIRCUIT 1205 (BK) FOR AN OPEN (Continued)</b></p> <ul style="list-style-type: none"> <li>Measure the resistance between the parking brake switch <b>C306-2</b>, circuit 1205 (BK), harness side and ground.</li> </ul>  <p>N0009406</p> <ul style="list-style-type: none"> <li><b>Is the resistance less than 5 ohms?</b></li> </ul>	<p><b>Yes</b> GO to <b>K8</b>.</p> <p><b>No</b> REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.</p>
<p><b>K8 CHECK CIRCUIT 1309 (RD/YE) FOR AN OPEN</b></p> <ul style="list-style-type: none"> <li>Disconnect: SJB <b>C2280c</b>.</li> <li>Measure the resistance between the SJB <b>C2280c-50</b>, circuit 1309 (RD/YE), harness side and the parking brake switch <b>C306-1</b>, circuit 1309 (RD/YE), harness side.</li> </ul>  <p>N0026275</p> <ul style="list-style-type: none"> <li><b>Is the resistance less than 5 ohms?</b></li> </ul>	<p><b>Yes</b> GO to <b>K14</b>.</p> <p><b>No</b> REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.</p>
<p><b>K9 CHECK THE SJB OPERATION USING THE SCAN TOOL</b></p> <ul style="list-style-type: none"> <li>Enter the following diagnostic mode on the scan tool: SJB Brake Fluid Level PID.</li> <li>Key in OFF position.</li> <li>Disconnect: Brake Fluid Level Switch <b>C124</b>.</li> <li>Key in ON position.</li> <li>Monitor the brake fluid level PID.</li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

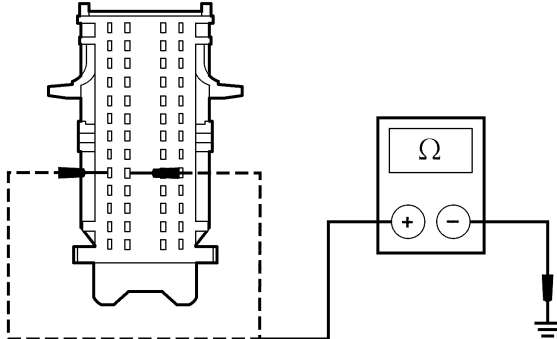
**PINPOINT TEST K: THE BRAKE WARNING INDICATOR IS NEVER/ALWAYS ON (Continued)**

	Test Step	Result / Action to Take
<p><b>K9</b></p>	<p><b>CHECK THE SJB OPERATION USING THE SCAN TOOL (Continued)</b></p>	
	<ul style="list-style-type: none"> <li>Connect a fused (10A) jumper wire between the brake fluid level switch <b>C124-1</b>, circuit 547 (LG/YE), harness side and the brake fluid level switch <b>C124-2</b>, circuit 512 (TN/LG), harness side.</li> </ul>  <p>N0011996</p> <ul style="list-style-type: none"> <li><b>Does the PID indicate OK with the brake fluid level switch disconnected, and indicate low brake fluid level when the jumper wire is in place?</b></li> </ul>	<p><b>Yes</b> REMOVE the jumper wire. GO to <b>K10</b>.</p> <p><b>No</b> REMOVE the jumper wire. GO to <b>K11</b>.</p>
<p><b>K10</b></p>	<p><b>CHECK THE BRAKE FLUID LEVEL SWITCH PID USING THE SCAN TOOL</b></p>	
	<ul style="list-style-type: none"> <li>Enter the following diagnostic mode on the scan tool: SJB Brake Fluid Level PID.</li> <li>Connect: Brake Fluid Level Switch <b>C124</b>.</li> <li>Key in ON position.</li> <li> <b>CAUTION: Do not spill brake fluid onto painted or plastic surfaces. If spilled, wipe up immediately before damage to the painted or plastic surface occurs.</b></li> </ul> <p>Using a suitable tool, lightly push the brake fluid level float to the bottom of the reservoir. Monitor the SJB brake fluid PID.</p> <ul style="list-style-type: none"> <li><b>Does the PID indicate low fluid level with the brake fluid level float pushed down, and indicate normal with the brake fluid level float released?</b></li> </ul>	<p><b>Yes</b> GO to <b>K14</b>.</p> <p><b>No</b> INSTALL a new brake fluid level switch. TEST the system for normal operation.</p>
<p><b>K11</b></p>	<p><b>CHECK CIRCUITS 512 (TN/LG) AND 547 (LG/YE) FOR AN OPEN</b></p>	
	<ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: SJB <b>C2280c</b>.</li> <li>Measure the resistance between the SJB <b>C2280c-35</b>, circuit 512 (TN/LG), harness side and the brake fluid level switch <b>C124-2</b>, circuit 512 (TN/LG), harness side; and between the SJB <b>C2280c-48</b>, circuit 547 (LG/YE), harness side and the brake fluid level switch <b>C124-1</b>, circuit 547 (LG/YE), harness side.</li> </ul>  <p>N0011997</p> <ul style="list-style-type: none"> <li><b>Are the resistances less than 5 ohms?</b></li> </ul>	<p><b>Yes</b> GO to <b>K12</b>.</p> <p><b>No</b> REPAIR the circuit in question. CLEAR the DTCs. REPEAT the self-test.</p>

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

**PINPOINT TEST K: THE BRAKE WARNING INDICATOR IS NEVER/ALWAYS ON (Continued)**

Test Step		Result / Action to Take
<b>K12</b>	<b>CHECK CIRCUITS 512 (TN/LG) AND 547 (LG/YE) FOR A SHORT TO GROUND</b>	
	<ul style="list-style-type: none"> <li>Measure the resistance between the SJB <a href="#">C2280c-35</a>, circuit 512 (TN/LG), harness side and ground; and between the SJB <a href="#">C2280c-48</a>, circuit 547 (LG/YE), harness side and ground.</li> </ul>  <p>N0012024</p> <ul style="list-style-type: none"> <li><b>Are the resistances greater than 10,000 ohms?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">K14</a>.</p> <p><b>No</b> REPAIR the circuit in question. CLEAR the DTCs. REPEAT the self-test.</p>
<b>K13</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect all the instrument cluster connectors.</li> <li>Check for:                             <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect all the instrument cluster connectors and make sure they seat correctly.</li> <li>Operate the system and verify that the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p>
<b>K14</b>	<b>CHECK FOR CORRECT SJB OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect all the SJB connectors.</li> <li>Check for:                             <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect all the SJB connectors and make sure they seat correctly.</li> <li>Operate the system and verify that the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new SJB. REFER to Section 419-10. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p>

**Pinpoint Test L: The Charging System Warning Indicator Is Never/Always On**

**Normal Operation**

The charging system warning indicator is controlled by the instrument cluster based upon data received from the powertrain control module (PCM) over the communication network.

**Possible Causes**

- Charging system
- PCM
- Instrument cluster

**PINPOINT TEST L: THE CHARGING SYSTEM WARNING INDICATOR IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>L1</b>	<b>CHECK THE CHARGING SYSTEM FOR CORRECT OPERATION</b>	
	<ul style="list-style-type: none"> <li>Check the charging system operation. Refer to Section 414-00.</li> <li><b>Is the charging system operating correctly?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">L2</a>.</p> <p><b>No</b> REFER to Section 414-00.</p>

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

**PINPOINT TEST L: THE CHARGING SYSTEM WARNING INDICATOR IS NEVER/ALWAYS ON (Continued)**

Test Step		Result / Action to Take
<b>L2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster charging system warning indicator active command on. Observe the charging system warning indicator.</li> <li>• <b>Is the charging system warning indicator illuminated?</b></li> </ul>	<p><b>Yes</b> GO to <b>L3</b>.</p> <p><b>No</b> GO to <b>L4</b>.</p>
<b>L3</b>	<b>CHECK FOR CORRECT PCM OPERATION</b>	
	<ul style="list-style-type: none"> <li>• Disconnect all the PCM connectors.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all the PCM connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new PCM. REFER to Section 303-14. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
<b>L4</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>• Disconnect the instrument cluster connector.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect the instrument cluster connector and make sure it seats correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>

**Pinpoint Test M: The High Beam Indicator Is Never/Always On**

**Possible Causes**

- SJB
- Instrument cluster

**Normal Operation**

When the high beams are turned on, the smart junction box (SJB) sends a signal to the instrument cluster through the communication network to illuminate the high beam indicator.

**PINPOINT TEST M: THE HIGH BEAM INDICATOR IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>M1</b>	<b>CHECK THE HIGH BEAM HEADLAMPS OPERATION</b>	
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Place the headlamp switch in the HIGH BEAMS ON position. Observe the high beam headlamps.</li> <li>• <b>Do the high beam headlamps operate correctly?</b></li> </ul>	<p><b>Yes</b> GO to <b>M2</b>.</p> <p><b>No</b> REFER to Section 417-01.</p>
<b>M2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster high beam indicator active command on and off. Observe the high beam indicator.</li> <li>• <b>Does the high beam indicator illuminate when selected on, and turn off when selected off?</b></li> </ul>	<p><b>Yes</b> GO to <b>M4</b>.</p> <p><b>No</b> GO to <b>M3</b>.</p>

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

**PINPOINT TEST M: THE HIGH BEAM INDICATOR IS NEVER/ALWAYS ON (Continued)**

Test Step		Result / Action to Take
<b>M3</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>• Disconnect the instrument cluster connector.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect the instrument cluster connector and make sure it seats correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	
<b>M4</b>	<b>CHECK FOR CORRECT SJB OPERATION</b>	<p><b>Yes</b> INSTALL a new SJB. REFER to Section 419-10. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>• Disconnect all the SJB connectors.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all the SJB connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	

**Pinpoint Test N: The Turn Signal Indicator Is Never/Always On**

**Possible Causes**

- SJB
- Instrument cluster

**Normal Operation**

When the multifunction switch is in the left or the right turn position, a message is sent to the instrument cluster from the smart junction box (SJB) through the communication network, and the left or the right turn signal indicator flashes on and off.

**PINPOINT TEST N: THE TURN SIGNAL INDICATOR IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>N1</b>	<b>CHECK THE TURN SIGNAL LAMPS OPERATION</b>	<p><b>Yes</b> GO to <b>N2</b>.</p> <p><b>No</b> REFER to Section 417-01.</p>
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Operate the LH and RH turn signals.</li> <li>• <b>Do the turn signals operate correctly?</b></li> </ul>	
<b>N2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	<p><b>Yes</b> GO to <b>N4</b>.</p> <p><b>No</b> GO to <b>N3</b>.</p>
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster all warning lamps active command on and off. Observe the LH and RH turn signal indicators.</li> <li>• <b>Do the LH and RH turn signal indicators illuminate when selected on, and turn off when selected off?</b></li> </ul>	
<b>N3</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>• Disconnect the instrument cluster connector.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect the instrument cluster connector and make sure it seats correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST N: THE TURN SIGNAL INDICATOR IS NEVER/ALWAYS ON (Continued)**

Test Step		Result / Action to Take
<b>N4</b>	<b>CHECK FOR CORRECT SJB OPERATION</b>	<p><b>Yes</b> INSTALL a new SJB. REFER to Section 419-10. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>Disconnect all the SJB connectors.</li> <li>Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>Connect all the SJB connectors and make sure they seat correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	

**Pinpoint Test O: The Anti-Lock Brake System (ABS) Warning Indicator Is Never/Always On**

**Normal Operation**

The status of the ABS system is sent to the instrument cluster from the ABS module over the communication network. The instrument cluster monitors the ABS input and illuminates the ABS warning indicator when a concern is present.

**Possible Causes**

- ABS module
- Instrument cluster

**PINPOINT TEST O: THE ANTI-LOCK BRAKE SYSTEM (ABS) WARNING INDICATOR IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>O1</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND ABS MODULE SELF-TESTS</b>	<p><b>Yes</b> REFER to Section 206-09.</p> <p><b>No</b> GO to <b>O2</b>.</p>
	<ul style="list-style-type: none"> <li>Check for recorded ABS module DTCs from the continuous and on-demand self-tests.</li> <li><b>Are any ABS module DTCs recorded?</b></li> </ul>	
<b>O2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	<p><b>Yes</b> GO to <b>O3</b>.</p> <p><b>No</b> GO to <b>O4</b>.</p>
	<ul style="list-style-type: none"> <li>Key in ON position.</li> <li>Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>Select the instrument cluster ABS warning indicator active command on and off. Observe the ABS warning indicator.</li> <li><b>Does the ABS warning indicator illuminate when selected on, and turn off when selected off?</b></li> </ul>	
<b>O3</b>	<b>CHECK FOR CORRECT ABS MODULE OPERATION</b>	<p><b>Yes</b> INSTALL a new ABS module. REFER to Section 206-09. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>Disconnect the ABS module connector.</li> <li>Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>Connect the ABS module connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	
<b>O4</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>Disconnect the instrument cluster connector.</li> <li>Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>Connect the instrument cluster connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	

**DIAGNOSIS AND TESTING (Continued)****Pinpoint Test P: The Low Oil Pressure Warning Indicator Is Never/Always On**

Refer to Wiring Diagrams Cell 60, Instrument Cluster for schematic and connector information.

**Normal Operation**

The oil pressure switch is a normally open switch that is hardwired to the smart junction box (SJB) through circuit 208 (GY). When the oil pressure is within normal ranges, the oil pressure switch closes, grounding the signal to the SJB. The SJB then sends a command signal to the instrument cluster through the communication network, to turn off the oil pressure warning indicator. When engine oil pressure is low, the oil pressure switch opens, removing the ground to the SJB. The SJB sends a low oil pressure command to the instrument cluster through the communication network to illuminate the oil pressure warning indicator.

**Possible Causes**

- Circuit 208 (GY) open or short to ground
- Engine oil pressure switch
- SJB
- Instrument cluster

**PINPOINT TEST P: THE LOW OIL PRESSURE WARNING INDICATOR IS NEVER/ALWAYS ON**

 **CAUTION:** Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

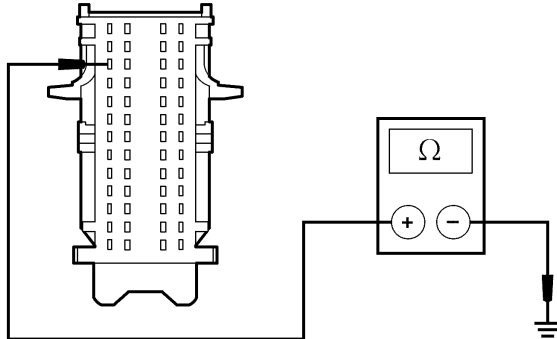
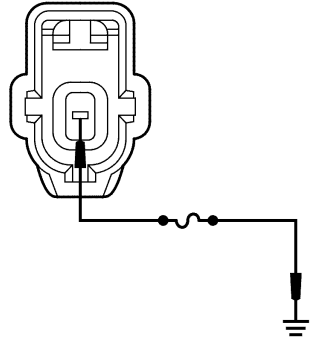
Test Step		Result / Action to Take
<b>P1</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster low oil pressure warning indicator active command on and off. Observe the low oil pressure warning indicator.</li> <li>• <b>Does the low oil pressure warning indicator illuminate when selected on, and turn off when selected off?</b></li> </ul>	<p><b>Yes</b> If the low oil pressure warning indicator is never on, GO to <b>P2</b>.</p> <p>If the low oil pressure warning indicator is always on, GO to <b>P4</b>.</p> <p><b>No</b> GO to <b>P8</b>.</p>
<b>P2</b>	<b>CHECK THE OIL PRESSURE SWITCH</b>	
	<ul style="list-style-type: none"> <li>• Key in OFF position.</li> <li>• Disconnect: Engine Oil Pressure Switch <b>C103</b>.</li> <li>• Key in ON position.</li> <li>• With the oil pressure switch disconnected, monitor the low oil pressure warning indicator.</li> <li>• <b>Is the low oil pressure warning indicator illuminated?</b></li> </ul>	<p><b>Yes</b> INSTALL a new engine oil pressure switch. TEST the system for normal operation.</p> <p><b>No</b> GO to <b>P3</b>.</p>
<b>P3</b>	<b>CHECK CIRCUIT 208 (GY) FOR A SHORT TO GROUND</b>	
	<ul style="list-style-type: none"> <li>• Key in OFF position.</li> <li>• Disconnect: SJB <b>C2280c</b>.</li> <li>• Disconnect: Engine Oil Pressure Switch <b>C103</b>.</li> </ul>	

(Continued)



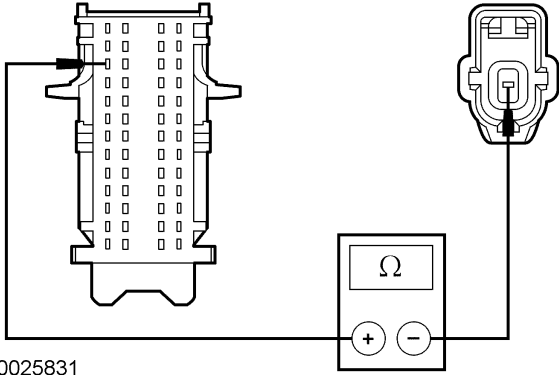
**DIAGNOSIS AND TESTING (Continued)**

**PINPOINT TEST P: THE LOW OIL PRESSURE WARNING INDICATOR IS NEVER/ALWAYS ON (Continued)**

	Test Step	Result / Action to Take
<p><b>P3</b></p>	<p><b>CHECK CIRCUIT 208 (GY) FOR A SHORT TO GROUND (Continued)</b></p> <ul style="list-style-type: none"> <li>Measure the resistance between the SJB C2280c-42, circuit 208 (GY), harness side and ground.</li> </ul>  <p>N0012025</p> <ul style="list-style-type: none"> <li><b>Is the resistance greater than 10,000 ohms?</b></li> </ul>	<p><b>Yes</b> GO to P7.</p> <p><b>No</b> REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.</p>
<p><b>P4</b></p>	<p><b>CHECK THE OIL PRESSURE SWITCH</b></p> <ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: Oil Pressure Switch C103.</li> <li>Connect a fused (5A) jumper wire between the oil pressure switch C103-1, circuit 208 (GY), harness side and ground.</li> </ul>  <p>N0002760</p> <ul style="list-style-type: none"> <li>Key in ON position.</li> <li><b>Does the low oil pressure warning indicator illuminate?</b></li> </ul>	<p><b>Yes</b> REMOVE the jumper wire. GO to P5.</p> <p><b>No</b> REMOVE the jumper wire. GO to P6.</p>
<p><b>P5</b></p>	<p><b>CHECK CIRCUIT 208 (GY) FOR AN OPEN</b></p> <ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: SJB C2280c.</li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST P: THE LOW OIL PRESSURE WARNING INDICATOR IS NEVER/ALWAYS ON (Continued)**

Test Step		Result / Action to Take
<b>P5</b>	<b>CHECK CIRCUIT 208 (GY) FOR AN OPEN (Continued)</b>	
	<ul style="list-style-type: none"> <li>Measure the resistance between the SJB C2280c-42, circuit 208 (GY), harness side and the engine oil pressure switch C103-1, circuit 208 (GY), harness side.</li> </ul>  <p>N0025831</p> <ul style="list-style-type: none"> <li>Is the resistance less than 5 ohms?</li> </ul>	<p><b>Yes</b> GO to <b>P8</b>.</p> <p><b>No</b> REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.</p>
<b>P6</b>	<b>CHECK THE OIL PRESSURE</b>	
	<ul style="list-style-type: none"> <li>Carry out the engine oil pressure test. Refer to Section 303-00.</li> <li>Is the oil pressure within specification?</li> </ul>	<p><b>Yes</b> INSTALL a new engine oil pressure switch. TEST the system for normal operation.</p> <p><b>No</b> REFER to Section 303-00.</p>
<b>P7</b>	<b>CHECK FOR CORRECT SJB OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect all the SJB connectors.</li> <li>Check for: <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect all the SJB connectors and make sure they seat correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li>Is the concern still present?</li> </ul>	<p><b>Yes</b> INSTALL a new SJB. REFER to Section 419-10. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p>
<b>P8</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect the instrument cluster connector.</li> <li>Check for: <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect the instrument cluster connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li>Is the concern still present?</li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p>

**Pinpoint Test Q: The Malfunction Indicator Lamp (MIL) Is Never/Always On****Normal Operation**

The MIL is controlled by the instrument cluster using data sent from the powertrain control module (PCM) over the communication network.

**Possible Causes**

- PCM
- Instrument cluster

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST Q: THE MALFUNCTION INDICATOR LAMP (MIL) IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>Q1</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND PCM SELF-TESTS</b>	
	<ul style="list-style-type: none"> <li>Check for recorded PCM DTCs from the continuous and on-demand self-tests.</li> <li><b>Are any DTCs recorded?</b></li> </ul>	<p><b>Yes</b> REFER to the <a href="#">Powertrain Control/Emissions Diagnosis (PC/ED) manual</a>.</p> <p><b>No</b> GO to <b>Q2</b>.</p>
<b>Q2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	
	<ul style="list-style-type: none"> <li>Key in ON position.</li> <li>Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>Select the instrument cluster warning MIL indicator active command on and off. Observe the MIL indicator.</li> <li><b>Does the MIL indicator illuminate when selected on, and turn off when selected off?</b></li> </ul>	<p><b>Yes</b> GO to <b>Q4</b>.</p> <p><b>No</b> GO to <b>Q3</b>.</p>
<b>Q3</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect the instrument cluster connector.</li> <li>Check for: <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect the instrument cluster connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
<b>Q4</b>	<b>CHECK FOR CORRECT PCM OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect all the PCM connectors.</li> <li>Check for: <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect all the PCM connectors and make sure they seat correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new PCM. REFER to Section 303-14. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>

**Pinpoint Test R: The Air Bag Warning Indicator Is Never/Always On**

[Refer to Wiring Diagrams Cell 60, Instrument Cluster for schematic and connector information.](#)

**Normal Operation**

The air bag warning indicator provides an indication that there is a restraint system concern present and the air bag may be inoperative or have degraded performance. If the instrument cluster does not receive the air bag warning indicator command over circuit 608 (BK/YE), the instrument cluster illuminates the air bag warning indicator.

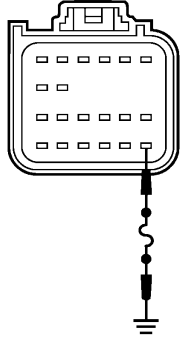
**Possible Causes**

- Circuit 608 (BK/YE) open or short to ground
- Restraints control module (RCM)
- Instrument cluster

**DIAGNOSIS AND TESTING (Continued)**

**PINPOINT TEST R: THE AIR BAG WARNING INDICATOR IS NEVER/ALWAYS ON**

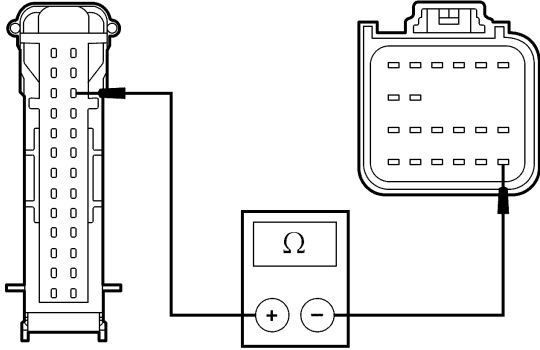
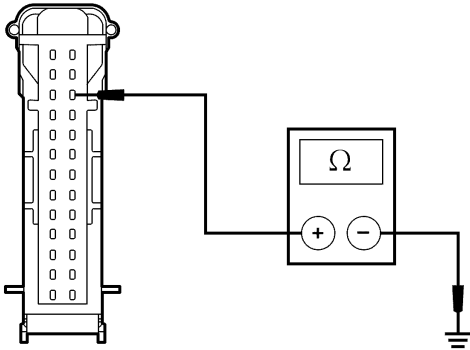
**⚠ CAUTION:** Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

Test Step		Result / Action to Take
<b>R1</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND RCM SELF-TESTS</b>	<b>Yes</b> REFER to Section 501-20B. <b>No</b> GO to <b>R2</b> .
	<ul style="list-style-type: none"> <li>Check for recorded RCM DTCs from the continuous and on-demand self-tests.</li> <li><b>Are any RCM DTCs recorded?</b></li> </ul>	
<b>R2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	<b>Yes</b> If the air bag indicator is never on, GO to <b>R5</b> . If the air bag indicator is always on, GO to <b>R3</b> . <b>No</b> GO to <b>R6</b> .
	<ul style="list-style-type: none"> <li>Key in ON position.</li> <li>Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>Select the instrument cluster air bag warning indicator active command on and off. Observe the air bag warning indicator.</li> <li><b>Does the air bag warning indicator illuminate when selected on, and turn off when selected off?</b></li> </ul>	
<b>R3</b>	<b>CHECK THE RCM FOR CORRECT OPERATION</b>	<b>Yes</b> REMOVE the jumper wire. GO to <b>R4</b> . <b>No</b> REMOVE the jumper wire. GO to <b>R8</b> .
	<ul style="list-style-type: none"> <li>Deactivate the supplemental restraint system (SRS). Refer to Section 501-20B.</li> <li>Key in OFF position.</li> <li>Disconnect: RCM <b>C2041a</b>.</li> <li>Connect a fused (5A) jumper wire between the RCM <b>C2041a-19</b>, circuit 608 (BK/YE), harness side and ground.</li> </ul> <div style="text-align: center;">  <p>A0040663</p> </div> <ul style="list-style-type: none"> <li>Key in ON position.</li> <li><b>Does the air bag indicator lamp illuminate after the instrument cluster proves out?</b></li> </ul>	
<b>R4</b>	<b>CHECK CIRCUIT 608 (BK/YE) FOR AN OPEN</b>	
	<ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: Instrument Cluster <b>C220</b>.</li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

**PINPOINT TEST R: THE AIR BAG WARNING INDICATOR IS NEVER/ALWAYS ON (Continued)**

Test Step		Result / Action to Take
<b>R4</b>	<b>CHECK CIRCUIT 608 (BK/YE) FOR AN OPEN (Continued)</b>	
	<ul style="list-style-type: none"> <li>Measure the resistance between the instrument cluster C220-24, circuit 608 (BK/YE), harness side and the RCM C2041a-19, circuit 608 (BK/YE), harness side.</li> </ul>  <p>N0012027</p> <ul style="list-style-type: none"> <li>Is the resistance less than 5 ohms?</li> </ul>	<p><b>Yes</b> GO to R7.</p> <p><b>No</b> REPAIR the circuit. REACTIVATE the SRS. REFER to Section 501-20B. TEST the system for normal operation.</p>
<b>R5</b>	<b>ISOLATE THE RCM</b>	
	<ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Deactivate the SRS. Refer to Section 501-20B.</li> <li>Disconnect: RCM C2041a.</li> <li>Observe the air bag warning indicator.</li> <li>Key in ON position.</li> <li>Does the air bag warning indicator illuminate?</li> </ul>	<p><b>Yes</b> GO to R8.</p> <p><b>No</b> GO to R6.</p>
<b>R6</b>	<b>CHECK CIRCUIT 608 (BK/YE) FOR A SHORT TO GROUND</b>	
	<ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: Instrument Cluster C220.</li> <li>Measure the resistance between the instrument cluster C220-24, circuit 608 (BK/YE), harness side and ground.</li> </ul>  <p>N0012028</p> <ul style="list-style-type: none"> <li>Is the resistance greater than 10,000 ohms?</li> </ul>	<p><b>Yes</b> GO to R7.</p> <p><b>No</b> REPAIR the circuit. ACTIVATE the SRS. REFER to Section 501-20B. TEST the system for normal operation.</p>
<b>R7</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect the instrument cluster connector.</li> <li>Check for:                             <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect the instrument cluster connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li>Is the concern still present?</li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. ACTIVATE the SRS. REFER to Section 501-20B. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ACTIVATE the SRS. REFER to Section 501-20B.</p>

(Continued)

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST R: THE AIR BAG WARNING INDICATOR IS NEVER/ALWAYS ON (Continued)**

Test Step		Result / Action to Take
<b>R8</b>	<b>CHECK FOR CORRECT RCM OPERATION</b>	<p><b>Yes</b> INSTALL a new RCM and ACTIVATE the SRS. REFER to Section 501-20B. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ACTIVATE the SRS. REFER to Section 501-20B.</p>
	<ul style="list-style-type: none"> <li>Disconnect all the RCM connectors.</li> <li>Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>Connect all the RCM connectors and make sure they seat correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	

**Pinpoint Test S: The Speed Control Indicator Is Never/Always On****Possible Causes**

- PCM
- Instrument cluster

**Normal Operation**

The speed control status information is sent to the instrument cluster from the powertrain control module (PCM) over the communication network.

**PINPOINT TEST S: THE SPEED CONTROL INDICATOR IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>S1</b>	<b>CHECK THE SPEED CONTROL OPERATION</b>	<p><b>Yes</b> GO to <b>S2</b>.</p> <p><b>No</b> REFER to Section 310-03.</p>
	<ul style="list-style-type: none"> <li>Test drive the vehicle and operate the speed control.</li> <li><b>Does the speed control operate correctly?</b></li> </ul>	
<b>S2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	<p><b>Yes</b> GO to <b>S3</b>.</p> <p><b>No</b> GO to <b>S4</b>.</p>
	<ul style="list-style-type: none"> <li>Key in ON position.</li> <li>Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>Select the instrument cluster speed control indicator active command on and off. Observe the speed control indicator.</li> <li><b>Does the speed control indicator illuminate when selected on, and turn off when selected off?</b></li> </ul>	
<b>S3</b>	<b>CHECK FOR CORRECT PCM OPERATION</b>	<p><b>Yes</b> INSTALL a new PCM. REFER to Section 303-14. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>Disconnect all the PCM connectors.</li> <li>Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>Connect all the PCM connectors and make sure they seat correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	
<b>S4</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>Disconnect the instrument cluster connector.</li> <li>Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>Connect the instrument cluster connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	

**DIAGNOSIS AND TESTING (Continued)**

**Pinpoint Test T: The Wrench Warning Indicator is Never/Always On**

**Possible Causes**

- PCM
- Instrument cluster

**Normal Operation**

The instrument cluster receives the electronic throttle control (ETC) status from the powertrain control module (PCM) over the communication network. When a system concern is detected, the PCM sends the instrument cluster a command signal to illuminate the wrench warning indicator.

**PINPOINT TEST T: THE WRENCH WARNING INDICATOR IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>T1</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND PCM SELF-TESTS</b>	<p><b>Yes</b> REFER to the <a href="#">Powertrain Control/Emissions Diagnosis (PC/ED) manual</a>.</p> <p><b>No</b> GO to <b>T2</b>.</p>
	<ul style="list-style-type: none"> <li>• Check for recorded PCM DTCs from the continuous and on-demand self-tests.</li> <li>• <b>Are any DTCs recorded?</b></li> </ul>	
<b>T2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	<p><b>Yes</b> GO to <b>T4</b>.</p> <p><b>No</b> GO to <b>T3</b>.</p>
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster wrench warning indicator active command on and off. Observe the wrench warning indicator.</li> <li>• <b>Does the wrench warning indicator illuminate when selected on, and turn off when selected off?</b></li> </ul>	
<b>T3</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>• Disconnect the instrument cluster connector.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect the instrument cluster connector and make sure it seats correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	
<b>T4</b>	<b>CHECK FOR CORRECT PCM OPERATION</b>	<p><b>Yes</b> INSTALL a new PCM. REFER to Section 303-14. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>• Disconnect all the PCM connectors.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all the PCM connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	

**DIAGNOSIS AND TESTING (Continued)****Pinpoint Test U: The Failsafe Cooling Warning Indicator Is Never/Always On****Normal Operation**

The failsafe cooling warning indicator informs the driver that the engine coolant is overheating due to loss of engine coolant fluid or other cause, and that the powertrain control module (PCM) is taking on limp home strategy. The other purpose is to inform the driver the engine cannot be cooled enough with the limp home strategy and the engine is about to be shut down by the PCM. The failsafe cooling information is sent from the PCM to the instrument cluster to illuminate the failsafe cooling warning indicator.

**Possible Causes**

- PCM
- Instrument cluster

**PINPOINT TEST U: THE FAILSAFE COOLING WARNING INDICATOR IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>U1</b>	<b>RETRIEVE THE RECORDED DTCs FROM THE CONTINUOUS AND ON-DEMAND PCM SELF-TESTS</b>	
	<ul style="list-style-type: none"> <li>• Check for recorded PCM DTCs from the continuous and on-demand self-tests.</li> <li>• <b>Are any DTCs recorded?</b></li> </ul>	<p><b>Yes</b> REFER to the <a href="#">Powertrain Control/Emissions Diagnosis (PC/ED) manual</a>.</p> <p><b>No</b> GO to <b>U2</b>.</p>
<b>U2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster failsafe warning indicator active command on and off. Observe the failsafe cooling warning indicator.</li> <li>• <b>Does the failsafe cooling warning indicator illuminate when selected on, and turn off when selected off?</b></li> </ul>	<p><b>Yes</b> GO to <b>U3</b>.</p> <p><b>No</b> GO to <b>U4</b>.</p>
<b>U3</b>	<b>CHECK FOR CORRECT PCM OPERATION</b>	
	<ul style="list-style-type: none"> <li>• Disconnect all the PCM connectors.</li> <li>• Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all the PCM connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new PCM. REFER to Section 303-14. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
<b>U4</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>• Disconnect the instrument cluster connector.</li> <li>• Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect the instrument cluster connector and make sure it seats correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>



**DIAGNOSIS AND TESTING (Continued)**

**Pinpoint Test V: The Door Ajar Warning Indicator Is Inoperative/Does Not Operate Correctly**

**Possible Causes**

- SJB
- Instrument cluster

**Normal Operation**

The door ajar indicator informs the driver if any of the doors, or the decklid is not completely closed. The information is sent from the smart junction box (SJB) to the instrument cluster over the communication network.

**PINPOINT TEST V: THE DOOR AJAR WARNING INDICATOR IS INOPERATIVE/DOES NOT OPERATE CORRECTLY**

Test Step		Result / Action to Take
<b>V1</b>	<b>CHECK THE OPERATION OF THE INTERIOR LAMPS</b>	<b>Yes</b> GO to <b>V2</b> . <b>No</b> REFER to Section 417-02.
	<ul style="list-style-type: none"> <li>• Open and close each door and the decklid, and monitor the interior lamps.</li> <li>• <b>Do the interior lamps operate correctly?</b></li> </ul>	
<b>V2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	<b>Yes</b> GO to <b>V3</b> . <b>No</b> GO to <b>V4</b> .
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument door ajar warning indicator active command on and off. Observe the door ajar warning indicator.</li> <li>• <b>Does the door ajar warning indicator illuminate when selected on, and turn off when selected off?</b></li> </ul>	
<b>V3</b>	<b>CHECK FOR CORRECT SJB OPERATION</b>	<b>Yes</b> INSTALL a new SJB. REFER to Section 419-10. TEST the system for normal operation. <b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.
	<ul style="list-style-type: none"> <li>• Disconnect all the SJB connectors.</li> <li>• Check for:                         <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all the SJB connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	
<b>V4</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	<b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation. <b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.
	<ul style="list-style-type: none"> <li>• Disconnect the instrument cluster connector.</li> <li>• Check for:                         <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect the instrument cluster connector and make sure it seats correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	

**Pinpoint Test W: The Traction Control Indicator Is Never/Always On**

**Possible Causes**

- Anti-lock brake system (ABS) module
- Instrument cluster

**Normal Operation**

The traction control indicator informs the driver that a traction control event is taking place, by flashing the indicator. It is also used to indicate a malfunction in the traction control system by illuminating the indicator constantly (not flashing).

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST W: THE TRACTION CONTROL INDICATOR IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>W1</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP ACTIVE COMMAND USING THE SCAN TOOL</b>	
	<ul style="list-style-type: none"> <li>Key in ON position.</li> <li>Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>Select the instrument cluster traction control indicator active command on and off. Observe the traction control indicator.</li> <li><b>Does the traction control indicator illuminate when selected on, and turn off when selected off?</b></li> </ul>	<b>Yes</b> GO to <b>W3</b> . <b>No</b> GO to <b>W2</b> .
<b>W2</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect the instrument cluster connector.</li> <li>Check for: <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect the instrument cluster connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation. <b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.
<b>W3</b>	<b>CHECK FOR CORRECT ABS MODULE OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect the ABS module connector.</li> <li>Check for: <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect the ABS module connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<b>Yes</b> INSTALL a new ABS module. REFER to Section 206-09. TEST the system for normal operation. <b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

**Pinpoint Test X: The Daytime Running Lamps (DRL) Indicator Is Never/Always On****Normal Operation**

When the DRL is on, the smart junction box (SJB) sends a message over the communication network to the instrument cluster to illuminate the DRL indicator.

**Possible Causes**

- SJB
- Instrument cluster

**PINPOINT TEST X: THE DAYTIME RUNNING LAMPS (DRL) INDICATOR IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>X1</b>	<b>CHECK THE DRL OPERATION</b>	
	<ul style="list-style-type: none"> <li>Check the operation of the DRL.</li> <li><b>Does the DRL operate correctly?</b></li> </ul>	<b>Yes</b> GO to <b>X2</b> . <b>No</b> REFER to Section 417-04.
<b>X2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	
	<ul style="list-style-type: none"> <li>Key in ON position.</li> <li>Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>Select the instrument cluster all warning lamps active command on and off. Observe the DRL indicator.</li> <li><b>Does the DRL indicator illuminate when selected on, and turn off when selected off?</b></li> </ul>	<b>Yes</b> GO to <b>X4</b> . <b>No</b> GO to <b>X3</b> .

(Continued)

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST X: THE DAYTIME RUNNING LAMPS (DRL) INDICATOR IS NEVER/ALWAYS ON (Continued)**

Test Step		Result / Action to Take
<b>X3</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	<b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.  <b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.
	<ul style="list-style-type: none"> <li>• Disconnect the instrument cluster connector.</li> <li>• Check for:               <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect the instrument cluster connector and make sure it seats correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	
<b>X4</b>	<b>CHECK FOR CORRECT SJB OPERATION</b>	<b>Yes</b> INSTALL a new SJB. REFER to Section 419-10. TEST the system for normal operation.  <b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.
	<ul style="list-style-type: none"> <li>• Disconnect all the SJB connectors.</li> <li>• Check for:               <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all the SJB connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	

**Pinpoint Test Y: The Low Fuel Warning Indicator Is Never/Always On****Possible Causes**

- Instrument cluster

**Normal Operation**

The low fuel indicator is on when the fuel level reaches a predetermined level of approximately 1/16 tank. The low fuel level warning indicator and the fuel gauge are controlled by the instrument cluster based upon the fuel level data provided by the smart junction box (SJB). When the instrument cluster receives the data, the fuel gauge indicates low fuel and the instrument cluster illuminates the low fuel warning indicator.

**PINPOINT TEST Y: THE LOW FUEL WARNING INDICATOR IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>Y1</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND USING THE SCAN TOOL</b>	<b>Yes</b> GO to <b>Y2</b> .  <b>No</b> GO to <b>Y3</b> .
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster low fuel warning indicator active command on and off. Observe the low fuel warning indicator.</li> <li>• <b>Does the low fuel warning indicator illuminate when selected on and turn off when selected off?</b></li> </ul>	
<b>Y2</b>	<b>CHECK THE FUEL GAUGE FOR CORRECT OPERATION</b>	<b>Yes</b> GO to <b>Y3</b> .  <b>No</b> GO to Pinpoint Test A.
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Check the fuel gauge.</li> <li>• <b>Does the fuel gauge operate correctly?</b></li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST Y: THE LOW FUEL WARNING INDICATOR IS NEVER/ALWAYS ON (Continued)**

Test Step		Result / Action to Take
<b>Y3</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>Disconnect the instrument cluster connector.</li> <li>Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>Connect the instrument cluster connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	

**Pinpoint Test Z: The Performance Shift Warning Indicator Is Never/Always On (GT 500 Only)****Normal Operation**

The performance shift indicator shares the SVT logo on the tachometer. The performance shift indicator is configurable on or off and uses engine rpm to determine when to illuminate. The performance shift indicator receives the engine rpm status from the powertrain control module (PCM) over the high speed controller area network (CAN) communication bus lines. When the engine rpm is equal to the preset (configured) shift rpm, the instrument cluster turns on the performance shift indicator.

**Possible Causes**

- PCM
- Instrument cluster

**PINPOINT TEST Z: THE PERFORMANCE SHIFT WARNING INDICATOR IS NEVER/ALWAYS ON (GT 500 ONLY)**

Test Step		Result / Action to Take
<b>Z1</b>	<b>CHECK THE PERFORMANCE SHIFT CONFIGURATION</b>	<p><b>Yes</b> GO to <b>Z2</b>.</p> <p><b>No</b> CONFIGURE the performance shift indicator on. REFER to the Owner's Literature for additional information. TEST the system for normal operation.</p>
	<ul style="list-style-type: none"> <li>Verify that the performance shift indicator is configured on. Refer to the Owner's Literature for additional information.</li> <li><b>Is the performance shift indicator configured on?</b></li> </ul>	
<b>Z2</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND PCM SELF-TESTS</b>	<p><b>Yes</b> REFER to the <a href="#">Powertrain Control/Emissions Diagnosis (PC/ED) manual</a>.</p> <p><b>No</b> GO to <b>Z3</b>.</p>
	<ul style="list-style-type: none"> <li>Retrieve the recorded DTCs from the PCM continuous and on-demand self-tests.</li> <li><b>Are there any DTCs retrieved?</b></li> </ul>	
<b>Z3</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND</b>	<p><b>Yes</b> GO to <b>Z4</b>.</p> <p><b>No</b> GO to <b>Z5</b>.</p>
	<ul style="list-style-type: none"> <li>Key in ON position.</li> <li>Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>Select the instrument cluster indicator lamp control.</li> <li>Select the performance shift indicator active command on then off again while observing the performance shift indicator.</li> <li><b>Does the performance shift indicator turn on when commanded on and turn off when commanded off?</b></li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST Z: THE PERFORMANCE SHIFT WARNING INDICATOR IS NEVER/ALWAYS ON (GT 500 ONLY) (Continued)**

Test Step		Result / Action to Take
<b>Z4</b>	<b>CHECK FOR CORRECT PCM OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect all PCM connectors.</li> <li>Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>Connect all PCM connectors and make sure they seat correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a PCM. REFER to Section 303-14. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
<b>Z5</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>Disconnect all instrument cluster connectors.</li> <li>Check for: <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>Connect all instrument cluster connectors and make sure they seat correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>

**Pinpoint Test AA: The Shift Indicator Is Never/Always On (GT 500 Only)****Normal Operation**

The shift indicator is used to inform the driver of shift points that provide the highest fuel economy. The shift indicator is controlled by the instrument cluster based upon a shift message sent from the powertrain control module (PCM) over the high speed controller area network (CAN) communication bus lines.

**Possible Causes**

- PCM
- Instrument cluster

**PINPOINT TEST AA: THE SHIFT INDICATOR IS NEVER/ALWAYS ON (GT 500 ONLY)**

Test Step		Result / Action to Take
<b>AA1</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND PCM SELF-TESTS</b>	
	<ul style="list-style-type: none"> <li>Retrieve the recorded DTCs from the PCM continuous and on-demand self-tests.</li> <li><b>Are there any DTCs retrieved?</b></li> </ul>	<p><b>Yes</b> REFER to the <a href="#">Powertrain Control/Emissions Diagnosis (PC/ED) manual</a>.</p> <p><b>No</b> GO to <a href="#">AA2</a>.</p>
<b>AA2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND</b>	
	<ul style="list-style-type: none"> <li>Key in ON position.</li> <li>Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>Select the instrument cluster indicator lamp control.</li> <li>Select the gear shift up indicator active command on then off again while observing the shift indicator.</li> <li><b>Does the shift indicator turn on when commanded on and turn off when commanded off?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">AA3</a>.</p> <p><b>No</b> GO to <a href="#">AA4</a>.</p>

(Continued)

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST AA: THE SHIFT INDICATOR IS NEVER/ALWAYS ON (GT 500 ONLY) (Continued)**

Test Step		Result / Action to Take
<b>AA3</b>	<b>CHECK FOR CORRECT PCM OPERATION</b>	<p><b>Yes</b> INSTALL a PCM. REFER to Section 303-14. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>Disconnect all PCM connectors.</li> <li>Check for: <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect all PCM connectors and make sure they seat correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	
<b>AA4</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
	<ul style="list-style-type: none"> <li>Disconnect all instrument cluster connectors.</li> <li>Check for: <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect all instrument cluster connectors and make sure they seat correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	

**Pinpoint Test AB: The Tire Pressure Monitoring System (TPMS) Warning Indicator Is Never/Always On****Normal Operation**

The instrument cluster receives the TPMS status message(s) from the smart junction box (SJB) over the medium speed controller area network (CAN) communication bus lines. If a low tire is detected by the TPMS, the SJB sends a message to the instrument cluster and the instrument cluster turns on the TPMS warning indicator. If there is a problem or fault detected in the TPMS, the SJB sends the appropriate message to the instrument cluster and the instrument cluster flashes the TPMS warning indicator. If the TPMS status message is invalid or missing for more than 5 seconds, the instrument cluster flashes the TPMS warning indicator for 75 seconds then turns the indicator on steady.

**Possible Causes**

- TPMS concern
- SJB
- Instrument cluster

**PINPOINT TEST AB: THE TIRE PRESSURE MONITORING SYSTEM (TPMS) WARNING INDICATOR IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>AB1</b>	<b>CHECK THE INSTRUMENT CLUSTER CONFIGURATION</b>	<p><b>Yes</b> GO to <a href="#">AB2</a>.</p> <p><b>No</b> CONFIGURE the TPMS in the instrument cluster. REFER to Section 418-01.</p>
	<ul style="list-style-type: none"> <li>Verify that the TPMS is configured on in the instrument cluster using as-built data. Refer to Section 418-01.</li> <li><b>Is the TPMS configured on?</b></li> </ul>	
<b>AB2</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND SJB SELF-TESTS</b>	<p><b>Yes</b> REFER to Section 419-10.</p> <p><b>No</b> GO to <a href="#">AB3</a>.</p>
	<ul style="list-style-type: none"> <li>Retrieve the recorded DTCs from the SJB continuous and on-demand self-tests.</li> <li><b>Are there any SJB DTCs retrieved?</b></li> </ul>	

(Continued)

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST AB: THE TIRE PRESSURE MONITORING SYSTEM (TPMS) WARNING INDICATOR IS NEVER/ALWAYS ON (Continued)**

Test Step		Result / Action to Take
<b>AB3</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND</b>	
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster indicator lamp control.</li> <li>• Select the tire pressure indicator active command on then off again while observing the TPMS warning indicator.</li> <li>• <b>Does the TPMS warning indicator turn on when commanded on and turn off when commanded off?</b></li> </ul>	<b>Yes</b> GO to <a href="#">AB4</a> .  <b>No</b> GO to <a href="#">AB5</a> .
<b>AB4</b>	<b>CHECK FOR CORRECT SJB OPERATION</b>	
	<ul style="list-style-type: none"> <li>• Disconnect all SJB connectors.</li> <li>• Check for:               <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all SJB connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<b>Yes</b> INSTALL a SJB. REFER to Section 419-10. TEST the system for normal operation.  <b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.
<b>AB5</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>• Disconnect all instrument cluster connectors.</li> <li>• Check for:               <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all instrument cluster connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.  <b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

**Pinpoint Test AC: The Anti-Theft Indicator Is Never/Always On****Normal Operation**

The instrument cluster receives the anti-theft status from the PCM over the high speed CAN communication bus lines. The anti-theft indicator proves out for 3 seconds when the ignition switch is turned to the RUN or the START position. If there is a passive anti-theft system (PATS) concern, the indicator either flashes rapidly or glows steadily (for more than 3 seconds) when the ignition switch is turned to the RUN or START position. PATS also flashes the anti-theft indicator every 2 seconds at ignition OFF to act as a visual theft deterrent.

**Possible Causes**

- PCM
- Instrument cluster

**PINPOINT TEST AC: THE ANTI-THEFT INDICATOR IS NEVER/ALWAYS ON**

Test Step		Result / Action to Take
<b>AC1</b>	<b>RETRIEVE THE RECORDED DTCs FROM BOTH THE CONTINUOUS AND ON-DEMAND PCM SELF-TESTS</b>	
	<ul style="list-style-type: none"> <li>• Retrieve the recorded DTCs from the PCM continuous and on-demand self-tests.</li> <li>• <b>Are there any DTCs retrieved?</b></li> </ul>	<b>Yes</b> If there are any PATS DTCs present, REFER to Section 419-01B. For all other PCM DTCs, REFER to the <a href="#">Powertrain Control/Emissions Diagnosis (PC/ED) manual</a> .  <b>No</b> GO to <a href="#">AC2</a> .

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

**PINPOINT TEST AC: THE ANTI-THEFT INDICATOR IS NEVER/ALWAYS ON (Continued)**

Test Step		Result / Action to Take
<b>AC2</b>	<b>CARRY OUT THE INSTRUMENT CLUSTER INDICATOR LAMP CONTROL ACTIVE COMMAND</b>	
	<ul style="list-style-type: none"> <li>• Key in ON position.</li> <li>• Enter the following diagnostic mode on the scan tool: Instrument Cluster Active Command.</li> <li>• Select the instrument cluster indicator lamp control.</li> <li>• Select the anti-theft indicator active command on then off again while observing the shift indicator.</li> <li>• <b>Does the anti-theft indicator turn on when commanded on and turn off when commanded off?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">AC3</a>.</p> <p><b>No</b> GO to <a href="#">AC4</a>.</p>
<b>AC3</b>	<b>CHECK FOR CORRECT PCM OPERATION</b>	
	<ul style="list-style-type: none"> <li>• Disconnect all PCM connectors.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all PCM connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a PCM. REFER to Section 303-14. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
<b>AC4</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	
	<ul style="list-style-type: none"> <li>• Disconnect all instrument cluster connectors.</li> <li>• Check for:                             <ul style="list-style-type: none"> <li>— corrosion</li> <li>— damaged pins</li> <li>— pushed-out pins</li> </ul> </li> <li>• Connect all instrument cluster connectors and make sure they seat correctly.</li> <li>• Operate the system and verify the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>

**Pinpoint Test AD: The Instrument Cluster Is Inoperative**

Refer to [Wiring Diagrams Cell 60, Instrument Cluster](#) for schematic and connector information.

**Normal Operation**

With the ignition switch in the START or RUN position, the instrument cluster receives voltage from the smart junction box (SJB) through circuits 489 (PK/BK) and 1266 (RD/YE). With the ignition switch in the OFF position, the instrument cluster receives its keep-alive voltage from the SJB through circuit 1001 (WH/YE). The instrument cluster is grounded through circuit 1205 (BK).

DTC B1556 — is set continuous DTC and on-demand if the instrument cluster receives a network message from the SJB indicating that the ignition switch is in the RUN or START position and there is no voltage on the instrument cluster run/start circuit 489 (PK/BK).

**Possible Causes**

- Fuse(s)
- Circuit 489 (PK/BK) open
- Circuit 1001 (WH/YE) open
- Circuit 1205 (BK) open
- Circuit 1266 (RD/YE) open
- Instrument cluster

**PINPOINT TEST AD: THE INSTRUMENT CLUSTER IS INOPERATIVE**

 **CAUTION:** Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

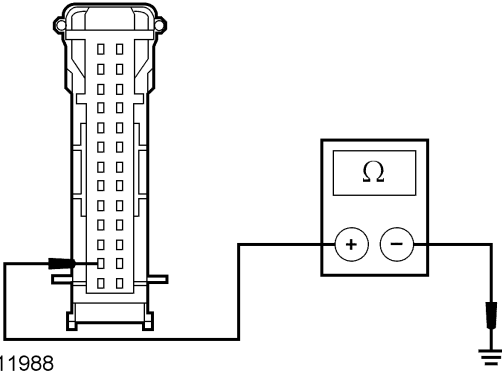
Test Step		Result / Action to Take
<b>AD1</b>	<b>CHECK THE INSTRUMENT CLUSTER VOLTAGE SUPPLY</b>	
	<ul style="list-style-type: none"> <li>• Key in OFF position.</li> <li>• Disconnect: Instrument Cluster <a href="#">C220</a>.</li> <li>• Key in ON position.</li> <li>• Measure the voltage between the instrument cluster, harness side and ground as follows:</li> </ul>	

(Continued)



**DIAGNOSIS AND TESTING (Continued)**

**PINPOINT TEST AD: THE INSTRUMENT CLUSTER IS INOPERATIVE (Continued)**

Test Step		Result / Action to Take								
<b>AD1</b>	<b>CHECK THE INSTRUMENT CLUSTER VOLTAGE SUPPLY (Continued)</b>	<p><b>Yes</b> GO to <b>AD2</b>.</p> <p><b>No</b> VERIFY the SJB fuses 8 (10A), 16 (5A), and 19 (5A) are OK. If OK, REPAIR the circuit in question. CLEAR the DTCs. REPEAT the self-test.</p>								
	<table border="1"> <thead> <tr> <th>Instrument Cluster Connector-Pin</th> <th>Circuit</th> </tr> </thead> <tbody> <tr> <td>C220-3</td> <td>1001 (WH/YE)</td> </tr> <tr> <td>C220-25</td> <td>1266 (RD/YE)</td> </tr> <tr> <td>C220-26</td> <td>489 (PK/BK)</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Are the voltages greater than 10 volts?</li> </ul>		Instrument Cluster Connector-Pin	Circuit	C220-3	1001 (WH/YE)	C220-25	1266 (RD/YE)	C220-26	489 (PK/BK)
Instrument Cluster Connector-Pin	Circuit									
C220-3	1001 (WH/YE)									
C220-25	1266 (RD/YE)									
C220-26	489 (PK/BK)									
<b>AD2</b>	<b>CHECK CIRCUIT 1205 (BK) FOR AN OPEN</b>									
	<ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Measure the resistance between the instrument cluster C220-2, circuit 1205 (BK) harness side and ground.</li> </ul>  <p>N0011988</p> <ul style="list-style-type: none"> <li>Is the resistance less than 5 ohms?</li> </ul>	<p><b>Yes</b> GO to <b>AD3</b>.</p> <p><b>No</b> REPAIR the circuit. TEST the system for normal operation.</p>								
<b>AD3</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>								
	<ul style="list-style-type: none"> <li>Disconnect the instrument cluster connector.</li> <li>Check for:                             <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect the instrument cluster connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li>Is the concern still present?</li> </ul>									

**Pinpoint Test AE: DTC B1557 — Ignition RUN/START Circuit Short To Battery**

Refer to Wiring Diagrams Cell 60, Instrument Cluster for schematic and connector information.

**Normal Operation**

With the ignition switch in the START or RUN position, the instrument cluster receives voltage from the smart junction box (SJB) through circuits 489 (PK/BK) and 1266 (RD/YE). With the ignition switch in the OFF position, the instrument cluster receives its keep-alive voltage from the SJB through circuit 1001 (WH/YE). The instrument cluster is grounded through circuit 1205 (BK).

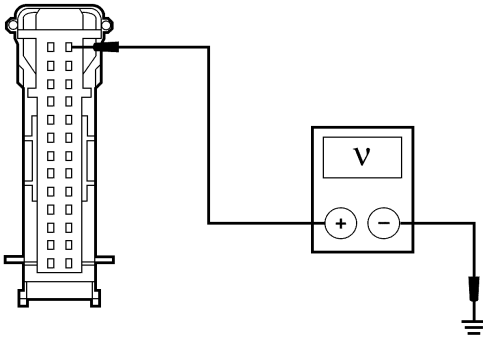
DTC B1557 — is a continuous DTC that sets if the instrument cluster receives a voltage input on circuit 489 (PK/BK) and a message from the SJB indicating that the ignition switch has transitioned to the OFF or ACC position.

**Possible Causes**

- Circuit 489 (PK/BK) short to voltage
- SJB
- Instrument cluster

**DIAGNOSIS AND TESTING (Continued)****PINPOINT TEST AE: DTC B1357 — IGNITION RUN/START CIRCUIT SHORT TO BATTERY**

**⚠ CAUTION:** Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

Test Step		Result / Action to Take
<b>AE1</b>	<b>CHECK THE INSTRUMENT CLUSTER VOLTAGE SUPPLY</b> <ul style="list-style-type: none"> <li>Key in OFF position.</li> <li>Disconnect: Instrument Cluster C220.</li> <li>Measure the voltage between the instrument cluster C220-26, circuit 489 (PK/BK), harness side and ground.</li> </ul>  <p>N0053436</p> <ul style="list-style-type: none"> <li><b>Is voltage present?</b></li> </ul>	<p><b>Yes</b> REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.</p> <p><b>No</b> GO to <b>AE2</b>.</p>
<b>AE2</b>	<b>CHECK THE SJB IGNITION SWITCH PIDs</b> <ul style="list-style-type: none"> <li>Key in ON position.</li> <li>Enter the following diagnostic mode on the scan tool: SJB Ignition Switch PIDs.</li> <li>Monitor the SJB ignition switch PIDs while moving the ignition switch from the RUN/START position to the OFF and ACC positions.</li> <li><b>Do the PIDs agree with the ignition switch position?</b></li> </ul>	<p><b>Yes</b> GO to <b>AE3</b>.</p> <p><b>No</b> VERIFY that all SJB controlled systems function correctly. GO to <b>AE4</b>.</p>
<b>AE3</b>	<b>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</b> <ul style="list-style-type: none"> <li>Disconnect the instrument cluster connector.</li> <li>Check for: <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect the instrument cluster connector and make sure it seats correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new instrument cluster. REFER to Instrument Cluster in this section. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>
<b>AE4</b>	<b>CHECK FOR CORRECT SJB OPERATION</b> <ul style="list-style-type: none"> <li>Disconnect all the SJB connectors.</li> <li>Check for: <ul style="list-style-type: none"> <li>corrosion</li> <li>damaged pins</li> <li>pushed-out pins</li> </ul> </li> <li>Connect all the SJB connectors and make sure they seat correctly.</li> <li>Operate the system and verify the concern is still present.</li> <li><b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> INSTALL a new SJB. REFER to Section 419-10. TEST the system for normal operation.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p>