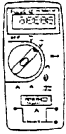
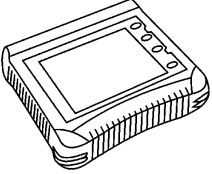


DIAGNOSIS AND TESTING

Communications Network

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

Special Tool(s)

 <p>ST1137-A</p>	<p>73III Automotive Meter 105-R0057 or equivalent</p>
 <p>ST2332-A</p>	<p>Worldwide Diagnostic System (WDS) Vehicle Communication Module (VCM) with appropriate adapters, or equivalent diagnostic tool</p>

Principles of Operation

The vehicle has 3 module communications networks:

- high speed controller area network (CAN)
- medium speed CAN
- international standards organization (ISO) 9141 communications network

The diagnostic tool connects to the communications networks through the data link connector (DLC). The DLC allows a diagnostic tool access to diagnose and test the vehicle systems of any module on the communications networks.

All 3 communications networks are connected to the DLC. This makes diagnosis and testing of these systems easier by allowing one diagnostic tool to be able to diagnose and control any module on the 3 communications networks from one common connector. The DLC can be found under the instrument panel between the steering column and the driver door.

The high speed CAN is an unshielded twisted pair cable, data plus circuit 1827 (WH/LG) and data minus, circuit 1828 (PK/LG). The high speed CAN is a high speed communications network used for the anti-lock brake system (ABS) module, the instrument cluster and the powertrain control module (PCM) communication. The ABS module, the PCM and the instrument cluster use the high speed CAN to communicate information back and forth such as engine RPM, vehicle speed and odometer. The modules on the high speed CAN are ignition switched. The high speed CAN is only on when the key is in the ON position. The high speed CAN is not fault tolerant meaning that if one of the circuits are shorted to voltage then the high speed CAN does not operate and communication is not possible. If the high speed CAN data minus circuit is shorted to ground, then communication is still possible. If the high speed CAN data plus circuit is shorted to ground, then communication is not possible. If one of the high speed CAN circuits becomes open, communication is possible on both sides of the open circuit. Communication across the open circuit is not impossible but unlikely. If there are issues with the high speed CAN, there may be missing functionality and problems connecting with a diagnostic tool. On the high speed CAN, there are 2 terminating modules which are composed of the PCM and the instrument cluster which are located at the far opposite ends of the high speed CAN wiring. Communication is possible with the loss of 1 termination resistor. Communication is not possible with the loss of 2 termination resistors.

DIAGNOSIS AND TESTING (Continued)

The medium speed CAN is an unshielded twisted pair cable, data plus circuit 1847 (WH/OG) and data minus circuit 1848 (PK/OG). The medium speed CAN is used for the audio unit, the instrument cluster, and the smart junction box (SJB) communications. The SJB, the instrument cluster and the audio unit use the medium speed CAN to communicate information back and forth such as dimming, fuel level, turn signal indicator on the instrument cluster and vehicle compensated volume. The medium speed CAN can be awake when the key is in the OFF position to carry out functions such as delay accessory. In order to do diagnostics, it is necessary to have the key in the ON position. The instrument cluster behaves as a communications network gateway transferring data from the high speed CAN to the medium speed CAN and from the medium speed CAN to the high speed CAN. Some of the data that the instrument cluster gateways is vehicle speed, fuel level and AC request. The medium speed CAN is not fault tolerant meaning that if one of the circuits are shorted to voltage then the medium speed CAN does not operate and communication is not possible. If the medium speed CAN data minus circuit is shorted to ground, then communication is still possible. If the medium speed CAN data plus circuit is shorted to ground, then communication is not possible. If one of the medium speed CAN circuits becomes open, communication is possible on both sides of the open circuit. Communication across the open circuit is not impossible but unlikely. If there are issues with the medium speed CAN, there may be missing functionality and problems connecting with a diagnostic tool. On the medium speed CAN, there are 2 terminating modules which are composed of the SJB and the instrument cluster which are located at the far opposite ends of the medium speed CAN wiring. Communication is possible with the loss of 1 termination resistor. Communication is not possible with the loss of 2 termination resistors.

The ISO 9141 communication network is a single circuit communications network, circuit 70 (LB/WH). The ISO 9141 communications network does not permit intermodule communication. When the diagnostic tool communicates to modules on the ISO 9141 communications network, the diagnostic tool must ask for all information; the modules cannot initiate communications. The ISO 9141 communications network does not function if the circuit is short to ground, voltage or an open. Also, if one of the modules on the ISO 9141 communications network loses power or shorts internally, communications to that module fails. The ISO 9141 communications network is used to communicate with the restraint control module (RCM).

Inspection and Verification

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

Visual Inspection Chart

Electrical
<ul style="list-style-type: none"> • Bussed electrical center (BEC) fuse 4 (30A) • Smart junction box (SJB) fuse 8 (10A) • Wiring harness • Connections

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, connect the diagnostic tool to the data link connector (DLC) and select the vehicle to be tested from the diagnostic tool menu. If the diagnostic tool does not communicate with the vehicle:
 - check that the program card is correctly installed.
 - check the connections to the vehicle.
 - check the ignition switch position.
5. If the diagnostic tool still does not communicate with the vehicle, [GO to Pinpoint Test J](#).
6. [GO to Pinpoint Test PC](#).

DIAGNOSIS AND TESTING (Continued)**Diagnostic Trouble Code (DTC) Chart**

DTC	Description	Source	Action
U0073	Control Module Communication Bus Off	Audio Unit	GO to Pinpoint Test H.
U0073	Control Module Communication Bus Off	Instrument Cluster	GO to Pinpoint Test G.
U0073	Control Module Communication Bus Off	SJB	GO to Pinpoint Test H.
U0073	CAN Bus Off-Transmit Error	ABS Module	GO to Pinpoint Test G.
U1900	CAN Communication Bus Fault-Receive Error	Audio Unit	GO to Pinpoint Test H.
U1900	CAN Communication Bus Fault-Receive Error	ABS Module	GO to Pinpoint Test G.
U1900	CAN Communication Bus Fault-Receive Error	Instrument Cluster	GO to Pinpoint Test G.
U1900	CAN Communication Bus Fault-Receive Error	SJB	GO to Pinpoint Test H.

System Precheck**PINPOINT TEST PC: DATA LINK DIAGNOSTICS TEST**

Test Step		Result / Action to Take
PC1	DATA LINK DIAGNOSTICS TEST	
	<ul style="list-style-type: none"> Key in ON position. Enter the following diagnostic mode on the diagnostic tool: Diagnostic Tool Data Link Test. Is system passed obtained? 	<p>Yes The test passed. RETURN to the Symptom Chart of the section for the module in question.</p> <p>No If high speed controller area network (CAN) circuit faults; all electronic control units no response/not equipped, GO to Pinpoint Test G. If medium speed CAN circuit faults; all electronic control units no response/not equipped, GO to Pinpoint Test H. If international standards organization (ISO) 9141 communications network circuit fault; all electronic control units no response/not equipped, GO to Pinpoint Test I. If no response from the diagnostic tool, GO to Pinpoint Test J. If the module in question is no response/not equipped, GO to Symptom Chart.</p>

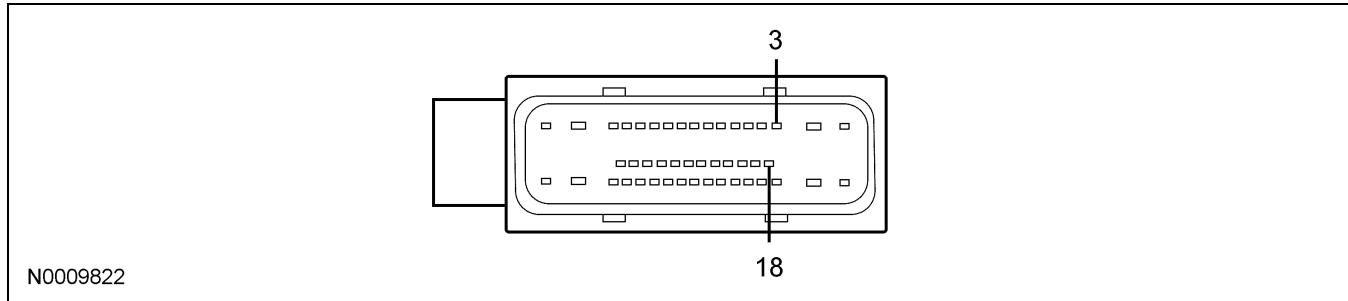
DIAGNOSIS AND TESTING (Continued)**Symptom Chart****Symptom Chart**

Condition	Possible Sources	Action
<ul style="list-style-type: none"> The anti-lock brake system (ABS) module does not respond to the diagnostic tool 	<ul style="list-style-type: none"> Circuit or connection in the high speed controller area network (CAN) ABS module 	<ul style="list-style-type: none"> GO to Pinpoint Test A.
<ul style="list-style-type: none"> The audio unit does not respond to the diagnostic tool 	<ul style="list-style-type: none"> Circuit or connection in the medium speed controller area network (CAN) Audio unit 	<ul style="list-style-type: none"> GO to Pinpoint Test B.
<ul style="list-style-type: none"> The instrument cluster does not respond to the diagnostic tool — high speed controller area network (CAN) 	<ul style="list-style-type: none"> Circuit or connection in the high speed CAN Instrument cluster 	<ul style="list-style-type: none"> GO to Pinpoint Test C.
<ul style="list-style-type: none"> The instrument cluster does not respond to the diagnostic tool — medium speed controller area network (CAN) 	<ul style="list-style-type: none"> Circuit or connection in the medium speed CAN Instrument cluster 	<ul style="list-style-type: none"> GO to Pinpoint Test D.
<ul style="list-style-type: none"> The powertrain control module (PCM) does not respond to the diagnostic tool 	<ul style="list-style-type: none"> Circuit or connection in the high speed controller area network (CAN) PCM 	<ul style="list-style-type: none"> GO to Pinpoint Test E.
<ul style="list-style-type: none"> The restraint control module (RCM) does not respond to the diagnostic tool 	<ul style="list-style-type: none"> Circuit or connection in the international standards organization (ISO) 9141 communications network RCM 	<ul style="list-style-type: none"> GO to Pinpoint Test I.
<ul style="list-style-type: none"> The smart junction box (SJB) does not respond to the diagnostic tool 	<ul style="list-style-type: none"> Circuit or connection in the medium speed controller area network (CAN) SJB 	<ul style="list-style-type: none"> GO to Pinpoint Test F.
<ul style="list-style-type: none"> No high speed controller area network (CAN) communication 	<ul style="list-style-type: none"> Circuit or connection in the high speed CAN High speed CAN modules 	<ul style="list-style-type: none"> GO to Pinpoint Test G.
<ul style="list-style-type: none"> No medium speed controller area network (CAN) communication 	<ul style="list-style-type: none"> Circuit or connection in the medium speed CAN Medium speed CAN modules 	<ul style="list-style-type: none"> GO to Pinpoint Test H.
<ul style="list-style-type: none"> No international standards organization (ISO) 9141 communications network communication 	<ul style="list-style-type: none"> Circuit or connection in the ISO 9141 communications network circuit Restraint control module (RCM) 	<ul style="list-style-type: none"> GO to Pinpoint Test I.
<ul style="list-style-type: none"> No module/network communication — no power to the diagnostic tool 	<ul style="list-style-type: none"> Data link connector (DLC) C251 Bussed electrical center (BEC) fuse 4 (30A) Smart junction box (SJB) fuse 8 (10A) Circuitry Diagnostic tool 	<ul style="list-style-type: none"> GO to Pinpoint Test J.

DIAGNOSIS AND TESTING (Continued)

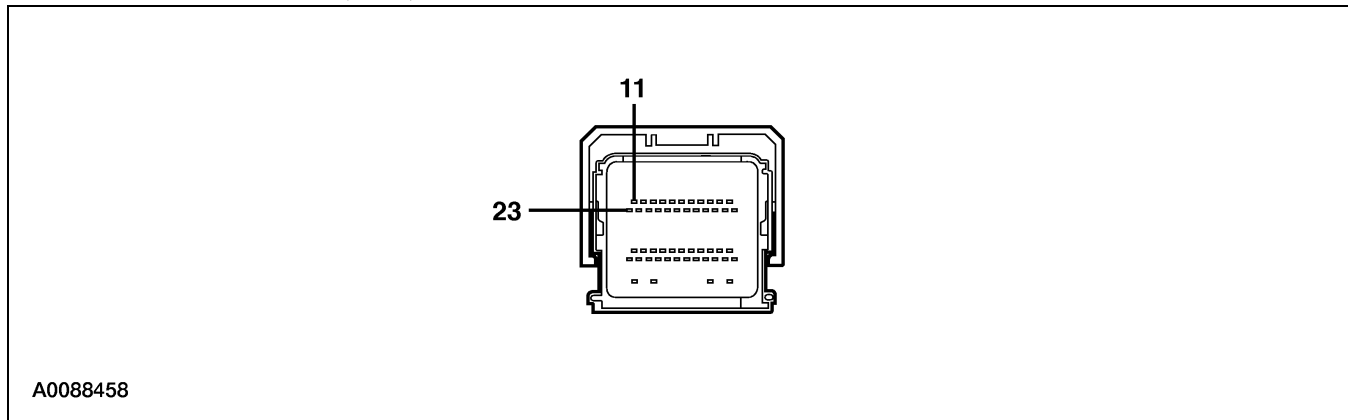
Connector Circuit Reference

Anti-Lock Brake System (ABS) Module C135



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
3	1827 (WH/LG) high speed controller area network (CAN) circuit	Less than 5 ohms between the ABS module and the data link connector (DLC). Greater than 10,000 ohms to ground with all the high speed CAN modules disconnected.
18	1828 (PK/LG) high speed CAN circuit	Less than 5 ohms between the ABS module and the DLC. Greater than 10,000 ohms to ground with all the high speed CAN modules disconnected.

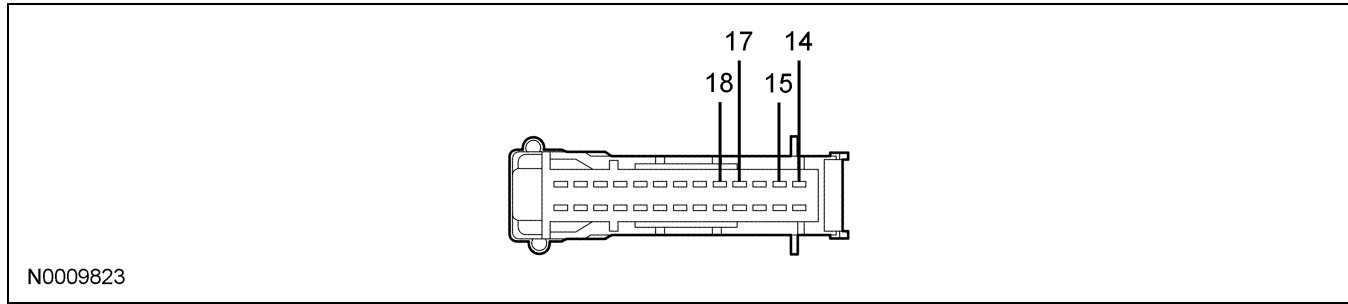
Powertrain Control Module (PCM) C175b



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
11	1827 (WH/LG) high speed controller area network (CAN) circuit	Less than 5 ohms between the data link connector (DLC) and the PCM. Greater than 10,000 ohms to ground with all the high speed CAN modules disconnected.
23	1828 (PK/LG) high speed CAN circuit	Less than 5 ohms between the DLC and the PCM. Greater than 10,000 ohms to ground with all the high speed CAN modules disconnected.

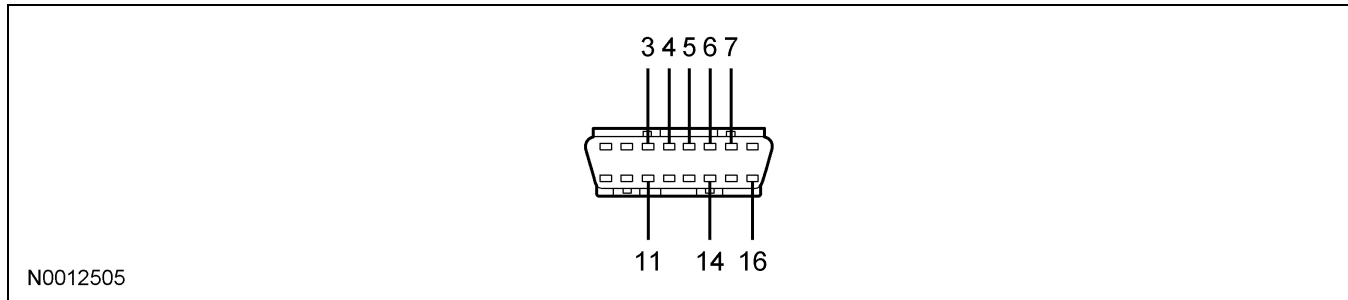
DIAGNOSIS AND TESTING (Continued)

Instrument Cluster C220



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
14	1848 (PK/OG) medium speed controller area network (CAN) circuit	Less than 5 ohms between the data link connector (DLC) and the instrument cluster. Greater than 10,000 ohms to ground with all the medium speed CAN modules disconnected.
15	1847 (WH/OG) medium speed CAN circuit	Less than 5 ohms between the DLC and the instrument cluster. Greater than 10,000 ohms to ground with all the medium speed CAN modules disconnected.
17	1828 (PK/LG) high speed CAN circuit	Less than 5 ohms between the DLC and the instrument cluster. Greater than 10,000 ohms between the DLC and ground with all the high speed CAN modules disconnected.
18	1827 (WH/LG) high speed CAN circuit	Less than 5 ohms between the DLC and the instrument cluster. Greater than 10,000 ohms between the DLC and ground with all the high speed CAN modules disconnected.

Data Link Connector (DLC) C251

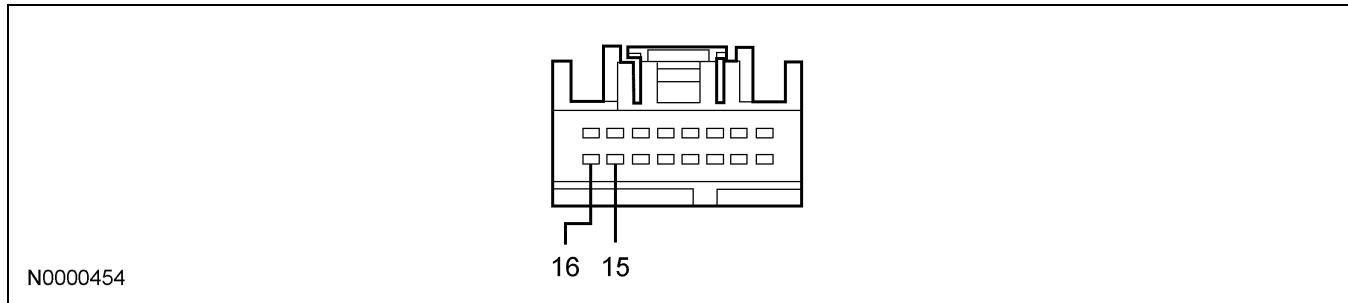


Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
3	1847 (WH/OG) medium speed controller area network (CAN) circuit	Less than 5 ohms between the DLC and the module in concern. Greater than 10,000 ohms between the DLC and ground with all the medium speed CAN modules disconnected.
4	1205 (BK) ground circuit	0 volts, less than 5 ohms to ground.
5	570 (BK/WH) ground circuit	0 volts, less than 5 ohms to ground.

DIAGNOSIS AND TESTING (Continued)

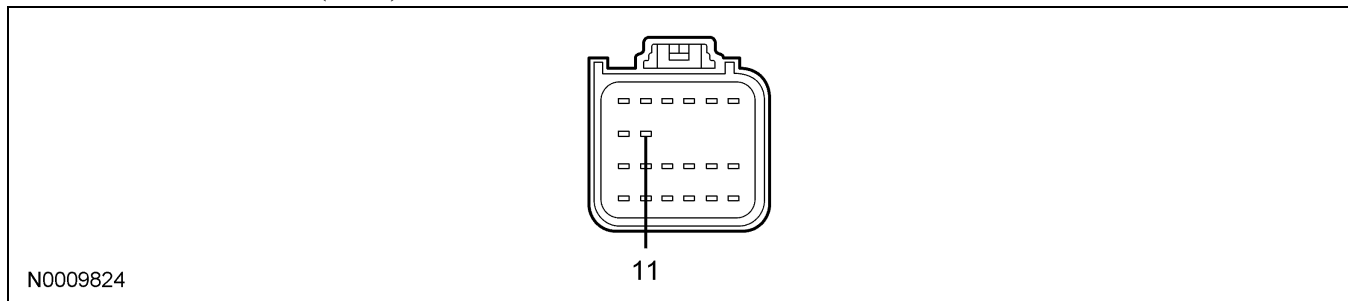
Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
6	1827 (WH/LG) high speed CAN circuit	Less than 5 ohms between the DLC and the module in concern. Greater than 10,000 ohms between the DLC and ground with all the high speed CAN modules disconnected.
7	70 (LB/WH) international standards organization (ISO) 9141 communications network circuit	Less than 5 ohms between the DLC and the restraint control module (RCM). Greater than 10,000 ohms between the DLC and ground with the RCM disconnected.
11	1848 (PK/OG) medium speed CAN circuit	Less than 5 ohms between the DLC and the module in concern. Greater than 10,000 ohms between the DLC and ground with all the medium speed CAN modules disconnected.
14	1828 (PK/LG) high speed CAN circuit	Less than 5 ohms between the DLC and the module in concern. Greater than 10,000 ohms between the DLC and ground with all the high speed CAN modules disconnected.
16	1047 (LG/RD) B+ power circuit	10 volts or greater. Greater than 10,000 ohms to ground.

Audio Unit C290a



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
15	1847 (WH/OG) medium speed controller area network (CAN) circuit	Less than 5 ohms between the data link connector (DLC) and the audio unit. Greater than 10,000 ohms to ground with all the medium speed CAN modules disconnected.
16	1848 (PK/OG) medium speed CAN circuit	Less than 5 ohms between the DLC and the audio unit. Greater than 10,000 ohms to ground with all the medium speed CAN modules disconnected.

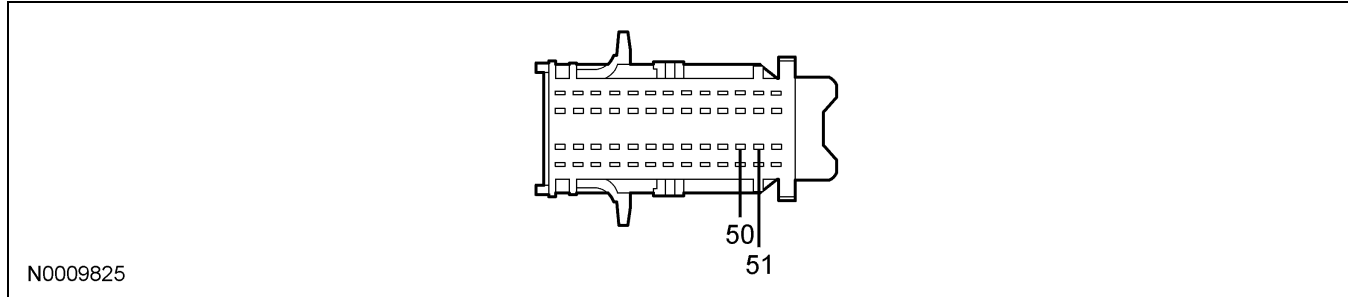
Restraint Control Module (RCM) C2041a



DIAGNOSIS AND TESTING (Continued)

Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
11	70 (LB/WH) international standards organization (ISO) 9141 communications network circuit	Less than 5 ohms between the data link connector (DLC) and the RCM. Greater than 10,000 ohms to ground with the RCM disconnected.

Smart Junction Box (SJB) C2280b



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
50	1847 (WH/OG) medium speed controller area network (CAN) circuit	Less than 5 ohms between the data link connector (DLC) and the SJB. Greater than 10,000 ohms to ground with all the medium speed CAN modules disconnected.
51	1848 (PK/OG) medium speed CAN circuit	Less than 5 ohms between the DLC and the SJB. Greater than 10,000 ohms to ground with all the medium speed CAN modules disconnected.

Pinpoint Test A: The Anti-Lock Brake System (ABS) Module Does Not Respond To The Diagnostic Tool

Normal Operation

The ABS module communicates with the diagnostic tool through the high speed controller area network (CAN), circuits 1827 (WH/LG) and 1828 (PK/LG). Check circuits 1827 (WH/LG) and 1828 (PK/LG) between the ABS module C135 and the data link connector (DLC) C251. The total resistance values must not be more than 5 ohms. If the resistance is more than 5 ohms there is an open in one of the high speed CAN circuits, damage to the DLC C251, damage to the ABS module C135, or a problem in an in-line connector.

Possible Causes

- high speed CAN circuit 1827 (WH/LG) open
- high speed CAN circuit 1828 (PK/LG) open
- ABS module C135
- ABS module

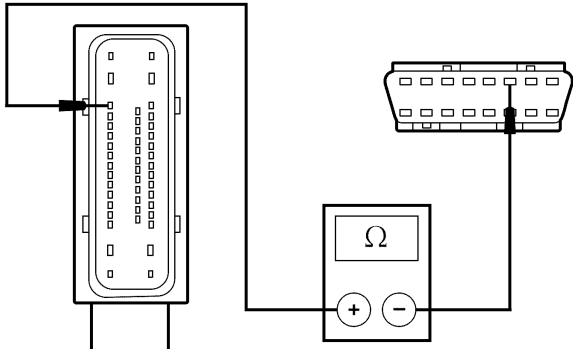
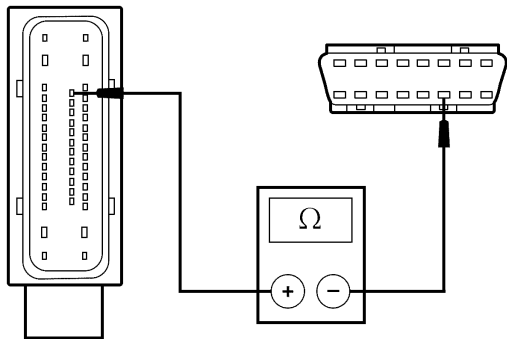
PINPOINT TEST A: THE ANTI-LOCK BRAKE SYSTEM (ABS) MODULE DOES NOT RESPOND TO THE DIAGNOSTIC TOOL

Test Step		Result / Action to Take
A1	CHECK THE ABS MODULE C135 FOR DAMAGE	Yes GO to A2 .
	<ul style="list-style-type: none"> • Key in OFF position. • Disconnect: ABS Module C135. 	

(Continued)

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST A: THE ANTI-LOCK BRAKE SYSTEM (ABS) MODULE DOES NOT RESPOND TO THE DIAGNOSTIC TOOL (Continued)

Test Step		Result / Action to Take
A1	CHECK THE ABS MODULE C135 FOR DAMAGE (Continued)	<p>No REPAIR the ABS module C135 as necessary. CARRY OUT the diagnostic tool data link test.</p>
	<ul style="list-style-type: none"> Inspect the ABS module C135 for damage. Is the ABS module C135 OK? 	
A2	CHECK THE HIGH SPEED CONTROLLER AREA NETWORK (CAN) CIRCUITS 1827 (WH/LG) AND 1828 (PK/LG) BETWEEN THE DATA LINK CONNECTOR (DLC) C251 AND THE ABS MODULE C135 FOR AN OPEN	<p>Yes GO to A3.</p> <p>No REPAIR the circuit in question. CLEAR the diagnostic trouble codes (DTCs). REPEAT the self-test. CARRY OUT the diagnostic tool data link test.</p>
	<ul style="list-style-type: none"> Measure the resistance between the ABS module C135-3, circuit 1827 (WH/LG), harness side and the DLC C251-6, circuit 1827 (WH/LG), harness side.  <p>N0012506</p>	
	<ul style="list-style-type: none"> Measure the resistance between the ABS module C135-18, circuit 1828 (PK/LG), harness side and the DLC C251-14, circuit 1828 (PK/LG), harness side.  <p>N0012507</p>	
	<ul style="list-style-type: none"> Are the resistances less than 5 ohms? 	
A3	CHECK FOR CORRECT ABS MODULE OPERATION	<p>Yes INSTALL a new ABS module. REFER to Section 206-09. CLEAR the DTCs. REPEAT the self-test. CARRY OUT the diagnostic tool data link test.</p> <p>No 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. CARRY OUT the diagnostic tool data link test.</p>
	<ul style="list-style-type: none"> Disconnect all the ABS module connectors. Check for: <ul style="list-style-type: none"> corrosion pushed-out pins Connect all the ABS module connectors and make sure they seat correctly. Operate the system and verify the concern is still present. Is the concern still present? 	

DIAGNOSIS AND TESTING (Continued)

Pinpoint Test B: The Audio Unit Does Not Respond To The Diagnostic Tool

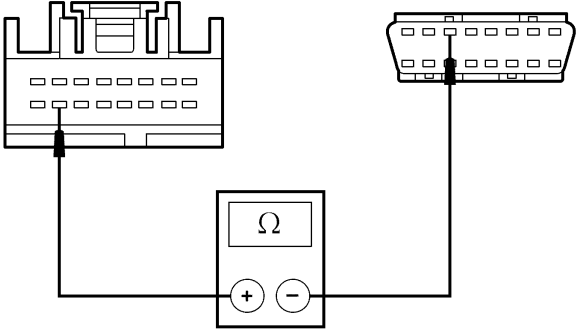
Normal Operation

The audio unit communicates with the diagnostic tool through the medium speed controller area network (CAN), circuits 1847 (WH/OG) and 1848 (PK/OG). Check circuits 1847 (WH/OG) and 1848 (PK/OG) between the audio unit C290a and the data link connector (DLC) C251. The total resistance values must not be more than 5 ohms. If the resistance is more than 5 ohms there is an open in one of the medium speed CAN circuits, damage to the DLC C251, damage to the audio unit connector, or damage to an in-line connector.

Possible Causes

- medium speed CAN circuit 1847 (WH/OG) open
- medium speed CAN circuit 1848 (PK/OG) open
- audio unit C290a
- audio unit

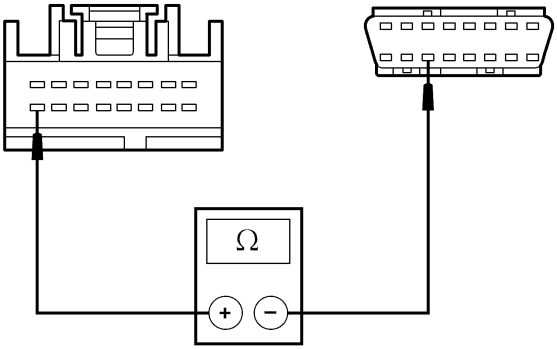
PINPOINT TEST B: THE AUDIO UNIT DOES NOT RESPOND TO THE DIAGNOSTIC TOOL

Test Step		Result / Action to Take
B1	<p>CHECK THE AUDIO UNIT C290A FOR DAMAGE</p> <ul style="list-style-type: none"> • Key in OFF position. • Disconnect: Audio Unit C290a. • Is the audio unit C290a OK? 	<p>Yes GO to B2.</p> <p>No REPAIR the audio unit C290a as necessary. CARRY OUT the diagnostic tool data link test.</p>
B2	<p>CHECK THE MEDIUM SPEED CONTROLLER AREA NETWORK (CAN) CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) BETWEEN THE DATA LINK CONNECTOR (DLC) C251 AND THE AUDIO UNIT C290A FOR AN OPEN</p> <ul style="list-style-type: none"> • Key in OFF position. • Measure the resistance between the audio unit C290a-15, circuit 1847 (WH/OG), harness side and the DLC C251-3, circuit 1847 (WH/OG), harness side. <div style="text-align: center;">  </div> <p>N0012514</p>	

(Continued)

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST B: THE AUDIO UNIT DOES NOT RESPOND TO THE DIAGNOSTIC TOOL (Continued)

Test Step	Result / Action to Take
<p>B2 CHECK THE MEDIUM SPEED CONTROLLER AREA NETWORK (CAN) CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) BETWEEN THE DATA LINK CONNECTOR (DLC) C251 AND THE AUDIO UNIT C290A FOR AN OPEN (Continued)</p> <ul style="list-style-type: none"> Measure the resistance between the audio unit C290a-16, circuit 1848 (PK/OG), harness side and the DLC C251-11, circuit 1848 (PK/OG), harness side.  <p>N0012515</p> <ul style="list-style-type: none"> Are the resistances less than 5 ohms? 	<p>Yes GO to B3.</p> <p>No REPAIR the circuit in question. CLEAR the diagnostic trouble codes (DTCs). REPEAT the self-test. CARRY OUT the diagnostic tool data link test.</p>
<p>B3 CHECK FOR CORRECT AUDIO UNIT OPERATION</p> <ul style="list-style-type: none"> Disconnect all the audio unit connectors. Check for: <ul style="list-style-type: none"> corrosion pushed-out pins Connect all the audio unit connectors and make sure they seat correctly. Operate the system and verify the concern is still present. Is the concern still present? 	<p>Yes INSTALL a new audio unit. REFER to Section 415-01. CLEAR the DTCs. REPEAT the self-test. CARRY OUT the diagnostic tool data link test.</p> <p>No 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. CARRY OUT the diagnostic tool data link test.</p>

Pinpoint Test C: The Instrument Cluster Does Not Respond To The Diagnostic Tool — High Speed Controller Area Network (CAN)

Normal Operation

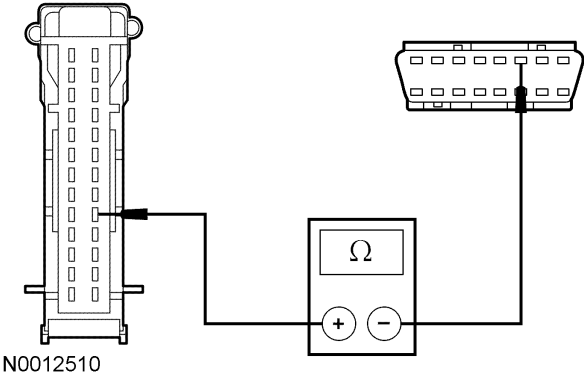
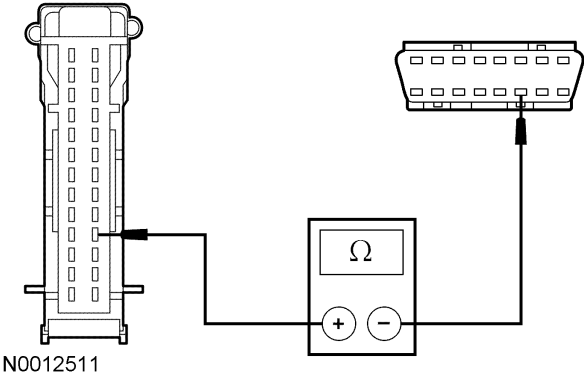
The instrument cluster communicates with the diagnostic tool through the high speed CAN, circuits 1827 (WH/LG) and 1828 (PK/LG). Check circuits 1827 (WH/LG) and 1828 (PK/LG) between the instrument cluster C220 and the data link connector (DLC) C251. The total resistance values must not be more than 5 ohms. If the resistance is more than 5 ohms there is an open in one of the high speed CAN circuits, damage to the DLC C251, damage to the instrument cluster C220, or a problem in an in-line connector.

Possible Causes

- high speed CAN circuit 1827 (WH/LG) open
- high speed CAN circuit 1828 (PK/LG) open
- instrument cluster C220
- instrument cluster

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST C: THE INSTRUMENT CLUSTER DOES NOT RESPOND TO THE DIAGNOSTIC TOOL — HIGH SPEED CONTROLLER AREA NETWORK (CAN)

Test Step		Result / Action to Take
C1	CHECK THE INSTRUMENT CLUSTER C220 FOR DAMAGE	<p>Yes GO to C2.</p> <p>No REPAIR the instrument cluster C220 as necessary. CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p>
	<ul style="list-style-type: none"> Depower the supplemental restraint system (SRS). Refer to Section 501-20B. Disconnect: Instrument Cluster C220. Inspect the instrument cluster C220 for damage. Is the instrument cluster C220 OK? 	
C2	CHECK CIRCUITS 1827 (WH/LG) AND 1828 (PK/LG) FOR AN OPEN BETWEEN THE DATA LINK CONNECTOR (DLC) C251 AND THE INSTRUMENT CLUSTER C220	<p>Yes GO to C3.</p> <p>No REPAIR the circuit in question. CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p>
	<ul style="list-style-type: none"> Measure the resistance between the instrument cluster C220-18, circuit 1827 (WH/LG), harness side and the DLC C251-6, circuit 1827 (WH/LG), harness side.  <p>N0012510</p>	
	<ul style="list-style-type: none"> Measure the resistance between the instrument cluster C220-17, circuit 1828 (PK/LG), harness side and the DLC C251-14, circuit 1828 (PK/LG), harness side.  <p>N0012511</p> <ul style="list-style-type: none"> Are the resistances less than 5 ohms? 	
C3	CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION	<p>Yes INSTALL a new instrument cluster. REFER to Section 413-01. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p> <p>No CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the diagnostic trouble codes (DTCs). REPEAT the self-test.</p>
	<ul style="list-style-type: none"> Disconnect all the instrument cluster connectors. Check for: <ul style="list-style-type: none"> corrosion pushed-out pins Connect all the instrument cluster connectors and make sure they seat correctly. Operate the system and verify the concern is still present. Is the concern still present? 	

DIAGNOSIS AND TESTING (Continued)

Pinpoint Test D: The Instrument Cluster Does Not Respond To The Diagnostic Tool — Medium Speed Controller Area Network (CAN)

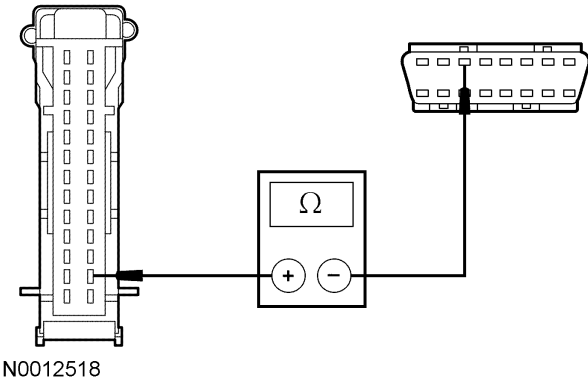
Normal Operation

The instrument cluster communicates with the diagnostic tool through the medium speed CAN, circuits 1847 (WH/OG) and 1848 (PK/OG). Check circuits 1847 (WH/OG) and 1848 (PK/OG) between the instrument cluster C220 and the data link connector (DLC) C251. The total resistance values must not be more than 5 ohms. If the resistance is more than 5 ohms there is an open in one of the medium speed CAN circuits, damage to the DLC C251, damage to the instrument cluster connector, or damage to an in-line connector.

Possible Causes

- medium speed CAN circuit 1847 (WH/OG) open
- medium speed CAN circuit 1848 (PK/OG) open
- instrument cluster C220
- instrument cluster

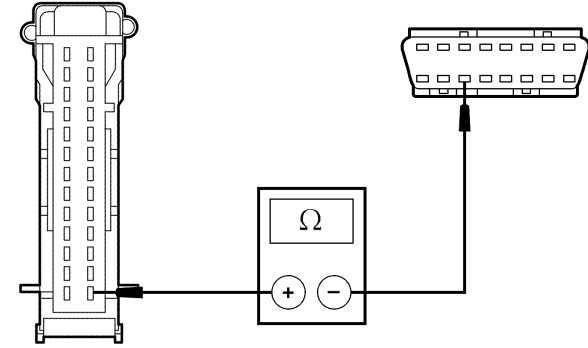
PINPOINT TEST D: THE INSTRUMENT CLUSTER DOES NOT RESPOND TO THE DIAGNOSTIC TOOL — MEDIUM SPEED CONTROLLER AREA NETWORK (CAN)

Test Step		Result / Action to Take
D1	<p>CHECK THE INSTRUMENT CLUSTER C220 FOR DAMAGE</p> <ul style="list-style-type: none"> • Depower the supplemental restraint system (SRS). Refer to Section 501-20B. • Disconnect: Instrument Cluster C220. • Inspect the instrument cluster C220 for damage. • Is the instrument cluster C220 OK? 	<p>Yes GO to D2.</p> <p>No REPAIR the instrument cluster C220 as necessary. CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p>
D2	<p>CHECK CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) FOR AN OPEN BETWEEN THE DATA LINK CONNECTOR (DLC) C251 AND THE INSTRUMENT CLUSTER C220</p> <ul style="list-style-type: none"> • Measure the resistance between the instrument cluster C220-15, circuit 1847 (WH/OG), harness side and the DLC C251-3, circuit 1847 (WH/OG), harness side.  <p>N0012518</p>	

(Continued)

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST D: THE INSTRUMENT CLUSTER DOES NOT RESPOND TO THE DIAGNOSTIC TOOL — MEDIUM SPEED CONTROLLER AREA NETWORK (CAN) (Continued)

Test Step		Result / Action to Take
D2	<p>CHECK CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) FOR AN OPEN BETWEEN THE DATA LINK CONNECTOR (DLC) C251 AND THE INSTRUMENT CLUSTER C220 (Continued)</p> <ul style="list-style-type: none"> Measure the resistance between the instrument cluster C220-14, circuit 1848 (PK/OG), harness side and the DLC C251-11, circuit 1848 (PK/OG), harness side.  <p>N0012519</p> <ul style="list-style-type: none"> Are the resistances less than 5 ohms? 	<p>Yes GO to D3.</p> <p>No REPAIR the circuit in question. CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p>
D3	<p>CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</p> <ul style="list-style-type: none"> Disconnect all the instrument cluster connectors. Check for: <ul style="list-style-type: none"> corrosion pushed-out pins Connect all the instrument cluster connectors and make sure they seat correctly. Operate the system and verify the concern is still present. Is the concern still present? 	<p>Yes INSTALL a new instrument cluster. REFER to Section 413-01. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p> <p>No CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the diagnostic trouble codes (DTCs). REPEAT the self-test.</p>

Pinpoint Test E: The Powertrain Control Module (PCM) Does Not Respond To The Diagnostic Tool

Normal Operation

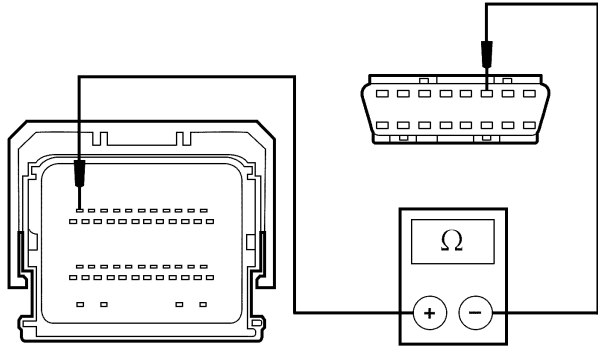
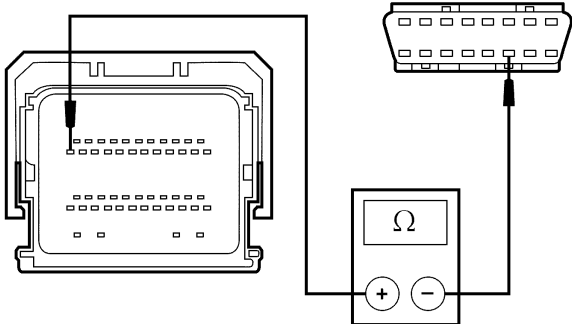
The PCM communicates with the diagnostic tool through the high speed controller area network (CAN), circuits 1827 (WH/LG) and 1828 (PK/LG). Check circuits 1827 (WH/LG) and 1828 (PK/LG) between the PCM C175b and the data link connector (DLC) C251. The total resistance values must not be more than 5 ohms. If the resistance is more than 5 ohms there is an open in one of the high speed CAN circuits, damage to the DLC C251, damage to the PCM C175b, or a problem in an in-line connector.

Possible Causes

- high speed CAN circuit 1827 (WH/LG) open
- high speed CAN circuit 1828 (PK/LG) open
- PCM C175b
- PCM

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST E: THE POWERTRAIN CONTROL MODULE (PCM) DOES NOT RESPOND TO THE DIAGNOSTIC TOOL

Test Step		Result / Action to Take
E1	<p>CHECK THE POWERTRAIN CONTROL MODULE (PCM) C175B FOR DAMAGE</p> <ul style="list-style-type: none"> • Key in OFF position. • Disconnect: PCM C175b. • Inspect the PCM C175b for damage. • Is the PCM C175b OK? 	<p>Yes GO to E2.</p> <p>No REPAIR the PCM C175b as necessary. CARRY OUT the diagnostic tool data link test.</p>
E2	<p>CHECK CIRCUITS 1827 (WH/LG) AND 1828 (PK/LG) FOR AN OPEN BETWEEN THE DATA LINK CONNECTOR (DLC) C251 AND THE PCM C175B</p> <ul style="list-style-type: none"> • Measure the resistance between the PCM C175b-11, circuit 1827 (WH/LG), harness side and the DLC C251-6, circuit 1827 (WH/LG), harness side.  <p>N0012508</p> <ul style="list-style-type: none"> • Measure the resistance between the PCM C175b-23, circuit 1828 (PK/LG), harness side and the DLC C251-14, circuit 1828 (PK/LG), harness side.  <p>N0012509</p> <ul style="list-style-type: none"> • Are the resistances less than 5 ohms? 	<p>Yes GO to E3.</p> <p>No REPAIR the circuit in question. CARRY OUT the diagnostic tool data link test.</p>
E3	<p>CHECK FOR CORRECT PCM OPERATION</p> <ul style="list-style-type: none"> • Disconnect all the PCM connectors. • Check for: <ul style="list-style-type: none"> • corrosion • pushed-out pins • Connect all the PCM connectors and make sure they seat correctly. • Operate the system and verify the concern is still present. • Is the concern still present? 	<p>Yes INSTALL a new PCM. REFER to Section 303-14. CARRY OUT the diagnostic tool data link test.</p> <p>No The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the diagnostic trouble codes (DTCs). REPEAT the self-test.</p>

DIAGNOSIS AND TESTING (Continued)

Pinpoint Test F: The Smart Junction Box (SJB) Does Not Respond To The Diagnostic Tool

Normal Operation

The SJB communicates with the diagnostic tool through the medium speed controller area network (CAN), circuits 1847 (WH/OG) and 1848 (PK/OG). Check circuits 1847 (WH/OG) and 1848 (PK/OG) between the SJB C2280b and the data link connector (DLC) C251. The total resistance values must not be more than 5 ohms. If the resistance is more than 5 ohms there is an open in one of the medium speed CAN circuits, damage to the DLC C251, damage to the SJB connector, or damage to an in-line connector.

Possible Causes

- medium speed CAN circuit 1847 (WH/OG) open
- medium speed CAN circuit 1848 (PK/OG) open
- SJB C2280b
- SJB

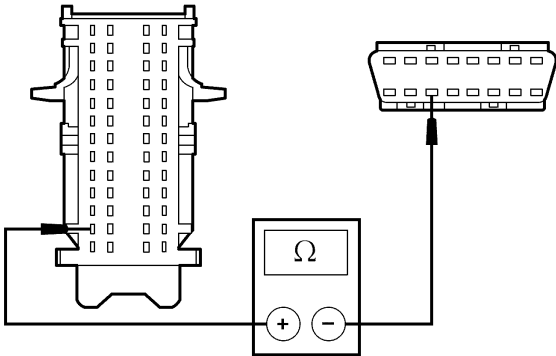
PINPOINT TEST F: THE SMART JUNCTION BOX (SJB) DOES NOT RESPOND TO THE DIAGNOSTIC TOOL

Test Step		Result / Action to Take
F1	<p>CHECK THE SMART JUNCTION BOX (SJB) C2280B FOR DAMAGE</p> <ul style="list-style-type: none"> • Key in OFF position. • Disconnect: SJB C2280b. • Inspect the SJB C2280b for damage. • Is the SJB C2280b OK? 	<p>Yes GO to F2.</p> <p>No REPAIR the SJB C2280b as necessary. CARRY OUT the diagnostic tool data link test.</p>
F2	<p>CHECK CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) FOR AN OPEN BETWEEN THE DLC C251 AND THE SJB C2280B</p> <ul style="list-style-type: none"> • Measure the resistance between the SJB C2280b-50, circuit 1847 (WH/OG), harness side and the DLC C251-3, circuit 1847 (WH/OG), harness side. <div style="text-align: center;"> </div> <p>N0012516</p>	

(Continued)

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST F: THE SMART JUNCTION BOX (SJB) DOES NOT RESPOND TO THE DIAGNOSTIC TOOL (Continued)

Test Step		Result / Action to Take
F2	<p>CHECK CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) FOR AN OPEN BETWEEN THE DLC C251 AND THE SJB C2280B (Continued)</p> <ul style="list-style-type: none"> Measure the resistance between the SJB C2280b-51, circuit 1848 (PK/OG), harness side and the DLC C251-11, circuit 1848 (PK/OG), harness side.  <p>N0012517</p> <ul style="list-style-type: none"> Are the resistances less than 5 ohms? 	<p>Yes GO to F3.</p> <p>No REPAIR the circuit in question. CARRY OUT the diagnostic tool data link test.</p>
F3	<p>CHECK FOR CORRECT SJB OPERATION</p> <ul style="list-style-type: none"> Disconnect all the SJB connectors. Check for: <ul style="list-style-type: none"> corrosion pushed-out pins Connect all the SJB connectors and make sure they seat correctly. Operate the system and verify the concern is still present. Is the concern still present? 	<p>Yes INSTALL a new SJB. REFER to Section 419-10. CARRY OUT the diagnostic tool data link test.</p> <p>No The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the diagnostic trouble codes (DTCs). REPEAT the self-test.</p>

Pinpoint Test G: No High Speed Controller Area Network (CAN) Communication

Normal Operation

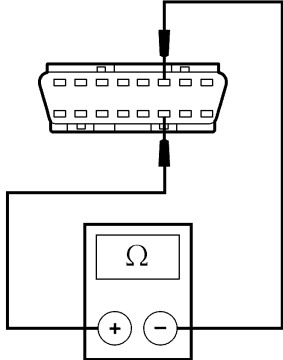
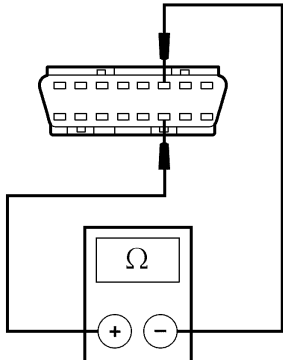
The high speed CAN has an unshielded twisted pair cable, circuits 1827 (WH/LG) and 1828 (PK/LG). The anti-lock brake system (ABS) module, the instrument cluster and the powertrain control module (PCM) are all on the high speed CAN. The total resistance values from the module to the data link connector (DLC) must not be more than 5 ohms. If the resistance is more than 5 ohms there is an open in one of the high speed CAN circuits, damage to the DLC C251, damage to one of the communications network module connectors, or damage to an in-line connector.

Possible Causes

- high speed CAN circuit 1827 (WH/LG) short to voltage, short to ground or open
- high speed CAN circuit 1828 (PK/LG) short to voltage, short to ground or open
- DLC C251
- ABS module C135
- instrument cluster C220
- PCM C175b
- ABS module
- instrument cluster
- PCM

DIAGNOSIS AND TESTING (Continued)

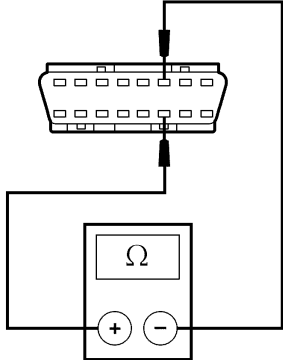
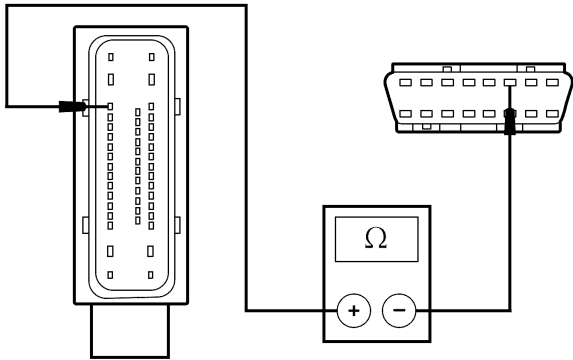
PINPOINT TEST G: NO HIGH SPEED CONTROLLER AREA NETWORK (CAN) COMMUNICATION

Test Step		Result / Action to Take
G1	<p>CHECK THE DATA LINK CONNECTOR (DLC) C251 FOR DAMAGE</p> <ul style="list-style-type: none"> Inspect the DLC C251 for damage. Is the DLC C251 OK? 	<p>Yes GO to G2.</p> <p>No REPAIR the DLC C251 as necessary. CARRY OUT the diagnostic tool data link test.</p>
G2	<p>CHECK THE HIGH SPEED CAN TERMINATION RESISTANCE</p> <ul style="list-style-type: none"> Key in OFF position. Measure the resistance between the DLC C251-14, circuit 1828 (PK/LG), harness side and the DLC C251-6, circuit 1827 (WH/LG), harness side.  <p>N0012691</p> <ul style="list-style-type: none"> Is the resistance between 54 and 66 ohms? 	<p>Yes GO to G5.</p> <p>No GO to G3.</p>
G3	<p>CHECK THE HIGH SPEED CAN RESISTANCE WITH THE POWERTRAIN CONTROL MODULE (PCM) C175B DISCONNECTED</p> <ul style="list-style-type: none"> Disconnect: PCM C175b. Measure the resistance between the DLC C251-14, circuit 1828 (PK/LG), harness side and the DLC C251-6, circuit 1827 (WH/LG), harness side.  <p>N0012691</p> <ul style="list-style-type: none"> Is the resistance between 108 and 132 ohms? 	<p>Yes GO to G4.</p> <p>No GO to G11.</p>
G4	<p>CHECK THE HIGH SPEED CAN RESISTANCE WITH THE INSTRUMENT CLUSTER C220 DISCONNECTED</p> <ul style="list-style-type: none"> Connect: PCM C175b. Depower the supplemental restraint system (SRS). Refer to Section 501-20B. Disconnect: Instrument Cluster C220. 	

(Continued)

DIAGNOSIS AND TESTING (Continued)

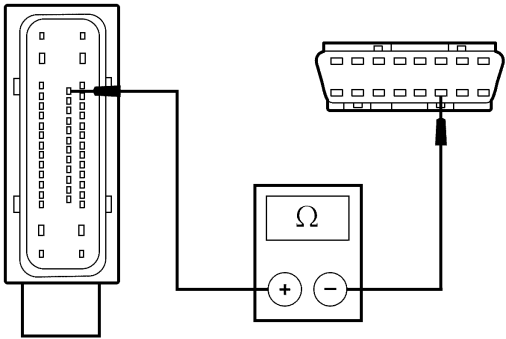
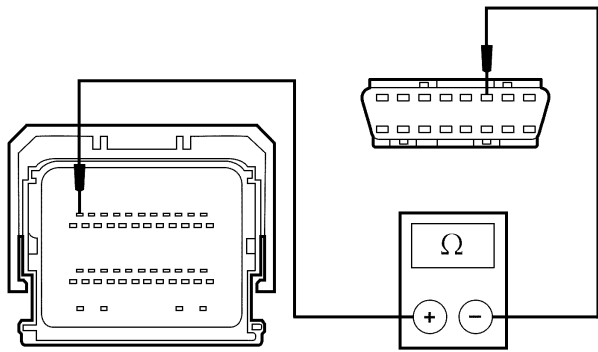
PINPOINT TEST G: NO HIGH SPEED CONTROLLER AREA NETWORK (CAN) COMMUNICATION (Continued)

Test Step		Result / Action to Take
G4	<p>CHECK THE HIGH SPEED CAN RESISTANCE WITH THE INSTRUMENT CLUSTER C220 DISCONNECTED (Continued)</p> <ul style="list-style-type: none"> Measure the resistance between the DLC C251-14, circuit 1828 (PK/LG), harness side and the DLC C251-6, circuit 1827 (WH/LG), harness side.  <p>N0012691</p> <ul style="list-style-type: none"> Is the resistance between 108 and 132 ohms? 	<p>Yes CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. GO to G5.</p> <p>No CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. GO to G9.</p>
G5	<p>CHECK THE ANTI-LOCK SYSTEM (ABS) MODULE C135 FOR DAMAGE</p> <ul style="list-style-type: none"> Key in OFF position. Disconnect: ABS Module C135. Inspect the ABS module C135 for damage. Is the ABS module C135 OK? 	<p>Yes GO to G6.</p> <p>No REPAIR the ABS module C135 as necessary. CARRY OUT the diagnostic tool data link test.</p>
G6	<p>CHECK CIRCUITS 1827 (WH/LG) AND 1828 (PK/LG) FOR AN OPEN BETWEEN THE DLC C251 AND THE ABS MODULE C135</p> <ul style="list-style-type: none"> Measure the resistance between the ABS module C135-3, circuit 1827 (WH/LG), harness side and the DLC C251-6, circuit 1827 (WH/LG), harness side.  <p>N0012506</p>	

(Continued)

DIAGNOSIS AND TESTING (Continued)

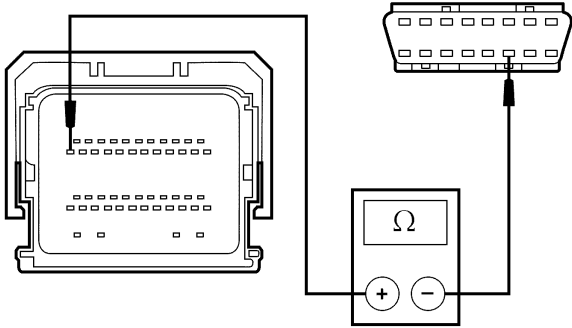
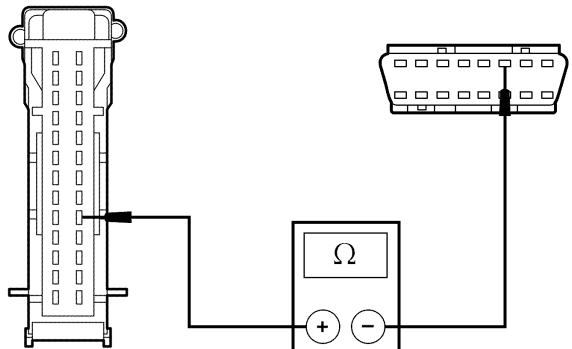
PINPOINT TEST G: NO HIGH SPEED CONTROLLER AREA NETWORK (CAN) COMMUNICATION (Continued)

Test Step		Result / Action to Take
G6	CHECK CIRCUITS 1827 (WH/LG) AND 1828 (PK/LG) FOR AN OPEN BETWEEN THE DLC C251 AND THE ABS MODULE C135 (Continued)	
	<ul style="list-style-type: none"> Measure the resistance between the ABS module C135-18, circuit 1828 (PK/LG), harness side and the DLC C251-14, circuit 1828 (PK/LG), harness side.  <p>N0012507</p> <ul style="list-style-type: none"> Are the resistances less than 5 ohms? 	<p>Yes GO to G7.</p> <p>No REPAIR the circuit in question. CARRY OUT the diagnostic tool data link test.</p>
G7	CHECK THE COMMUNICATIONS NETWORK WITH THE ABS MODULE C135 DISCONNECTED	
	<ul style="list-style-type: none"> Key in ON position. Enter the following diagnostic mode on the diagnostic tool: Diagnostic Tool Data Link Test. Is system passed obtained? 	<p>Yes GO to G15.</p> <p>No CONNECT the ABS module C135. GO to G8.</p>
G8	CHECK THE PCM C175B FOR DAMAGE	
	<ul style="list-style-type: none"> Key in OFF position. Disconnect: PCM C175b. Inspect the PCM C175b for damage. Is the PCM C175b OK? 	<p>Yes GO to G9.</p> <p>No REPAIR the PCM C175b as necessary. CARRY OUT the diagnostic tool data link test.</p>
G9	CHECK CIRCUITS 1827 (WH/LG) AND 1828 (PK/LG) FOR AN OPEN BETWEEN THE DLC C251 AND THE PCM C175B	
	<ul style="list-style-type: none"> Measure the resistance between the PCM C175b-11, circuit 1827 (WH/LG), harness side and the DLC C251-6, circuit 1827 (WH/LG), harness side.  <p>N0012508</p>	

(Continued)

DIAGNOSIS AND TESTING (Continued)

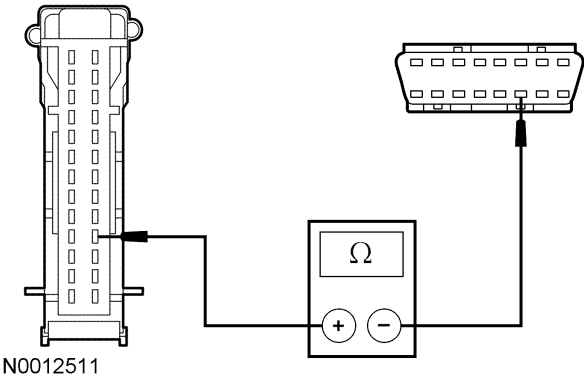
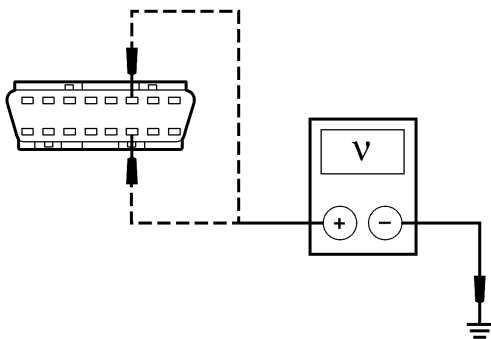
PINPOINT TEST G: NO HIGH SPEED CONTROLLER AREA NETWORK (CAN) COMMUNICATION (Continued)

Test Step		Result / Action to Take
G9	<p>CHECK CIRCUITS 1827 (WH/LG) AND 1828 (PK/LG) FOR AN OPEN BETWEEN THE DLC C251 AND THE PCM C175B (Continued)</p> <ul style="list-style-type: none"> Measure the resistance between the PCM C175b-23, circuit 1828 (PK/LG), harness side and the DLC C251-14, circuit 1828 (PK/LG), harness side.  <p>N0012509</p> <ul style="list-style-type: none"> Are the resistances less than 5 ohms? 	<p>Yes If sent here from G4, GO to G17. If sent here from G8, GO to G10.</p> <p>No REPAIR the circuit in question. CARRY OUT the diagnostic tool data link test.</p>
G10	<p>CHECK THE INSTRUMENT CLUSTER C220 FOR DAMAGE</p> <ul style="list-style-type: none"> Depower the SRS. Refer to Section 501-20B. Disconnect: Instrument Cluster C220. Inspect the instrument cluster C220 for damage. Is the instrument cluster C220 OK? 	<p>Yes GO to G11.</p> <p>No REPAIR the instrument cluster C220 as necessary. CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p>
G11	<p>CHECK CIRCUITS 1827 (WH/LG) AND 1828 (PK/LG) FOR AN OPEN BETWEEN THE DLC C251 AND THE INSTRUMENT CLUSTER C220</p> <ul style="list-style-type: none"> Measure the resistance between the instrument cluster C220-18, circuit 1827 (WH/LG), harness side and the DLC C251-6, circuit 1827 (WH/LG), harness side.  <p>N0012510</p>	

(Continued)

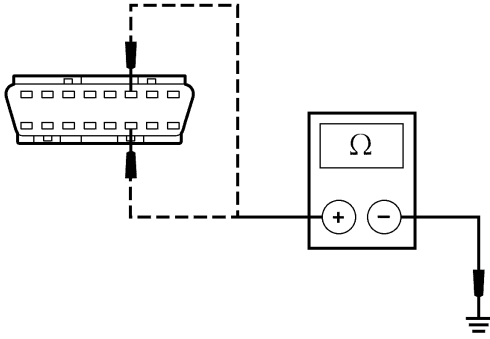
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST G: NO HIGH SPEED CONTROLLER AREA NETWORK (CAN) COMMUNICATION (Continued)

Test Step		Result / Action to Take
G11	<p>CHECK CIRCUITS 1827 (WH/LG) AND 1828 (PK/LG) FOR AN OPEN BETWEEN THE DLC C251 AND THE INSTRUMENT CLUSTER C220 (Continued)</p> <ul style="list-style-type: none"> Measure the resistance between the instrument cluster C220-17, circuit 1828 (PK/LG), harness side and the DLC C251-14, circuit 1828 (PK/LG), harness side.  <p>N0012511</p> <ul style="list-style-type: none"> Are the resistances less than 5 ohms? 	<p>Yes If sent here from G3, GO to G16. If sent here from G10, GO to G12.</p> <p>No REPAIR the circuit in question. CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p>
G12	<p>CHECK THE HIGH SPEED CAN CIRCUITS 1827 (WH/LG) AND 1828 (PK/LG) FOR A SHORT TO VOLTAGE</p> <ul style="list-style-type: none"> Disconnect: ABS Module C135. Key in ON position. Measure the voltage between the DLC C251-6, circuit 1827 (WH/LG), harness side and ground; and between the DLC C251-14, circuit 1828 (PK/LG), harness side and ground.  <p>N0012512</p> <ul style="list-style-type: none"> Is any voltage present? 	<p>Yes REPAIR the circuit in question. CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p> <p>No GO to G13.</p>
G13	<p>CHECK THE HIGH SPEED CAN CIRCUITS 1827 (WH/LG) AND 1828 (PK/LG) FOR A SHORT TO GROUND</p> <ul style="list-style-type: none"> Key in OFF position. 	

(Continued)

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST G: NO HIGH SPEED CONTROLLER AREA NETWORK (CAN) COMMUNICATION
(Continued)**

Test Step		Result / Action to Take
G13	CHECK THE HIGH SPEED CAN CIRCUITS 1827 (WH/LG) AND 1828 (PK/LG) FOR A SHORT TO GROUND (Continued)	
	<ul style="list-style-type: none"> Measure the resistance between the DLC C251-6, circuit 1827 (WH/LG), harness side and ground; and between the DLC C251-14, circuit 1828 (PK/LG), harness side and ground.  <p>N0012513</p> <ul style="list-style-type: none"> Are the resistances greater than 10,000 ohms? 	<p>Yes GO to G14.</p> <p>No REPAIR the circuit in question. CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p>
G14	CHECK THE HIGH SPEED CAN WITH A SUBSTITUTED PCM	
	<ul style="list-style-type: none"> Connect: ABS Module C135. Connect: Instrument Cluster C220. Install a known good PCM. Refer to Section 303-14. Repower the SRS. Refer to Section 501-20B. Key in ON position. Enter the following diagnostic mode on the diagnostic tool: Diagnostic Tool Data Link Test. Is system passed obtained? 	<p>Yes GO to G17.</p> <p>No GO to G16.</p>
G15	CHECK FOR CORRECT ABS MODULE OPERATION	
	<ul style="list-style-type: none"> Disconnect all the ABS module connectors. Check for: <ul style="list-style-type: none"> corrosion pushed-out pins Connect all the ABS module connectors and make sure they seat correctly. Operate the system and verify the concern is still present. Is the concern still present? 	<p>Yes INSTALL a new ABS module. REFER to Section 206-09. CARRY OUT the diagnostic tool data link test.</p> <p>No The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the diagnostic trouble codes (DTCs). REPEAT the self-test.</p>
G16	CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION	
	<ul style="list-style-type: none"> Disconnect all the instrument cluster connectors. Check for: <ul style="list-style-type: none"> corrosion pushed-out pins Connect all the instrument cluster connectors and make sure they seat correctly. Operate the system and verify the concern is still present. Is the concern still present? 	<p>Yes INSTALL a new instrument cluster. REFER to Section 413-01. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p> <p>No CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. 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>

(Continued)

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST G: NO HIGH SPEED CONTROLLER AREA NETWORK (CAN) COMMUNICATION (Continued)

Test Step		Result / Action to Take
G17	CHECK FOR CORRECT PCM OPERATION	
	<ul style="list-style-type: none"> • Disconnect all the PCM connectors. • Check for: <ul style="list-style-type: none"> • corrosion • pushed-out pins • Connect all the PCM connectors and make sure they seat correctly. • Operate the system and verify the concern is still present. • Is the concern still present? 	<p>Yes INSTALL a new PCM. REFER to Section 303-14. CARRY OUT the diagnostic tool data link test.</p> <p>No 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 H: No Medium Speed Controller Area Network (CAN) Communication

Normal Operation

The medium speed CAN has an unshielded twisted pair cable, circuits 1847 (WH/OG) and 1848 (PK/OG). The audio unit, the instrument cluster, and the smart junction box (SJB) are all on the medium speed CAN. The total resistance values from the data link connector (DLC) C251 must not be more than 5 ohms. If the resistance is more than 5 ohms there is an open in one of the medium speed CAN circuits, damage to the DLC C251, damage to one of the communications network module connectors, or damage to an in-line connector.

Possible Causes

- medium speed CAN circuit 1847 (WH/OG) short to ground, short to voltage, or open
- medium speed CAN circuit 1848 (PK/OG) short to ground, short to voltage, or open
- DLC C251
- audio unit C290a
- instrument cluster C220
- SJB C2280b
- audio unit
- instrument cluster
- SJB

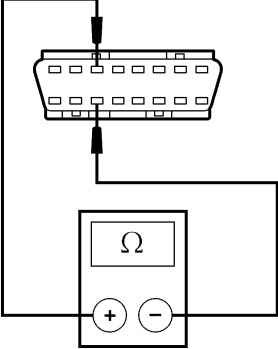
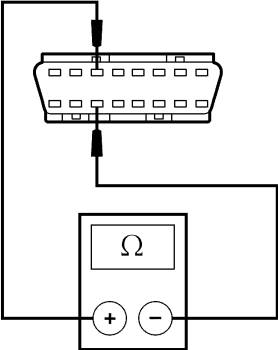
PINPOINT TEST H: NO MEDIUM SPEED CONTROLLER ARE NETWORK (CAN) COMMUNICATION

Test Step		Result / Action to Take
H1	CHECK THE DATA LINK CONNECTOR (DLC) C251 FOR DAMAGE	
	<ul style="list-style-type: none"> • Inspect the DLC C251 for damage. • Is the DLC C251 OK? 	<p>Yes GO to H2.</p> <p>No REPAIR the DLC C251 as necessary. CARRY OUT the diagnostic tool data link test.</p>
H2	CHECK THE MEDIUM SPEED CAN TERMINATION RESISTANCE	
	<ul style="list-style-type: none"> • Key in OFF position. • Disconnect the battery, refer to Section 414-01. 	

(Continued)

DIAGNOSIS AND TESTING (Continued)

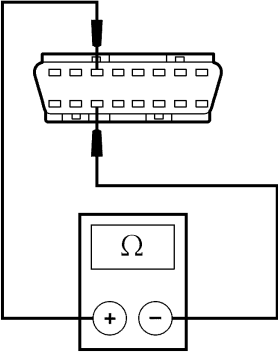
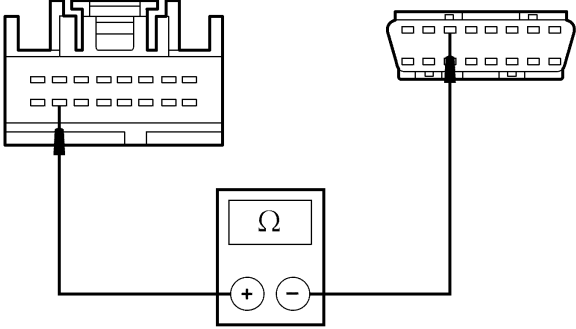
PINPOINT TEST H: NO MEDIUM SPEED CONTROLLER ARE NETWORK (CAN) COMMUNICATION (Continued)

Test Step		Result / Action to Take
H2	<p>CHECK THE MEDIUM SPEED CAN TERMINATION RESISTANCE (Continued)</p> <ul style="list-style-type: none"> Measure the resistance between the DLC C251-3, circuit 1847 (WH/OG), harness side and the DLC C251-11, circuit 1848 (PK/OG), harness side.  <p>N0012692</p> <ul style="list-style-type: none"> Is the resistance between 54 and 66 ohms? 	<p>Yes GO to H5.</p> <p>No GO to H3.</p>
H3	<p>CHECK THE MEDIUM SPEED CAN RESISTANCE WITH THE INSTRUMENT CLUSTER C220 DISCONNECTED</p> <ul style="list-style-type: none"> Depower the supplemental restraint system (SRS). Refer to Section 501-20B. Disconnect: Instrument Cluster C220. Measure the resistance between the DLC C251-3, circuit 1847 (WH/OG), harness side and the DLC C251-11, circuit 1848 (PK/OG), harness side.  <p>N0012692</p> <ul style="list-style-type: none"> Is the resistance between 108 and 132 ohms? 	<p>Yes GO to H4.</p> <p>No CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. GO to H9.</p>
H4	<p>CHECK THE MEDIUM SPEED CAN RESISTANCE WITH THE SMART JUNCTION BOX (SJB) C2280B DISCONNECTED</p> <ul style="list-style-type: none"> Connect: Instrument Cluster C220. Disconnect: SJB C2280b. 	

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DIAGNOSIS AND TESTING (Continued)

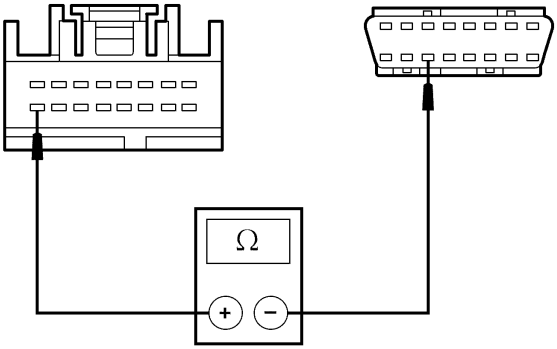
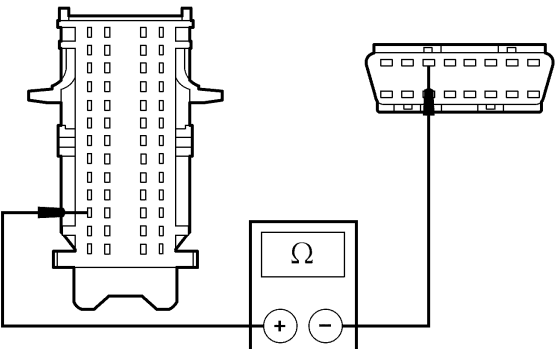
PINPOINT TEST H: NO MEDIUM SPEED CONTROLLER ARE NETWORK (CAN) COMMUNICATION (Continued)

Test Step		Result / Action to Take
H4	<p>CHECK THE MEDIUM SPEED CAN RESISTANCE WITH THE SMART JUNCTION BOX (SJB) C2280B DISCONNECTED (Continued)</p> <ul style="list-style-type: none"> Measure the resistance between the DLC C251-3, circuit 1847 (WH/OG), harness side and the DLC C251-11, circuit 1848 (PK/OG), harness side.  <p>N0012692</p> <ul style="list-style-type: none"> Is the resistance between 108 and 132 ohms? 	<p>Yes CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. GO to H5.</p> <p>No GO to H11.</p>
H5	<p>CHECK THE AUDIO UNIT C290A FOR DAMAGE</p> <ul style="list-style-type: none"> Key in OFF position. Disconnect: Audio Unit C290a. Inspect the audio unit C290a for damage. Is the audio unit C290a OK? 	<p>Yes GO to H6.</p> <p>No REPAIR the audio unit C290a as necessary. CARRY OUT the diagnostic tool data link test.</p>
H6	<p>CHECK CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) FOR AN OPEN BETWEEN THE DLC C251 AND THE AUDIO UNIT C290A</p> <ul style="list-style-type: none"> Measure the resistance between the audio unit C290a-15, circuit 1847 (WH/OG), harness side and the DLC C251-3, circuit 1847 (WH/OG), harness side.  <p>N0012514</p>	

(Continued)

DIAGNOSIS AND TESTING (Continued)

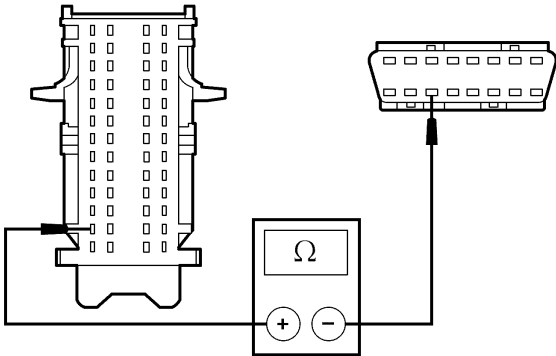
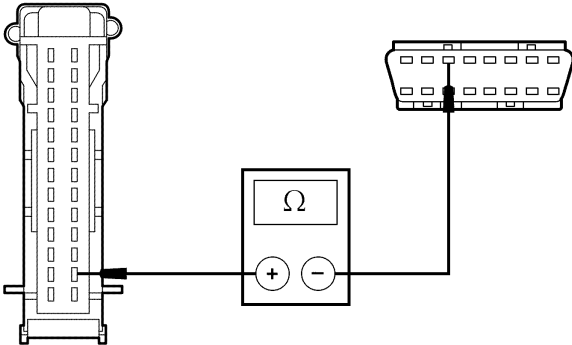
PINPOINT TEST H: NO MEDIUM SPEED CONTROLLER ARE NETWORK (CAN) COMMUNICATION (Continued)

Test Step		Result / Action to Take
H6	CHECK CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) FOR AN OPEN BETWEEN THE DLC C251 AND THE AUDIO UNIT C290A (Continued)	
	<ul style="list-style-type: none"> Measure the resistance between the audio unit C290a-16, circuit 1848 (PK/OG), harness side and the DLC C251-11, circuit 1848 (PK/OG), harness side.  <p>N0012515</p> <ul style="list-style-type: none"> Are the resistances less than 5 ohms? 	<p>Yes GO to H7.</p> <p>No REPAIR the circuit in question. CARRY OUT the diagnostic tool data link test.</p>
H7	CHECK THE COMMUNICATIONS NETWORK WITH THE AUDIO UNIT C290A DISCONNECTED	
	<ul style="list-style-type: none"> Key in ON position. Enter the following diagnostic mode on the diagnostic tool: Diagnostic Tool Data Link Test. Is system passed obtained? 	<p>Yes GO to H15.</p> <p>No CONNECT the audio unit C290a. GO to H8.</p>
H8	CHECK THE SJB C2280B FOR DAMAGE	
	<ul style="list-style-type: none"> Key in OFF position. Disconnect: SJB C2280b. Inspect the SJB C2280b for damage. Is the SJB C2280b OK? 	<p>Yes GO to H9.</p> <p>No REPAIR the SJB C2280b as necessary. CARRY OUT the diagnostic tool data link test.</p>
H9	CHECK CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) FOR AN OPEN BETWEEN THE DLC C251 AND THE SJB C2280B	
	<ul style="list-style-type: none"> Measure the resistance between the SJB C2280b-50, circuit 1847 (WH/OG), harness side and the DLC C251-3, circuit 1847 (WH/OG), harness side.  <p>N0012516</p>	

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DIAGNOSIS AND TESTING (Continued)

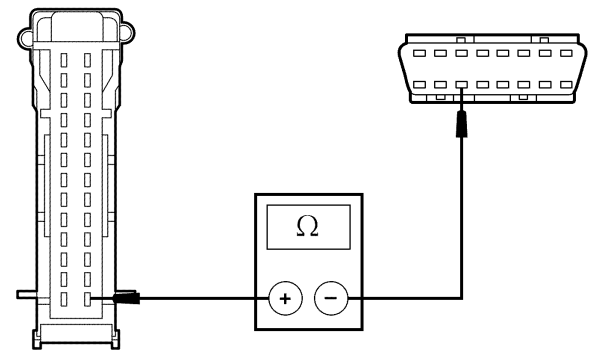
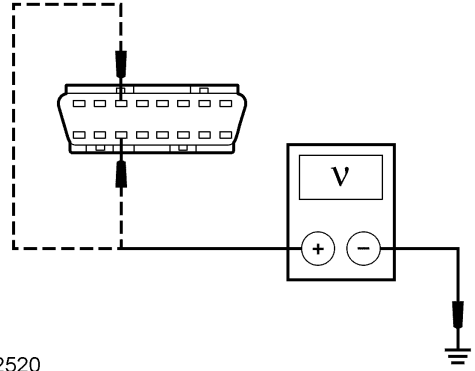
PINPOINT TEST H: NO MEDIUM SPEED CONTROLLER ARE NETWORK (CAN) COMMUNICATION (Continued)

Test Step		Result / Action to Take
H9	<p>CHECK CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) FOR AN OPEN BETWEEN THE DLC C251 AND THE SJB C2280B (Continued)</p> <ul style="list-style-type: none"> Measure the resistance between the SJB C2280b-51, circuit 1848 (PK/OG), harness side and the DLC C251-11, circuit 1848 (PK/OG), harness side.  <p>N0012517</p> <ul style="list-style-type: none"> Are the resistances less than 5 ohms? 	<p>Yes If sent here from H3, GO to H17. If sent here from H8, GO to H10.</p> <p>No REPAIR the circuit in question. CARRY OUT the diagnostic tool data link test.</p>
H10	<p>CHECK THE INSTRUMENT CLUSTER C220 FOR DAMAGE</p> <ul style="list-style-type: none"> Depower the SRS. Refer to Section 501-20B. Disconnect: Instrument Cluster C220. Inspect the instrument cluster C220 for damage. Is the instrument cluster C220 OK? 	<p>Yes GO to H11.</p> <p>No REPAIR the instrument cluster C220 as necessary. CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p>
H11	<p>CHECK CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) FOR AN OPEN BETWEEN THE DLC C251 AND THE INSTRUMENT CLUSTER C220</p> <ul style="list-style-type: none"> Measure the resistance between the instrument cluster C220-15, circuit 1847 (WH/OG), harness side and the DLC C251-3, circuit 1847 (WH/OG), harness side.  <p>N0012518</p>	

(Continued)

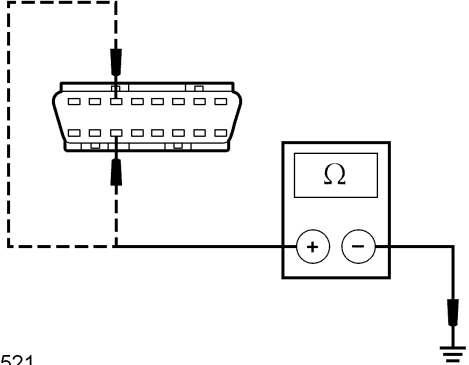
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST H: NO MEDIUM SPEED CONTROLLER ARE NETWORK (CAN) COMMUNICATION (Continued)

Test Step		Result / Action to Take
H11	<p>CHECK CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) FOR AN OPEN BETWEEN THE DLC C251 AND THE INSTRUMENT CLUSTER C220 (Continued)</p>	
<ul style="list-style-type: none"> Measure the resistance between the instrument cluster C220-14, circuit 1848 (PK/OG), harness side and the DLC C251-11, circuit 1848 (PK/OG), harness side.  <p>N0012519</p> <ul style="list-style-type: none"> Are the resistances less than 5 ohms? 		<p>Yes If sent here from H4, GO to H16. If sent here from H10, GO to H12.</p> <p>No REPAIR the circuit in question. CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p>
H12	<p>CHECK THE MEDIUM SPEED CAN CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) FOR A SHORT TO VOLTAGE</p>	
<ul style="list-style-type: none"> Disconnect: Audio Unit C290a. Key in ON position. Measure the voltage between the DLC C251-3, circuit 1847 (WH/OG), harness side and ground; and between the DLC C251-11, circuit 1848 (PK/OG), harness side and ground.  <p>N0012520</p> <ul style="list-style-type: none"> Is any voltage present? 		<p>Yes REPAIR the circuit in question. CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p> <p>No GO to H13.</p>
H13	<p>CHECK THE MEDIUM SPEED CAN CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) FOR A SHORT TO GROUND</p>	
<ul style="list-style-type: none"> Key in OFF position. 		

(Continued)

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST H: NO MEDIUM SPEED CONTROLLER ARE NETWORK (CAN) COMMUNICATION (Continued)**

Test Step		Result / Action to Take
H13	CHECK THE MEDIUM SPEED CAN CIRCUITS 1847 (WH/OG) AND 1848 (PK/OG) FOR A SHORT TO GROUND (Continued)	
	<ul style="list-style-type: none"> Measure the resistance between the DLC C251-6, circuit 1847 (WH/OG), harness side and ground; and between the DLC C251-14, circuit 1848 (PK/OG), harness side and ground.  <p>N0012521</p> <ul style="list-style-type: none"> Are the resistances greater than 10,000 ohms? 	<p>Yes GO to H14.</p> <p>No REPAIR the circuit in question. CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p>
H14	CHECK THE MEDIUM SPEED CAN WITH A SUBSTITUTED SJB	
	<ul style="list-style-type: none"> Connect: Audio Unit C290a. Connect: Instrument Cluster C220. Install a known good SJB. Refer to Section 419-10. Repower the SRS. Refer to Section 501-20B. Key in ON position. Enter the following diagnostic mode on the diagnostic tool: Diagnostic Tool Data Link Test. Is system passed obtained? 	<p>Yes GO to H17.</p> <p>No GO to H16.</p>
H15	CHECK FOR CORRECT AUDIO UNIT OPERATION	
	<ul style="list-style-type: none"> Disconnect all the audio unit connectors. Check for: <ul style="list-style-type: none"> corrosion pushed-out pins Connect all the audio unit connectors and make sure they seat correctly. Operate the system and verify the concern is still present. Is the concern still present? 	<p>Yes INSTALL a new audio unit. REFER to Section 415-01. CARRY OUT the diagnostic tool data link test.</p> <p>No The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the diagnostic trouble codes (DTCs). REPEAT the self-test.</p>
H16	CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION	
	<ul style="list-style-type: none"> Disconnect all the instrument cluster connectors. Check for: <ul style="list-style-type: none"> corrosion pushed-out pins Connect all the instrument cluster connectors and make sure they seat correctly. Operate the system and verify the concern is still present. Is the concern still present? 	<p>Yes INSTALL a new instrument cluster. REFER to Section 413-01. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p> <p>No CONNECT the instrument cluster C220. REPOWER the SRS. REFER to Section 501-20B. 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>

(Continued)

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST H: NO MEDIUM SPEED CONTROLLER ARE NETWORK (CAN) COMMUNICATION (Continued)

Test Step		Result / Action to Take
H17	CHECK FOR CORRECT SJB OPERATION	<p>Yes INSTALL a new SJB. REFER to Section 419-10. CARRY OUT the diagnostic tool data link test.</p> <p>No 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>
	<ul style="list-style-type: none"> • Disconnect all the SJB connectors. • Check for: <ul style="list-style-type: none"> • corrosion • pushed-out pins • Connect all the SJB connectors and make sure they seat correctly. • Operate the system and verify the concern is still present. • Is the concern still present? 	

Pinpoint Test I: No International Standards Organization (ISO) 9141 Communications Network Communication

Normal Operation

The restraint control module (RCM) communicates with the diagnostic tool through the ISO 9141 communications network, circuit 70 (LB/WH). Check circuit 70 (LB/WH) between the RCM C2041a and the data link connector (DLC) C251. The total resistance value must not be more than 5 ohms. If the resistance is more than 5 ohms there is an open in the ISO 9141 communications network circuit, damage to the DLC C251, damage to the RCM C2041a, or a problem in an in-line connector.

Possible Causes

- ISO 9141 communications network circuit 70 (LB/WH) short to ground, short to voltage or open
- DLC C251
- RCM C2041a
- RCM

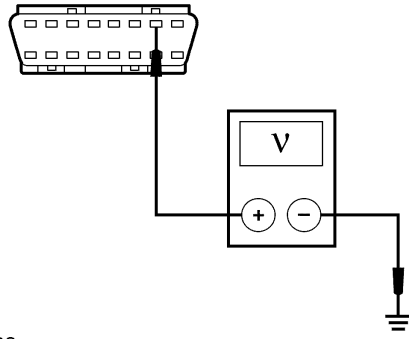
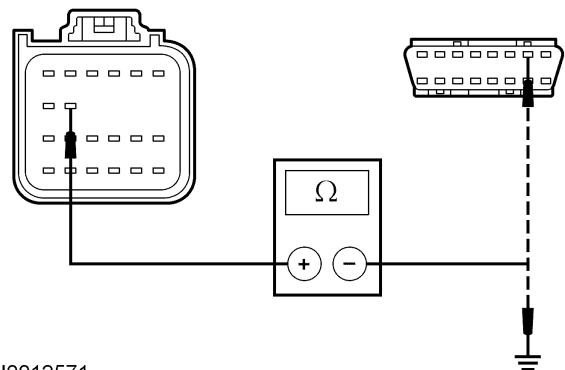
PINPOINT TEST I: NO INTERNATIONAL STANDARDS ORGANIZATION (ISO) 9141 COMMUNICATIONS NETWORK COMMUNICATION

Test Step		Result / Action to Take
I1	CHECK THE DATA LINK CONNECTOR (DLC) C251 FOR DAMAGE	<p>Yes GO to I2.</p> <p>No REPAIR the DLC C251 as necessary. CARRY OUT the diagnostic tool data link test.</p>
	<ul style="list-style-type: none"> • Inspect the DLC C251 for damage. • Is the DLC C251 OK? 	
I2	CHECK THE RESTRAINT CONTROL MODULE (RCM) C2041A FOR DAMAGE	<p>Yes GO to I3.</p> <p>No REPAIR the RCM C2041a as necessary. CONNECT the RCM C2041a. REPOWER the SRS. REFER to Section 501-20B. CARRY OUT the diagnostic tool data link test.</p>
	<ul style="list-style-type: none"> • Key in OFF position. • Depower the supplemental restraint system (SRS). Refer to Section 501-20B. • Disconnect: RCM C2041a. • Is the RCM C2041a OK? 	
I3	CHECK ISO 9141 COMMUNICATIONS NETWORK CIRCUIT 70 (LB/WH) FOR A SHORT TO VOLTAGE	
	<ul style="list-style-type: none"> • Key in ON position. 	

(Continued)

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST I: NO INTERNATIONAL STANDARDS ORGANIZATION (ISO) 9141 COMMUNICATIONS NETWORK COMMUNICATION (Continued)

Test Step		Result / Action to Take
13	<p>CHECK ISO 9141 COMMUNICATIONS NETWORK CIRCUIT 70 (LB/WH) FOR A SHORT TO VOLTAGE (Continued)</p> <ul style="list-style-type: none"> Measure the voltage between the DLC C251-7, circuit 70 (LB/WH), harness side and ground.  <p>N0012522</p> <ul style="list-style-type: none"> Is any voltage present? 	<p>Yes GO to I4.</p> <p>No REPAIR the circuit. CONNECT the RCM C2041a. REPOWER the SRS. REFER to Section 501-20B. CLEAR the diagnostic trouble codes (DTCs). REPEAT the self-test. CARRY OUT the diagnostic tool data link test.</p>
14	<p>CHECK ISO 9141 COMMUNICATIONS NETWORK CIRCUIT 70 (LB/WH) BETWEEN THE DLC C251 AND THE RCM C2041A FOR AN OPEN OR A SHORT TO GROUND</p> <ul style="list-style-type: none"> Key in OFF position. Measure the resistance between the RCM C2041a-11, circuit 70 (LB/WH), harness side and the DLC C251-7, circuit 70 (LB/WH), harness side; and between the RCM C2041a-11, circuit 70 (LB/WH), harness side and ground.  <p>N0012571</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms between the RCM connector and the DLC, and greater than 10,000 ohms between the RCM connector and ground? 	<p>Yes GO to I5.</p> <p>No REPAIR the circuit. CONNECT the RCM C2041a. REPOWER the SRS. REFER to Section 501-20B. CLEAR the DTCs. REPEAT the self-test. CARRY OUT the diagnostic tool data link test.</p>
15	<p>CHECK FOR CORRECT RCM OPERATION</p> <ul style="list-style-type: none"> Disconnect all the RCM connectors. Check for: <ul style="list-style-type: none"> corrosion pushed-out pins Connect all the RCM module connectors and make sure they seat correctly. Operate the system and verify the concern is still present. Is the concern still present? 	<p>Yes INSTALL a new RCM. REFER to Section 501-20B. CLEAR the DTCs. REPEAT the self-test. CARRY OUT the diagnostic tool data link test.</p> <p>No CONNECT the RCM C2041a. REPOWER the SRS. REFER to Section 501-20B. 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. CARRY OUT the diagnostic tool data link test.</p>

DIAGNOSIS AND TESTING (Continued)

Pinpoint Test J: No Module/Network Communication — No Power To The Diagnostic Tool

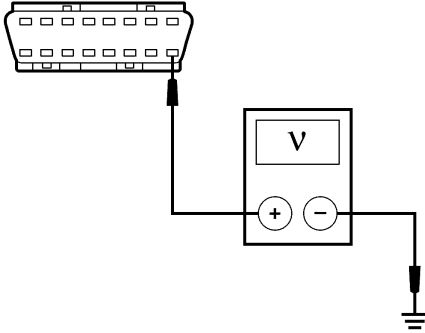
Normal Operation

Under normal operation the diagnostic tool is connected to the data link connector (DLC) C251 to communicate with the high speed controller area network (CAN), medium speed CAN, and international standards organization (ISO) 9141 communications networks. If communication can not be established, the diagnostic tool and the DLC C251 must be checked for damage. If the diagnostic tool and the DLC C251 are OK, circuits 570 (BK/WH), 1047 (LG/RD) and 1205 (BK) must be checked for an open condition.

Possible Causes

- DLC C251
- diagnostic tool
- circuit 570 (BK/WH) open
- circuit 1047 (LG/RD) open
- circuit 1205 (BK) open

PINPOINT TEST J: NO MODULE/NETWORK COMMUNICATION — NO POWER TO THE DIAGNOSTIC TOOL

Test Step		Result / Action to Take
J1	<p>CHECK THE DIAGNOSTIC TOOL CONNECTOR FOR DAMAGE</p> <ul style="list-style-type: none"> • Inspect the diagnostic tool pins for damage. • Are the pins OK? 	<p>Yes GO to J2.</p> <p>No REPAIR the diagnostic tool connector as necessary. CARRY OUT the diagnostic tool data link test.</p>
J2	<p>CHECK THE DATA LINK CONNECTOR (DLC) C251 FOR DAMAGE</p> <ul style="list-style-type: none"> • Inspect the DLC C251 pins for damage. • Are the pins OK? 	<p>Yes GO to J3.</p> <p>No REPAIR the DLC C251 as necessary. CARRY OUT the diagnostic tool data link test.</p>
J3	<p>CHECK CIRCUIT 1047 (LG/RD) FOR VOLTAGE</p> <ul style="list-style-type: none"> • Key in ON position. • Measure the voltage between the DLC C251-16, circuit 1047 (LG/RD), harness side and ground. <div style="text-align: center;">  </div> <p>N0012524</p> <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? 	<p>Yes GO to J4.</p> <p>No REPAIR the circuit. CARRY OUT the diagnostic tool data link test.</p>

(Continued)

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST J: NO MODULE/NETWORK COMMUNICATION — NO POWER TO THE DIAGNOSTIC TOOL (Continued)

Test Step		Result / Action to Take
J4	<p>CHECK CIRCUITS 570 (BK/WH) AND 1205 (BK) FOR AN OPEN</p> <ul style="list-style-type: none"> Measure the resistance between the DLC C251-4, circuit 1205 (BK), harness side and ground; and between the DLC C251-5, circuit 570 (BK/WH), harness side and ground. <p>N0012525</p> <ul style="list-style-type: none"> Are the resistances less than 5 ohms? 	<p>Yes REPAIR the diagnostic tool. CARRY OUT the diagnostic tool data link test.</p> <p>No REPAIR the circuit in question. CARRY OUT the diagnostic tool data link test.</p>