

Climate Control System

[Printable View \(966 KB\)](#)

Special Tool(s)

 ST2085-A	A/C Flush Adapter Kit 219-00074 or equivalent
 ST2574-A	Flex Probe Kit 300-NUD105-R025DE or equivalent
 ST3093-A	Fluke 77-IV Digital Multimeter FLU77-4 or equivalent
 ST1474-A	Pressure Test Kit 014-R1072 or equivalent
 ST1928-A	R-134a Manifold Gauge Set 176-R032A or equivalent
 ST2351-A	Refrigerant Leak Detector 216-00001 or equivalent
 ST1252-A	Set, A/C Fittings 412-DS028 (014-00333, D93L-19703-B) or equivalent
 ST3094-A	Test Light SGT27000 or equivalent 250 mA incandescent bulb test lamp
 ST1176-A	Vacuum Pump Kit 416-D002 (D95L-7559-A) or equivalent
 ST2332-A	Worldwide Diagnostic System (WDS) Vehicle Communication Module (VCM) with appropriate adapters, or equivalent diagnostic tool

Inspection and Verification

1. Verify the customer's concern by operating the climate control system to duplicate the condition.
2. Inspect to determine if one of the following mechanical or electrical concerns apply:

Visual Inspection Chart

Mechanical	Electrical
- Loose, missing or damaged A/C compressor drive belt - Loose or disconnected A/C clutch - Broken or binding door/actuator - Broken or leaking refrigerant lines - Obstructed in-vehicle temperature sensor - Disconnected in-vehicle temperature aspirator hose	- Central junction box (CJB) fuse: 9 (7.5A) 15 (10A) 27 (10A) 31 (10A) - Battery junction box (BJB) fuse: 101 (40A) 11 (15A)

	■ 21 (15A) ● Blower motor inoperative ● A/C compressor inoperative ● Circuitry open/shorted ● Disconnected electrical connectors ● Cooling fan inoperative
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3. As pinpoint tests and measurements are being carried out, be sure to inspect for any disconnected, loose-fitting or incorrectly installed component, module and in-line electrical connectors and pins.
4. If the inspection reveals obvious concern(s) that can be readily identified, repair as required.
5. If the concern remains after the inspection, connect the diagnostic tool to the data link connector (DLC) located beneath the instrument panel and select the vehicle to be tested from the diagnostic tool menu. If the vehicle selection cannot be entered:
 - check that the program card is correctly installed.
 - check the connections to the vehicle.
 - check the ignition switch position.

If the diagnostic tool still does not allow the vehicle selection to be entered, refer to the diagnostic tool manual.

6. Carry out the DATA LINK DIAGNOSTIC TEST using the diagnostic tool. If the diagnostic tool responds with:
 - SCP+, SCP-, CAN or UBP circuits fault = ALL MODULE NO RESPONSE/NOT EQUIPPED, go to Communication System Diagnostics in [Section 418-00](#) to diagnose the network concern.
 - If the powertrain control module (PCM) is not listed for a communication concern, turn the A/C controls to OFF and execute the self-test diagnostics for the PCM.
 - If the EATC module is not listed for a communication concern, execute the self-test diagnostics for the EATC module.
7. If any PCM or EATC DTCs are retrieved, and are related to the concern, go to the Powertrain Control Module Diagnostic Trouble Code (DTC) Index or the Electronic Automatic Temperature Control (EATC) Module Diagnostic Trouble Code (DTC) Index to continue the diagnostics.
8. If no DTCs related to the concern are retrieved, go to the Symptom Chart to continue the diagnostics.
9. If the Electronic Automatic Temperature Control module cannot be accessed by the diagnostic tool, [GO to Pinpoint Test H](#).

Electronic Automatic Temperature Control Module Self-Test

- The EATC module self-test will not detect concerns associated with data link messages like engine coolant temperature or vehicle speed signals. A diagnostic tool must be used to retrieve these concerns.
- The EATC module self-test will detect concerns in the system control functions and will display hard diagnostic trouble codes (DTCs). Hard DTC's identify faults which are present during the self-test. The vehicle interior/ambient temperature should be between 4-32°C (40-90°F) when carrying out the self-test. If the temperatures are not within the specified ranges, false temperature sensor DTCs will be displayed.
- The self-test can be initiated at any time. Normal operation of the system stops when the self-test is activated.
- To enter the self-test, press the OFF and FLOOR buttons simultaneously and then press the AUTO button within 2 seconds. The display will show the fan speed indicator illuminating from low to high. The test may run as long as 30 seconds. Record all DTCs displayed.
- If any DTCs appear during the self-test, follow the diagnostics procedure given under ACTION for each DTC given.
- If a condition exists but no DTCs appear during the self-test, refer to the Symptom Chart Condition: The EATC System Is Inoperative, Intermittent or Incorrect Operation.
- To exit the self-test and clear all DTCs, press the FRONT DEFROST button. The EATC control assembly will then turn OFF (display blank) and all DTCs will be cleared.
- Always exit the self-test before powering the system down (system turned OFF).

Electronic Automatic Temperature Control Module — Display Continuous Codes

- This function will display continuous (intermittent) codes and hard faults that occur during normal operation.
- To display continuous codes, press the OFF and FLOOR buttons simultaneously and then release and within 2 seconds press the RECIRC button.
- To exit the display of continuous codes, press the FRONT DEFROST button. This will exit and clear all DTCs. Press any button except DEFROST to exit without clearing DTCs set before the last ignition cycle.
- Always exit continuous codes display before powering the system down (system turned off).
- Continuous DTCs are saved only after an ignition cycle.
- Continuous DTCs will be deleted after 80 ignition switch ON cycles after the intermittent condition occurs.

Electronic Automatic Temperature Control (EATC) Module Cold Boot Process

The purpose of the cold boot process is to allow the EATC module to re-initialize and calibrate the actuators. To carry out the cold boot process, follow the steps below.

1. Clear the DTCs.
2. Turn the ignition switch to the OFF position.
3. Disconnect the EATC module electrical connectors.
4. Inspect the module connectors for:
 - corrosion.
 - pushed-out pins.
 - incorrectly seated connector.
5. Wait one minute.
6. Connect the EATC module electrical connectors.
7. Turn the ignition switch to the ON position.
8. Select any position except OFF on the EATC module.

The EATC module will now initialize and calibrate the actuators. Calibration of the actuators will take approximately 30 seconds.

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

DTC	Description	Action
P1460	WOT A/C cutout internal driver malfunction	REFER to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P1469	Low A/C cycling period	REFER to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.

P1474	Low speed fan internal driver failure	REFER to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P1479	High speed fan internal driver failure	REFER to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P1464	A/C demand out of self-test range	REFER to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.

Rear Redundant Control Module (RRCM) Diagnostic Trouble Code (DTC) Index

DTC	Description	Action
B113D	Rear climate control switch stuck	INSTALL a new rear climate control switch. TEST the system for normal operation.
B113E	Rear climate control switch circuit short to ground	GO to Pinpoint Test Q.
B113F	Rear climate control switch circuit short to battery	GO to Pinpoint Test P.
U1178	SCP (J1850) Invalid or missing data for climate control	REFER to Section 418-00 to diagnose a network concern.

ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC) MODULE DIAGNOSTIC TROUBLE CODE (DTC) INDEX

DTC	EATC Self-Test Faults	Description	Action to take
B2266	2266	Driver side blend door failure or short	GO to Pinpoint Test A.
B2267	2267	Passenger side blend door failure or short	GO to Pinpoint Test A.
B1251	1251	In-vehicle temperature sensor open circuit	GO to Pinpoint Test B.
B1253	1253	In-vehicle temperature sensor short to ground	GO to Pinpoint Test B.
B1255	1255	Ambient temperature sensor open circuit	GO to Pinpoint Test C.
B1257	1257	Ambient temperature sensor short to ground	GO to Pinpoint Test C.
B1259	1259	A/C solar radiation sensor open circuit	GO to Pinpoint Test D.
B1261	1261	A/C solar radiation sensor circuit short to ground	GO to Pinpoint Test D.
B1242	1242	Recirc door short/failure	GO to Pinpoint Test E.
B1263	1263	Panel/defrost door short/failure	GO to Pinpoint Test F.
B1264	1264	Floor door short/failure	GO to Pinpoint Test F.
B2268	2268	Steering wheel auxiliary control switch open circuit	If vehicle is not equipped with steering wheel control switches, ignore this code and continue diagnosis. If vehicle is equipped with steering wheel control switches, GO to Pinpoint Test G.
B2269	2269	Steering wheel auxiliary control switch circuit short to ground	GO to Pinpoint Test G.
U1040	1040	SCP invalid or missing data for function read vehicle speed	If DTCs are present in the instrument cluster, diagnose those codes first. CLEAR the DTCs. If the EATC DTC returns, INSTALL a new EATC module. REFER to Section 412-01 . If no DTCs are present in the instrument cluster, CLEAR the DTCs. If the EATC DTC returns, INSTALL a new EATC module. REFER to Section 412-01 . TEST the system for normal operation.
U1073	N/A	SCP invalid or missing data for engine coolant	If DTCs are present in the instrument cluster, diagnose those codes first. CLEAR the DTCs. If the EATC DTC returns, INSTALL a new EATC module. REFER to Section 412-01 . TEST the system for normal operation. If no DTCs are present in the instrument cluster, CLEAR the DTCs. If the EATC DTC returns, INSTALL a new EATC module. REFER to Section 412-01 . TEST the system for normal operation.
U1112	1112	SCP invalid or missing data for interior lamps	GO to Section 417-02 , Inspection and Verification to continue diagnosis.
B1342	1342	Module faulted	Button held too long may set DTC. Attempt to clean buttons. If code returns, INSTALL a new EATC module. REFER to Section 412-01 .
B1200	1200	Stuck button	INSTALL a new EATC module. REFER to Section 412-01 .
B2477	2477	Module not configured — LHD only	CONFIGURE the EATC module. REFER to Section 418-01 .
B1676	1676	Voltage out of range	GO to Pinpoint Test H.

Symptom Chart**SYMPTOM CHART**

Condition	Possible Sources	Action
The steering wheel control switch is inoperative/does not operate correctly	- Circuitry short/open - Steering wheel control switch - EATC module	GO to Pinpoint Test G.
No communication with the electronic automatic temperature control (EATC) module	- Fuse(s) - Circuitry short/open - EATC module communication network	GO to Pinpoint Test H.
The EATC system is inoperative, intermittent or incorrect operation	- Fuse(s) - Circuitry short/open - Input sensor(s)/erratic input signals - Automatic temperature control sensor hose and elbow	GO to Pinpoint Test I.
Insufficient air conditioning (A/C) cooling	Restricted A/C evaporator core orifice	GO to Refrigerant System Tests in this section.

	- Low refrigerant level - A/C cycling switch - Temperature blend door actuator control	
Insufficient, erratic or no heat	- Low engine coolant level - Engine overheating - Plugged or partially plugged heater core - Temperature blend door binding or stuck - A/C electric blend door actuator - Blend door circuit open/shorted	GO to Pinpoint Test J.
The air conditioning (A/C) is inoperative	- Fuse(s) - A/C clutch relay - Circuitry short or open - A/C cycling switch - A/C system discharged or low charge - A/C compressor clutch - A/C pressure transducer - EATC module - PCM	GO to Pinpoint Test K.
The air conditioning (A/C) is always on	- Circuitry short or open - EATC module - A/C clutch relay - A/C compressor clutch - A/C evaporator core temperature sensor	GO to Pinpoint Test L.
The blower motor is inoperative	- Fuse(s) - Circuitry open or shorted - Blower motor - Blower motor speed control - Blower motor relay	GO to Pinpoint Test M.
The blower motor does not operate correctly	- Blower motor speed control - EATC module - Circuit short or open	GO to Pinpoint Test N.
The rear audio and climate control switch is inoperative/does not operate correctly.	- Fuse - Circuitry short or open - Rear audio/climate control switch - Rear audio/climate control module - Audio control module (ACM) - EATC module	GO to Pinpoint Test O.
The temperature set point does not repeat after turning the ignition switch off	- Fuse - Circuitry short or open - EATC module	VERIFY central junction box (CJB) fuse 27 (10A) is OK. If OK, CHECK circuit 1566 (RD/YE) for an open and REPAIR as necessary. If OK, INSTALL a new EATC module.
The electronic automatic temperature control is inoperative/does not operate correctly — EATC	- Temperature blend door/actuator broken/binding - EATC module	CHECK the temperature blend doors/actuators for a binding or broken condition. If no condition is found, INSTALL a new EATC module.
The temperature display will not switch between Celsius and Fahrenheit	EATC module	INSTALL a new EATC/EATC module.
Inaccurate external temperature display	EATC module	REFER to description and operation of the EATC External Temperature Display. If the external temperature display is not operating as described and no DTC is present, CARRY OUT the ambient temperature sensor component test in this section. If the sensor tests OK, INSTALL a new EATC module. REFER to Section 412-01. TEST the system for normal operation.

Pinpoint Tests

Pinpoint Test A: DTC B2266 Or DTC B2267 — Blend Door Failure Or Short

Refer to Wiring Diagrams Cell [55](#), Automatic Climate Control System for schematic and connector information.

Normal Operation

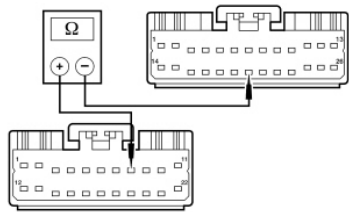
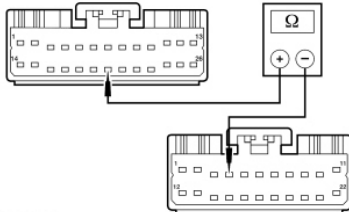
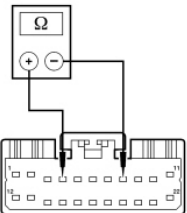
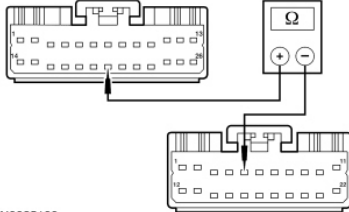
Under normal operation, the driver side (LH) and passenger side (RH) temperature blend door actuator motors are supplied voltage or ground on circuit 245 (BN/LG) (LH) or circuit 1125 (BN) (RH), depending on desired actuator rotation, by the electronic automatic temperature control (EATC) module. The EATC module then supplies the appropriate voltage or ground to the other side of the actuator motor on circuit 246 (VT) (LH) or circuit 1124 (WH) (RH).

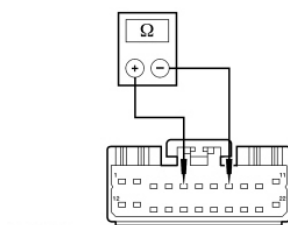
The driver side (LH) and passenger side (RH) temperature blend door actuator feedback resistors are supplied a ground from the EATC module by circuit 438 (RD/WH) and a 5 volt reference voltage on circuit 436 (RD/LG). The EATC module reads the voltage on circuit 437 (RD/WH) (LH) or circuit 1122 (RD) (RH) to determine the actuator position by the position of the actuator feedback resistor wiper arm.

Possible Causes

- An open, short to voltage, ground or together in circuits 245 (BN/LG), 246 (VT), 436 (RD/LG), 437 (RD/WH), 438 (RD/WH), 1124 (WH) or 1125 (BN)
- Driver side (LH) or passenger side (RH) temperature blend door actuator
- Electronic automatic temperature control (EATC) module
- Stuck or bound linkage or door

PINPOINT TEST A: DTC B2266 OR B2267

Test Step	Result / Action to Take
A1 CHECK THE FEEDBACK POTENTIOMETER TOTAL RESISTANCE - Disconnect: HVAC Module C228a. - Disconnect: HVAC Module C228b. - Measure the resistance between HVAC module C228b-8, circuit 436 (RD/LG), harness side and HVAC module C228a-20, circuit 438 (RD/WH), harness side.  N0085106 - Is the resistance greater than 500 ohms?	Yes For DTC B2266, GO to A2. For DTC B2267, GO to A3. No CARRY OUT the Blend Door Actuator Component Test in this section. If the actuator tests OK, REPAIR circuits 436 (RD/LG) and 438 (RD/WH) for a short together. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
A2 CHECK POTENTIOMETER LOW- AND HIGH-SIDE RESISTANCE - Measure the low-side resistance between HVAC module C228b-4, circuit 437 (YE/LG), harness side and HVAC module C228a-20, circuit 438 (RD/WH), harness side.  N0085107 - Measure the high-side resistance between HVAC module C228b-4, circuit 437 (YE/LG), harness side and HVAC module C228b-8, circuit 436 (RD/LG), harness side.  N0085108 - Is the resistance between 250 and 5,500 ohms?	Yes GO to A4. No CARRY OUT the Blend Door Actuator Component Test in this section. If the actuator tests OK and: If the low-side resistance only is greater than 5,500 ohms, REPAIR circuit 438 (RD/WH) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. If the low-side resistance only is less than 250 ohms, REPAIR circuits 437 (YE/LG) and 438 (RD/WH) for a short together. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. If the high-side resistance only is greater than 5,500 ohms, REPAIR circuit 436 (RD/LG) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. If the high-side resistance only is less than 250 ohms, REPAIR circuits 437 (YE/LG) and 436 (RD/LG) for a short together. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. If the high-side and low-side resistance is greater than 5,500 ohms, REPAIR circuit 437 (YE/LG) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
A3 CHECK POTENTIOMETER LOW- AND HIGH-SIDE RESISTANCE - Measure the low-side resistance between HVAC module C228b-5, circuit 1122 (RD), harness side and HVAC module C228a-20, circuit 438 (RD/WH), harness side.  N0085109 - Measure the high-side resistance between HVAC module C228b-5, circuit 1122 (RD), harness side and HVAC module C228b-8, circuit 436 (RD/LG), harness side.	Yes GO to A4. No CARRY OUT the Blend Door Actuator Component Test in this section. If the actuator tests OK and: If the low-side resistance only is greater than 5,500 ohms, REPAIR circuit 438 (RD/WH) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. If the low-side resistance only is less than 250 ohms, REPAIR circuits 1122 (RD) and 438 (RD/WH) for a short together. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. If the high-side resistance only is greater than 5,500 ohms, REPAIR circuit 436 (RD/LG) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. If the high-side resistance only is less than 250 ohms, REPAIR circuits 1122 (RD) and 436 (RD/LG) for a short together. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. If the high-side and low-side resistance is greater than 5,500 ohms, REPAIR circuit 1122 (RD) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

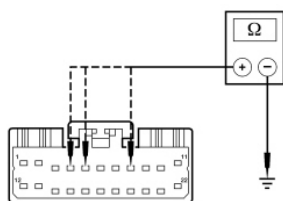


N0085110

- Is the resistance between 250 and 5,500 ohms?

A4 CHECK CIRCUITS 436 (RD/LG), 437 (YE/LG) AND 1122 (RD) FOR A SHORT TO GROUND

- Measure the resistance between ground and the following:
 - HVAC module C228b-8, circuit 436 (RD/LG), harness side.
 - For DTC B2266, HVAC module C228b-4, circuit 437 (YE/LG), harness side.
 - For DTC B2267, HVAC module C228b-5, circuit 1122 (RD), harness side.

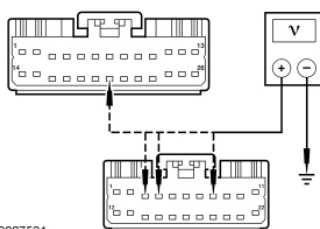


N0085111

- Is the resistance greater than 10,000 ohms?

A5 CHECK CIRCUITS 436 (RD/LG), 438 (RD/WH), 437 (YE/LG) AND 1122 (RD) FOR A SHORT TO VOLTAGE

- Measure the voltage between ground and the following:
 - HVAC module C228a-20, circuit 438 (RD/WH), harness side.
 - HVAC module C228b-8, circuit 436 (RD/LG), harness side.
 - For DTC B2266, HVAC module C228b-4, circuit 437 (YE/LG), harness side.
 - For DTC B2267, HVAC module C228b-5, circuit 1122 (RD), harness side.



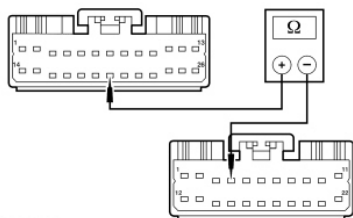
N0087531

- Is any voltage present?

A6 CHECK THE BLEND DOOR ACTUATOR OPERATION

NOTE: If a jumper fuse opens while carrying out this test step, repair the circuit(s) for a short.

- Ignition ON.
- Measure the resistance between HVAC module C228b-4, circuit 437 (YE/LG), harness side and HVAC module C228a-20, circuit 438 (RD/WH), harness side.



N0085107

- While observing the resistance, connect a fused jumper wire between:
 - HVAC module C228a-26, circuit 245 (BN/LG), harness side and HVAC module C228b-11, circuit 1566 (RD/YE), harness side.
 - HVAC module C228a-13, circuit 246 (VT), harness side and HVAC module C228a-2, circuit 57 (BK), harness side.

Yes
GO to [A5](#).

No
REPAIR circuit(s) for a short to ground. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

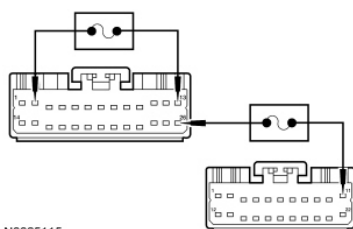
Yes
REPAIR circuit(s) for a short to voltage. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

No
For DTC B2266, GO to [A6](#).

For DTC B2267, GO to [A7](#).

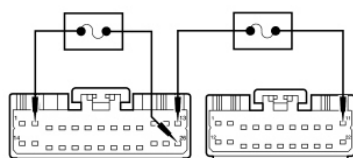
Yes
INSPECT for broken door and linkage. REPAIR as necessary. If no condition is found, GO to [A9](#).

No
GO to [A8](#).



N0085115

- Remove the fused jumpers when the resistance does not change.
- Connect a fused jumper wire between:
 - HVAC module C228a-13, circuit 246 (VT), harness side and HVAC module C228b-11, circuit 1566 (RD/YE), harness side.
 - HVAC module C228a-26, circuit 245 (BN/LG), harness side and HVAC module C228a-2, circuit 57 (BK), harness side.



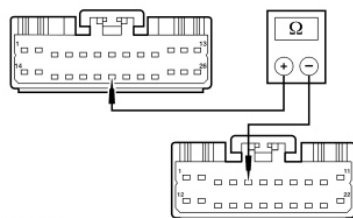
N0085113

- Does the resistance smoothly increase and/or decrease when the jumpers are connected?

A7 CHECK THE BLEND DOOR ACTUATOR OPERATION

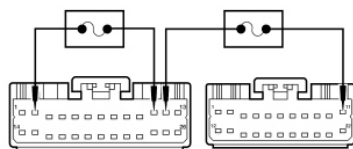
NOTE: If a jumper fuse opens while carrying out this test step, repair the circuit(s) for a short.

- Ignition ON.
- Measure the resistance between HVAC module C228b-5, circuit 1122 (RD), harness side and HVAC module C228a-20, circuit 438 (RD/WH), harness side.



N0085109

- While observing the resistance, connect a fused jumper wire between:
 - HVAC module C228a-12, circuit 1125 (BN), harness side and HVAC module C228b-11, circuit 1566 (RD/YE), harness side.
 - HVAC module C228a-11, circuit 1124 (WH), harness side and HVAC module C228a-2, circuit 57 (BK), harness side.



N0085116

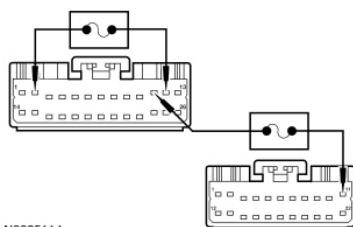
- Remove the fused jumpers when the resistance does not change.
- Connect a fused jumper wire between:
 - HVAC module C228a-11, circuit 1124 (WH), harness side and HVAC module C228b-11, circuit 1566 (RD/YE), harness side.
 - HVAC module C228a-12, circuit 1125 (BN), harness side and HVAC module C228a-2, circuit 57 (BK), harness side.

Yes

INSPECT for broken door and linkage. REPAIR as necessary. If no condition is found, GO to [A9](#).

No

GO to [A8](#).



N0085114

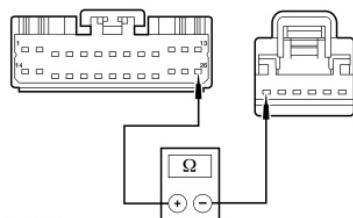
- Does the resistance smoothly increase and/or decrease when the jumpers are connected?

A8 CHECK THE ACTUATOR MOTOR DRIVE CIRCUITS FOR AN OPEN

NOTE: Due to limited connector accessibility, before carrying out this test step, visually inspect the wiring between the HVAC module and actuator for opens or shorts. If no damage is visually evident, proceed with the test.

- Ignition OFF.
- Disconnect: **For DTC B2266**, LH Temperature Blend Door Actuator C2091.
- Disconnect: **For DTC B2267**, RH Temperature Passenger Blend Door Actuator C2092.

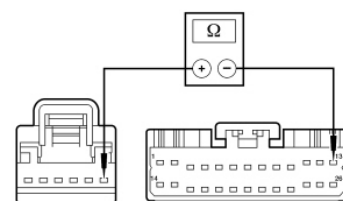
DTC B2266



N0085117

- **NOTE:** For **DTC B2266** only.
- Measure the resistance between HVAC module C228a-26, circuit 245 (BN/LG), harness side and the LH temperature blend door actuator C2091-6, circuit 245 (BN/LG), harness side.

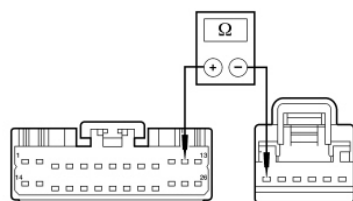
DTC B2266



N0085118

- **NOTE:** For **DTC B2266** only.
- Measure the resistance between HVAC module C228a-13, circuit 246 (VT), harness side and the LH temperature blend door actuator C2091-1, circuit 246 (VT), harness side.

DTC B2267



N0085119

- **NOTE:** For **DTC B2267** only.
- Measure the resistance between HVAC module C228a-12, circuit 1125 (BN), harness side and the RH temperature blend door actuator C2092-6, circuit 1125 (BN), harness side.

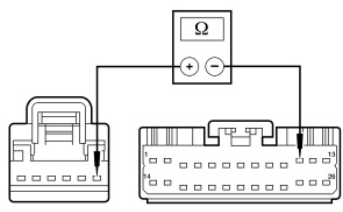
DTC B2267

Yes

INSPECT for binding or broken linkage. REPAIR as necessary. If no condition is found, INSTALL a new door actuator. TEST the system for normal operation.

No

REPAIR the circuit(s) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

 N0085120 - NOTE: For DTC B2267 only. - Measure the resistance between HVAC module C228a-11, circuit 1124 (WH), harness side and the RH temperature blend door actuator C2092-1, circuit 1124 (WH), harness side. - Is the resistance less than 5 ohms?	
A9 CHECK HVAC MODULE CONNECTION - Carry out the HVAC Module Cold Boot Process. - Carry out the HVAC Module On-Demand Self Test. - Operate the system. - Does the concern return?	Yes INSTALL a new HVAC module. REFER to Section 412-01. TEST the system for normal operation. 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. TEST the system for normal operation.

Pinpoint Test B: DTC B1251 Or DTC B1253 — A/C In-Vehicle Temperature Sensor Open Circuit Or Short To Ground

Refer to Wiring Diagrams Cell [55](#), Automatic Climate Control System for schematic and connector information.

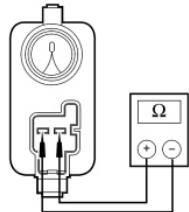
Normal Operation

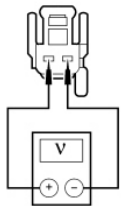
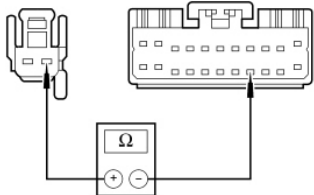
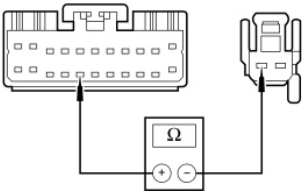
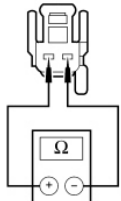
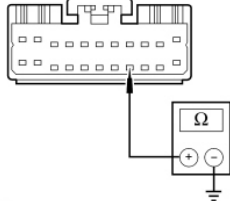
Under normal operation, the in-vehicle air temperature sensor receives a ground from the electronic automatic temperature control (EATC) module through circuit 3059 (YE/LG). A 5-volt reference voltage is supplied to the in-vehicle air temperature sensor from the EATC module through circuit 3058 (LG/RD).

Possible Causes

- An open in circuit 3059 (YE/LG) or 3058 (LG/RD)
- A short together in circuit 3059 (YE/LG) and 3058 (LG/RD)
- A short to ground in circuit 3058 (LG/RD)
- In-vehicle air temperature sensor
- Electronic automatic temperature control (EATC) module

PINPOINT TEST B: DTC B1251 OR DTC B1253 — A/C IN-VEHICLE TEMPERATURE SENSOR OPEN CIRCUIT OR SHORT TO GROUND

Test Step	Result / Action to Take								
B1 CHECK THE SENSOR RESISTANCE - Ignition OFF. - Disconnect: In-Vehicle Temperature Sensor C233. - Measure the resistance between the in-vehicle temperature sensor pins, component side.  A0048510 - Note the ambient temperature and compare the in-vehicle temperature sensor resistance with the table below. <table border="1" data-bbox="211 1533 511 1648"> <thead> <tr> <th>Temperature</th><th>Resistance</th></tr> </thead> <tbody> <tr> <td>10-20 °C (50-68 °F)</td><td>37,000-58,000 ohms</td></tr> <tr> <td>20-30 °C (68-86 °F)</td><td>24,000-37,000 ohms</td></tr> <tr> <td>30-40 °C (86-104 °F)</td><td>16,000-24,000 ohms</td></tr> </tbody> </table> - Is the resistance within the specified values for the temperature range?	Temperature	Resistance	10-20 °C (50-68 °F)	37,000-58,000 ohms	20-30 °C (68-86 °F)	24,000-37,000 ohms	30-40 °C (86-104 °F)	16,000-24,000 ohms	Yes GO to B2. No INSTALL a new in-vehicle temperature sensor. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
Temperature	Resistance								
10-20 °C (50-68 °F)	37,000-58,000 ohms								
20-30 °C (68-86 °F)	24,000-37,000 ohms								
30-40 °C (86-104 °F)	16,000-24,000 ohms								
B2 CHECK THE EATC MODULE OUTPUT VOLTAGE - Ignition ON. - Press the AUTO button on the EATC module. - Measure the voltage between in-vehicle temperature sensor C233-1, circuit 3058 (LG/RD) and C233-2, circuit 3059 (YE/LG).	Yes INSTALL a new in-vehicle temperature sensor. TEST the system for normal operation. If the code returns, INSTALL a new EATC module. TEST the system for normal operation. No If diagnosing DTC B1251, GO to B3 . If diagnosing DTC B1253, GO to B5 .								

 A0048511 Is the voltage between 4.7 and 5.1 volts?	
B3 CHECK CIRCUIT 3058 (LG/RD) FOR AN OPEN - Ignition OFF. - Disconnect: EATC Module C228b. - Measure the resistance between EATC module C228b-19, circuit 3058 (LG/RD) and in-vehicle temperature sensor C233-1, circuit 3058 (LG/RD).  A0048512 - Is the resistance less than 5 ohms?	Yes GO to B4. No REPAIR circuit 3058 (LG/RD) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
B4 CHECK CIRCUIT 3059 (YE/LG) FOR AN OPEN - Measure the resistance between EATC module C228b-16, circuit 3059 (YE/LG) and in-vehicle temperature sensor C233-2, circuit 3059 (YE/LG).  A0048513 - Is the resistance less than 5 ohms?	Yes GO to B7. No REPAIR circuit 3059 (YE/LG) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
B5 CHECK CIRCUIT 3058 (LG/RD) FOR A SHORT TO CIRCUIT 3059 (YE/LG) - Ignition OFF. - Disconnect: EATC Module C228b. - Measure the resistance between in-vehicle temperature sensor C233-1, circuit 3058 (LG/RD) and C233-2, circuit 3059 (YE/LG).  A0048514 - Is the resistance greater than 10,000 ohms?	Yes GO to B6. No REPAIR circuit 3058 (LG/RD) for a short to circuit 3059 (YE/LG). CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
B6 CHECK CIRCUIT 3058 (LG/RD) FOR A SHORT TO GROUND - Measure the resistance between EATC module C228b-19, circuit 3058 (LG/RD) and ground.  A0048515 - Is the resistance greater than 10,000 ohms?	Yes GO to B7. No REPAIR circuit 3058 (LG/RD) for a short to ground. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

B7 CHECK MODULE CONNECTION - Carry out the Electronic Automatic Temperature Control (EATC) Module Cold Boot Process. - Carry out the EATC on-demand self test. - Operate the system. Does the concern return?	Yes INSTALL a new EATC module. REFER to Section 412-01. TEST the system for normal operation. 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. TEST the system for normal operation.
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Pinpoint Test C: DTC B1255 Or DTC B1257 — A/C Ambient Temperature Sensor Open Circuit Or Short To Ground

Refer to Wiring Diagrams Cell [55](#), Automatic Climate Control System for schematic and connector information.

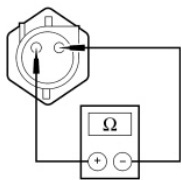
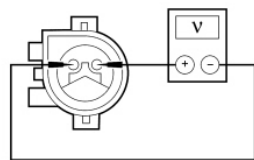
Normal Operation

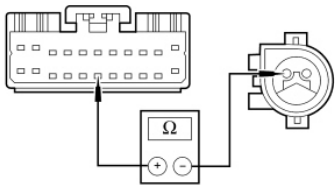
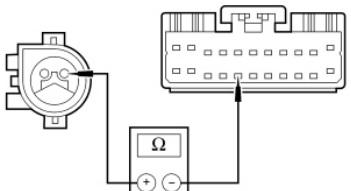
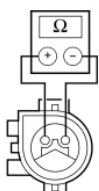
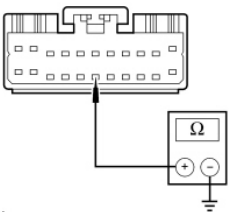
Under normal operation, the A/C ambient temperature sensor receives a ground from the electronic automatic temperature control (EATC) module through circuit 3059 (YE/LG). A 5-volt reference voltage is supplied to the A/C ambient temperature sensor from the EATC module through circuit 3061 (LB/OG).

Possible Causes

- An open in circuit 3059 (YE/LG) or 3061 (LB/OG)
- A short together in circuit 3059 (YE/LG) and 3061 (LB/OG)
- A short to ground in circuit 3061 (LB/OG)
- A/C ambient temperature sensor
- Electronic automatic temperature control (EATC) module

PINPOINT TEST C: DTC B1255 OR DTC B1257 — A/C AMBIENT TEMPERATURE SENSOR OPEN CIRCUIT OR SHORT TO GROUND

Test Step	Result / Action to Take
C1 CHECK THE AMBIENT TEMPERATURE SENSOR RESISTANCE - Ignition OFF. - Disconnect: Ambient Temperature Sensor C132. - Measure the resistance between the ambient temperature sensor terminals.  A0013640 - Is the resistance within the specified values for these temperature ranges: 10-20°C (50-68°F), 37,000-58,000 ohms; 20-30°C (68-86°F), 24,000-37,000 ohms; 30-40°C (86-104°F), 16,000-24,000 ohms?	Yes GO to C2. No INSTALL a new ambient air temperature sensor and bracket. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
C2 CHECK THE EATC MODULE OUTPUT VOLTAGE - Ignition ON. - Press the AUTOMATIC button. - Measure the voltage between ambient temperature sensor C132-1, circuit 3061 (LB/OG) and C132-2, circuit 3059 (YE/LG).  A0013641 - Is the voltage between 4.7 and 5.1 volts?	Yes INSTALL a new ambient air temperature sensor. TEST the system for normal operation. If the code returns, GO to C7. No If diagnosing DTC 1255, GO to C3. If diagnosing DTC 1257, GO to C5.
C3 CHECK CIRCUIT 3061 (LB/OG) FOR AN OPEN - Ignition OFF. - Disconnect: EATC Module C228a. - Measure the resistance between EATC module C228b-17, circuit 3061 (LB/OG) and ambient temperature sensor C132-1, circuit 3061 (LB/OG).	Yes GO to C4. No REPAIR circuit 3061 (LB/OG) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

 A0048532 Is the resistance less than 5 ohms?	
C4 CHECK CIRCUIT 3059 (YE/LG) FOR AN OPEN - Measure the resistance between EATC module C228b-16, circuit 3059 (YE/LG) and ambient temperature sensor C132-2, circuit 3059 (YE/LG).  A0048533 - Is the resistance less than 5 ohms?	Yes GO to C7. No REPAIR circuit 3059 (YE/LG) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
C5 CHECK CIRCUIT 3061 (LB/OG) FOR A SHORT TO CIRCUIT 3059 (YE/LG) - Ignition OFF. - Disconnect: EATC Module C228a. - Disconnect: EATC Module C228b. - Measure the resistance between ambient temperature sensor C132-1, circuit 3061 (LB/OG) and C132-2, circuit 3059 (YE/LG).  A0038068 - Is the resistance greater than 10,000 ohms?	Yes GO to C6. No REPAIR circuit 3061 (LB/OG) for a short to circuit 3059 (YE/LG). CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
C6 CHECK CIRCUIT 3061 (LB/OG) FOR A SHORT TO GROUND - Measure the resistance between EATC module C228-17, circuit 3061 (LB/OG) and ground.  A0048534 - Is the resistance greater than 10,000 ohms?	Yes GO to C7. No REPAIR circuit 3061 (LB/OG) for a short to ground. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
C7 CHECK MODULE CONNECTION - Carry out the Electronic Automatic Temperature Control (EATC) Module Cold Boot Process. - Carry out the EATC on-demand self test. - Operate the system. - Does the concern return?	Yes INSTALL a new EATC module. REFER to Section 412-01. TEST the system for normal operation. 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. TEST the system for normal operation.

Pinpoint Test D: DTC B1259 Or DTC B1261 — Solar Radiation Sensor Open Circuit Or Short To Ground

Refer to Wiring Diagrams Cell [55](#), Automatic Climate Control System for schematic and connector information.

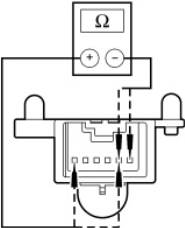
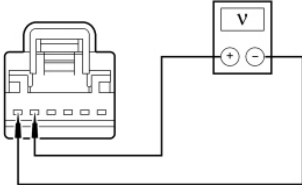
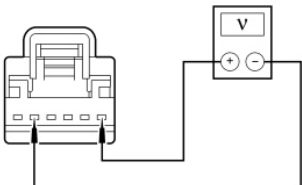
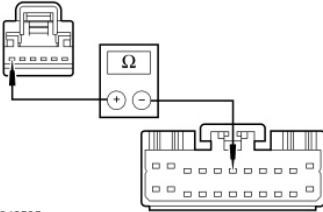
Normal Operation

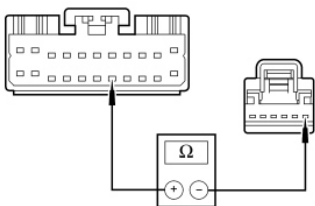
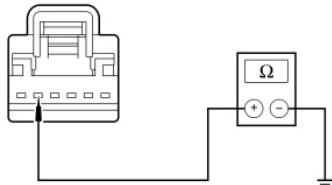
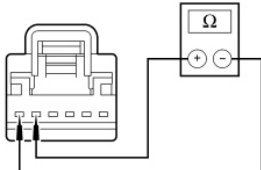
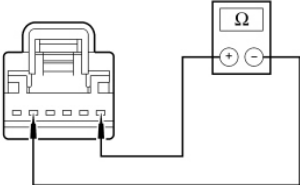
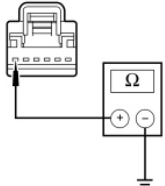
Under normal operation, the solar radiation sensor receives a ground through circuit 676 (PK/OG). A 5-volt reference voltage is supplied to the solar radiation sensor from the EATC module through circuit 476 (BN/YE) (LH) and circuit 468 (BN) (RH).

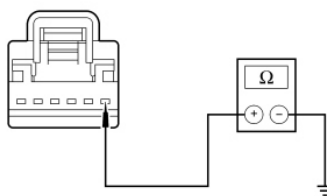
Possible Causes

- An open in circuit 476 (BN/YE), 468 (BN) or 676 (PK/OG)
- A short to ground in circuit 468 (BN) or 476 (BN/YE)
- Solar radiation sensor
- Electronic automatic temperature control (EATC) module

PINPOINT TEST D: DTC B1259 OR DTC B1261 — SOLAR RADIATION SENSOR OPEN CIRCUIT OR SHORT TO GROUND

Test Step	Result / Action to Take
D1 CHECK THE SOLAR RADIATION SENSOR RESISTANCE • Ignition OFF. • Disconnect: Solar Radiation Sensor C287. • Measure the resistance between the solar radiation sensor terminals 2 and 6 and between 1 and 2.  A0032464 • Is continuity present and the resistance greater than 0 ohms?	Yes GO to D2. No INSTALL a new solar radiation sensor and bracket. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
D2 CHECK THE EATC MODULE OUTPUT VOLTAGE • Ignition ON. • Press the AUTOMATIC button. • Measure the voltage between solar radiation sensor C287-1, circuit 468 (BN) and C287-2, circuit 676 (PK/OG).  A0038234 • Measure the voltage between solar radiation sensor C287-2, circuit 676 (PK/OG) and C287-6, circuit 476 (BN/YE).  A0015935 • Are the voltages between 4.7 and 5.1 volts?	Yes GO to D7. No If diagnosing DTC 1259, GO to D3 . If diagnosing DTC 1261, GO to D5 .
D3 CHECK CIRCUIT 468 (BN) AND CIRCUIT 476 (BN/YE) FOR AN OPEN • Ignition OFF. • Disconnect: EATC Module C228b. • Measure the resistance between EATC module C228b-6, circuit 468 (BN) and solar radiation sensor C287-1, circuit 468 (BN).  A0048535 • Measure the resistance between EATC module C228b-18, circuit 476 (BN/YE) and solar radiation sensor C287-6, circuit 476 (BN/YE).	Yes GO to D4. No REPAIR the circuit for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

 A0048536 Is the resistance less than 5 ohms?	
D4 CHECK CIRCUIT 676 (PK/OG) FOR AN OPEN - Measure the resistance between solar radiation sensor C287-2, circuit 676 (PK/OG) and ground.  A0015937 - Is the resistance less than 5 ohms?	Yes GO to D7. No REPAIR circuit 676 (PK/OG) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
D5 CHECK CIRCUIT 468 (BN) AND 476 (BN/YE) FOR A SHORT TO CIRCUIT 676 (PK/OG) - Ignition OFF. - Disconnect: EATC Module C228b. - Measure the resistance between solar radiation sensor C287-1, circuit 468 (BN) and C287-2, circuit 676 (PK/OG).  A0047079 - Measure the resistance between solar radiation sensor C287-6, circuit 476 (BN/YE) and C287-2, circuit 676 (PK/OG).  A0047078 - Are the resistances greater than 10,000 ohms?	Yes GO to D6. No REPAIR circuit 468 (BN) or 476 (BN/YE) for a short to circuit 676 (PK/OG). CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
D6 CHECK CIRCUIT 468 (BN) AND CIRCUIT 476 (BN/YE) FOR A SHORT TO GROUND - Measure the resistance between solar radiation sensor C287-1, circuit 468 (BN) and ground.  A0048537 - Measure the resistance between solar radiation sensor C287-6, circuit 476 (BN/YE) and ground.	Yes GO to D7. No REPAIR circuit 468 (BN) or 476 (BN/YE) for a short to ground. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

 A0015938 Are the resistances greater than 10,000 ohms?	
D7 CHECK MODULE CONNECTION - Carry out the Electronic Automatic Temperature Control (EATC) Module Cold Boot Process. - Carry out the EATC on-demand self test. - Operate the system. - Does the concern return?	Yes INSTALL a new EATC module. REFER to Section 412-01. TEST the system for normal operation. 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. TEST the system for normal operation.

Pinpoint Test E: DTC B1242 — Recirculation Door Failure

Refer to Wiring Diagrams Cell [55](#), Automatic Climate Control System for schematic and connector information.

Normal Operation

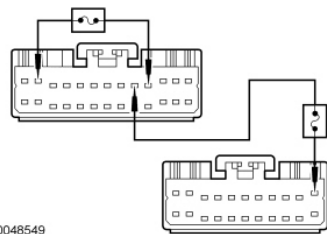
Under normal operation, the air inlet door actuator motor is supplied voltage or ground on circuit 1069 (OG/LB), depending on desired actuator rotation, by the EATC module. The EATC module then supplies the appropriate voltage or ground to the other side of the actuator motor on circuit 660 (YE/LG).

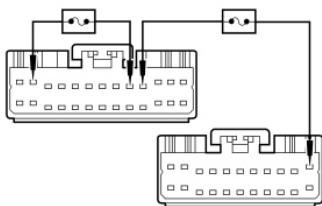
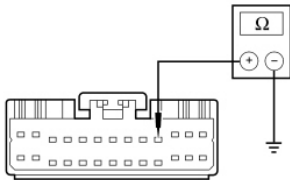
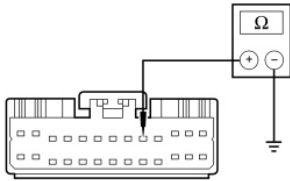
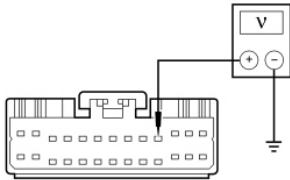
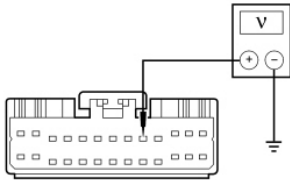
The air inlet door actuator feedback resistor is supplied a ground from the EATC module through circuit 438 (RD/WH) and a 5-volt reference voltage on circuit 436 (RD/LG). The EATC module reads the voltage on the air inlet door actuator feedback circuit 435 (YE/LB) to determine the air inlet door actuator position by the position of the actuator feedback resistor wiper arm.

Possible Causes

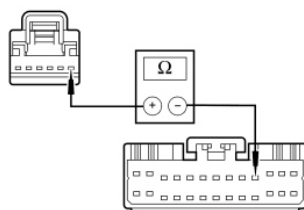
- An open, short to voltage, ground or together in circuits 660 (YE/LG), 1069 (OG/LB), 438 (RD/WH), 436 (RD/LG) and 435 (YE/LB)
- Air inlet door actuator motor
- Electronic automatic temperature control (EATC) module
- Stuck or bound linkage or door

PINPOINT TEST E: DTC B1242 — RECIRCULATION DOOR FAILURE

Test Step	Result / Action to Take
E1 CHECK THE RECIRC DOOR ACTUATOR CLOCKWISE OPERATION - Disconnect: EATC Module C228a. - Disconnect: EATC Module C228b. - Remove the door actuator and disengage the actuator driveshaft from the actuator door. Refer to Section 412-01. - Mark the door actuator driveshaft position. - Connect a fused jumper wire between: - EATC module C228a-19, circuit 1069 (OG/LB) and EATC module C228b-11, circuit 729 (RD/WH). - EATC module C228a-10, circuit 660 (YE/LG) and EATC module C228a-2, circuit 676 (PK/OG).  A0048549 - Does the actuator motor move in the clockwise direction?	Yes GO to E2. No GO to E3.
E2 CHECK THE RECIRC DOOR ACTUATOR COUNTERCLOCKWISE OPERATION - Connect a fused jumper wire between: - EATC module C228a-10, circuit 660 (YE/LG) and EATC module C228b-11, circuit 729 (RD/WH). - EATC module C228a-9, circuit 1069 (OG/LB) and EATC module C228a-2, circuit 676 (PK/OG).	Yes GO to E9. No GO to E3.

 A0048550 Does the actuator motor move in the counterclockwise direction?	
E3 CHECK CIRCUIT 660 (YE/LG) FOR A SHORT TO GROUND - Disconnect: Recirc Door Actuator C289. - Measure the resistance between ground and EATC module C228a-10, circuit 660 (YE/LG).  A0048551 - Is the resistance greater than 10,000 ohms?	Yes GO to E4. No REPAIR circuit 660 (YE/LG) for a short to ground. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
E4 CHECK CIRCUIT 1069 (OG/LB) FOR A SHORT TO GROUND - Measure the resistance between ground and EATC module C228a-9, circuit 1069 (OG/LB).  A0048552 - Is the resistance greater than 10,000 ohms?	Yes GO to E5. No REPAIR circuit 1069 (OG/LB) for a short to ground. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
E5 CHECK CIRCUIT 660 (YE/LG) FOR A SHORT TO VOLTAGE - Ignition ON. - Measure the voltage between ground and EATC module C228a-10, circuit 660 (YE/LG).  A0048553 - Is voltage present?	Yes REPAIR circuit 660 (YE/LG) for a short to voltage. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. No GO to E6.
E6 CHECK CIRCUIT 1069 (OG/LB) FOR A SHORT TO VOLTAGE - Measure the voltage between ground and EATC module C228a-9, circuit 1069 (OG/LB).  A0048554 - Is voltage present?	Yes REPAIR circuit 1069 (OG/LB) for a short to voltage. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. No GO to E7.
E7 CHECK CIRCUIT 660 (YE/LG) FOR AN OPEN Ignition OFF.	Yes

- Measure the resistance between EATC module C228a-10, circuit 660 (YE/LG) and the recirc door actuator C289-1, circuit 660 (YE/LG).



A0048555

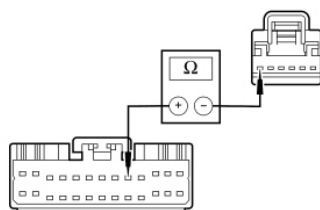
- Is the resistance less than 5 ohms?

GO to [E8](#).**No**

REPAIR circuit 660 (YE/LG) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

E8 CHECK CIRCUIT 1069 (OG/LB) FOR AN OPEN

- Measure the resistance between EATC module C228a-9, circuit 1069 (OG/LB) and the recirc door actuator C289-6, circuit 1069 (OG/LB).



A0048556

- Is the resistance less than 5 ohms?

Yes

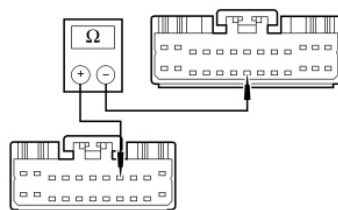
INSPECT for binding or broken linkage. If no condition is found, INSTALL a new door actuator. REFER to [Section 412-01](#). CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

No

REPAIR circuit 1069 (OG/LB) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

E9 CHECK THE FEEDBACK POTENTIOMETER TOTAL RESISTANCE

- Connect: Recirc Door Actuator C289.
- Disconnect: Temperature Blend Door Actuator C2091.
- Disconnect: Temperature Blend Door Actuator C2092.
- Disconnect: Panel/Defrost Door Actuator C2248.
- Disconnect: Floor Door Actuator C234.
- Measure the resistance between EATC module C228b-8, circuit 436 (RD/LG) and EATC module C228a-20, circuit 438 (RD/WH).



A0047952

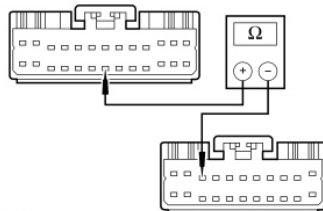
- Is the resistance between 5,000 and 6,000 ohms?

YesGO to [E10](#).**No**

If the resistance is greater than 6,000 ohms, GO to [E12](#). If the resistance is less than 5,000 ohms, GO to [E19](#).

E10 CHECK POTENTIOMETER LOW SIDE RESISTANCE

- Measure the resistance between EATC module C228a-20, circuit 438 (RD/WH) and EATC module C228b-3, circuit 435 (YE/LB).



A0048557

- Is the resistance between 250 and 5,500 ohms?

YesGO to [E11](#).**No**

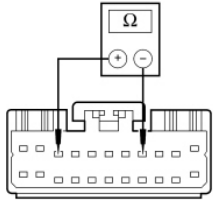
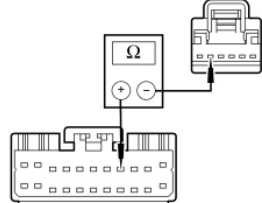
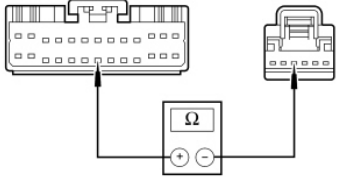
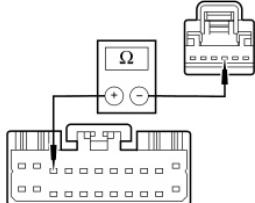
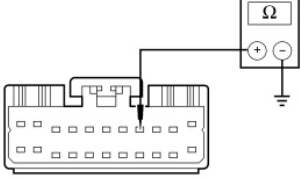
If the resistance is greater than 5,500 ohms, GO to [E14](#). If the resistance is less than 250 ohms, GO to [E20](#).

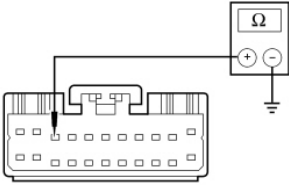
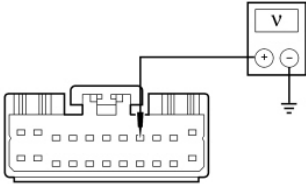
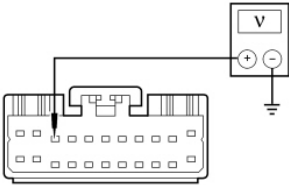
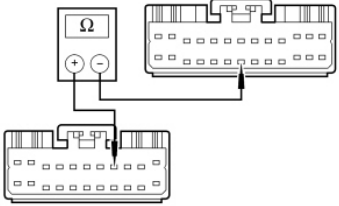
E11 CHECK POTENTIOMETER HIGH SIDE RESISTANCE

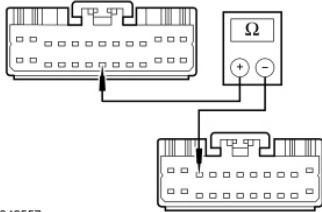
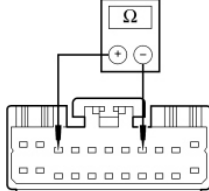
- Measure the resistance between EATC module C228b-8, circuit 436 (RD/LG) and EATC module C228b-3, circuit 435 (YE/LB).

YesGO to [E15](#).**No**

If the resistance is greater than 5,500 ohms, INSTALL a new door actuator. REFER to [Section 412-01](#). CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. If the resistance is less than 250 ohms, GO to [E21](#).

 A0048558 Is the resistance between 250 and 5,500 ohms?	
E12 CHECK 436 (RD/LG) CIRCUIT FOR AN OPEN - Disconnect: Recirc Door Actuator C289. - Measure the resistance between EATC module C228b-8, circuit 436 (RD/LG) and recirc door actuator C289-5, circuit 436 (RD/LG).  A0047955 - Is the resistance less than 5 ohms?	Yes GO to E13. No REPAIR circuit 436 (RD/LG) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
E13 CHECK THE ACTUATOR RETURN CIRCUIT 438 (RD/WH) FOR AN OPEN - Disconnect: Recirc Door Actuator C289. - Measure the resistance between EATC module C228a-20, circuit 438 (RD/WH) and recirc door actuator C289-4, circuit 438 (RD/WH).  A0047956 - Is the resistance less than 5 ohms?	Yes INSTALL a new door actuator. REFER to Section 412-01. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. No REPAIR circuit 438 (RD/WH) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
E14 CHECK CIRCUIT 435 (YE/LB) FOR AN OPEN - Disconnect: Recirc Door Actuator C289. - Measure the resistance between EATC module C228b-3, circuit 435 (YE/LB) and recirc door actuator C289-3, circuit 435 (YE/LB).  A0048559 - Is the resistance less than 5 ohms?	Yes INSTALL a new door actuator. REFER to Section 412-01. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. No REPAIR circuit 435 (YE/LB) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
E15 CHECK CIRCUIT 436 (RD/LG) FOR A SHORT TO GROUND - Measure the resistance between EATC module C228b-8, circuit 436 (RD/LG) and ground.  A0047958 - Is the resistance greater than 10,000 ohms?	Yes GO to E16. No REPAIR circuit 436 (RD/LG) for a short to ground. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
E16 CHECK CIRCUIT 435 (YE/LB) FOR A SHORT TO GROUND	

- Measure the resistance between ground and EATC module C228b-3, circuit 435 (YE/LB).  A0048560 - Is the resistance greater than 10,000 ohms?	Yes GO to E17. No REPAIR circuit 435 (YE/LB) for a short to ground. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
E17 CHECK CIRCUIT 436 (RD/LG) FOR A SHORT TO VOLTAGE - Ignition ON. - Measure the voltage between EATC module C228b-8, circuit 436 (RD/LG) and ground.  A0047960 - Is voltage present?	Yes REPAIR circuit 436 (RD/LG) for a short to voltage. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. No GO to E18.
E18 CHECK CIRCUIT 435 (YE/LB) FOR A SHORT TO VOLTAGE - Measure the voltage between ground and EATC module C228b-3, circuit 435 (YE/LB).  A0048561 - Is voltage present?	Yes REPAIR circuit 435 (YE/LB) for a short to voltage. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. No INSPECT for binding or broken door and linkage. If no condition is found, GO to E22.
E19 CHECK CIRCUIT 438 (RD/WH) AND CIRCUIT 436 (RD/LG) FOR A SHORT TOGETHER - Disconnect: Recirc Door Actuator C289. - Measure the resistance between EATC module C228a-20, circuit 438 (RD/WH) and EATC module C228b-8, circuit 436 (RD/LG).  A0047952 - Is the resistance less than 5 ohms?	Yes REPAIR circuits 438 (RD/WH) and circuit 436 (RD/LG) for a short together. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. No INSTALL a new door actuator. REFER to Section 412-01. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
E20 CHECK CIRCUIT 438 (RD/WH) AND CIRCUIT 435 (YE/LB) FOR A SHORT TOGETHER Measure the resistance between EATC module C228a-20, circuit 438 (RD/WH) and EATC module C228b-3, circuit 435 (YE/LB).	Yes REPAIR circuits 438 (RD/WH) and circuit 435 (YE/LB) for a short together. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. No INSTALL a new door actuator. REFER to Section 412-01. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

 A0048557 Is the resistance less than 5 ohms?	
E21 CHECK CIRCUIT 436 (RD/LG) AND CIRCUIT 435 (YE/LB) FOR A SHORT TOGETHER - Measure the resistance between EATC module C228b-8, circuit 436 (RD/LG) and EATC module C228b-3, circuit 435 (YE/LB).  A0048558 - Is the resistance less than 5 ohms?	Yes REPAIR circuits 436 (RD/LG) and circuit 435 (YE/LB) for a short together. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. No INSTALL a new door actuator. REFER to Section 412-01. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
E22 CHECK MODULE CONNECTION - Carry out the Electronic Automatic Temperature Control (EATC) Module Cold Boot Process. - Carry out the EATC on-demand self test. - Operate the system. - Does the concern return?	Yes INSTALL a new EATC module. REFER to Section 412-01. TEST the system for normal operation. 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. TEST the system for normal operation.

Pinpoint Test F: DTC B1263 or B1264 — Panel/Defrost or Floor Door Failure

Refer to Wiring Diagrams Cell [55](#). Automatic Climate Control System for schematic and connector information.

Normal Operation

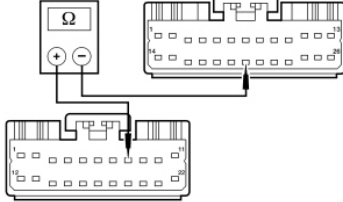
The panel/defrost and floor door actuator motors both work the same. Each door actuator motor has 2 circuits that the HVAC module applies voltage to and reverses the polarity to reverse door actuator motor rotation. The panel/defrost door actuator motor circuits are 1379 (PK/LB) and 1380 (TN/YE); the floor door actuator motor circuits are 1375 (PK/YE) and 1376 (BK/LB). Each door actuator motor has a position sensor that supplies a voltage to the HVAC module to indicate door position. Both door actuator motors receive reference voltage (5V) on circuit 436 (RD/LG) and a sensor ground on circuit 438 (RD/WH). Position signals are provided by the panel/defrost door actuator motor on circuit 1123 (YE/WH) and circuit 1130 (PK/LG) by the floor door actuator motor.

- DTC B1263 (Servo Motor Vent Circuit Failure) — The module senses no change in actuator feedback voltage when the actuator motor has been energized.
- DTC B1264 (Servo Motor Foot Circuit Failure) — The module senses no change in actuator feedback voltage when the actuator motor has been energized.

This pinpoint test is intended to diagnose the following:

- Wiring, terminals or connectors
- Panel/defrost or floor door actuator
- HVAC module
- Stuck or bound linkage or door

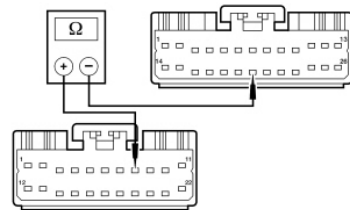
PINPOINT TEST F: DTC B1263 OR B1264 — PANEL/DEFROST OR FLOOR DOOR FAILURE

Test Step	Result / Action to Take
F1 CHECK THE FEEDBACK POTENTIOMETER TOTAL RESISTANCE - Disconnect: HVAC Module C228a. - Disconnect: HVAC Module C228b. - Measure the resistance between HVAC module C228b-8, circuit 436 (RD/LG), harness side and HVAC module C228a-20, circuit 438 (RD/WH), harness side.  N0085106 - Is the resistance greater than 500 ohms?	Yes If diagnosing DTC B1263, GO to F3. If diagnosing DTC B1264, GO to F4. No GO to F2.

F2 CHECK THE FEEDBACK POTENTIOMETER TOTAL RESISTANCE

NOTE: Access to the connector in the following step is difficult. Before performing this step, visually inspect the actuator and its harness for obvious damage. If no damage is evident, proceed with the test.

- Measure the resistance between HVAC module C228b-8, circuit 436 (RD/LG), harness side and HVAC module C228a-20, circuit 438 (RD/WH), harness side.



N0085106

- While measuring the resistance above, disconnect the following components one at a time, in order. Stop disconnecting components if the measured resistance rises above 500 ohms.
 - Air inlet door actuator C289
 - LH blend door actuator C2092
 - RH blend door actuator C2092
- Did the resistance rise above 500 ohms?

Yes

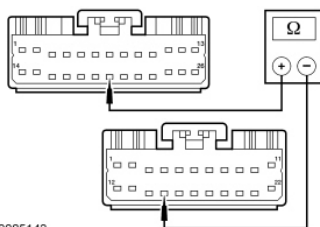
INSTALL a new actuator (the last one to be disconnected). TEST the system for normal operation.

No

Visually INSPECT the harness between the actuators and the HVAC module for obvious damage. REPAIR as necessary. If no damage is evident, INSTALL a new floor door actuator and panel/defrost door actuator. If a new actuator is installed, CONNECT the actuator electrical connectors before the HVAC module connectors. This will allow the new actuator to be calibrated when the HVAC module is reconnected. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

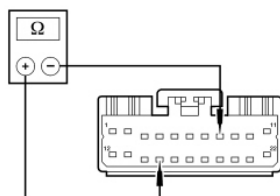
F3 CHECK POTENTIOMETER LOW- AND HIGH-SIDE RESISTANCE

- Measure the **low-side** resistance between HVAC module C228a-20, circuit 438 (RD/WH), harness side and HVAC module C228b-15, circuit 1123 (YE/WH), harness side.



N0085143

- Measure the **high-side** resistance between HVAC module C228b-8, circuit 436 (RD/LG), harness side and HVAC module C228b-15, circuit 1123 (YE/WH), harness side.



N0085144

- Is the resistance between 250 and 5,500 ohms?

Yes

GO to [F5](#).

No

CARRY OUT the Panel/Defrost Door Actuator Component Test in this section. If a new actuator is installed, CONNECT the actuator electrical connector before the HVAC module connector(s). This will allow the new actuator to be calibrated when the HVAC module is reconnected. If the actuator tests OK and:

If the **low-side** resistance only is greater than 5,500 ohms, REPAIR circuit 438 (RD/WH) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

If the **low-side** resistance only is less than 250 ohms, REPAIR circuits 1123 (YE/WH) and 438 (RD/WH) for a short together. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

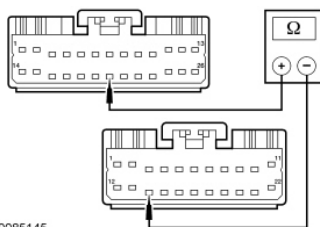
If the **high-side** resistance only is greater than 5,500 ohms, REPAIR circuit 436 (RD/LG) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

If the **high-side** resistance only is less than 250 ohms, REPAIR circuits 1123 (YE/WH) and 436 (RD/LG) for a short together. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

If both the **high-side and low-side** resistance is greater than 5,500 ohms, REPAIR circuit 1123 (YE/WH) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

F4 CHECK POTENTIOMETER LOW- AND HIGH-SIDE RESISTANCE

- Measure the **low-side** resistance between HVAC module C228a-20, circuit 438 (RD/WH), harness side and HVAC module C228b-14, circuit 1130 (PK/LG), harness side.



N0085145

- Measure the **high-side** resistance between HVAC module C228b-8, circuit 436 (RD/LG), harness side and HVAC module C228b-14, circuit 1130 (PK/LG), harness side.

Yes

GO to [F5](#).

No

CARRY OUT the Floor Door Actuator Component Test in this section. If a new actuator is installed, CONNECT the actuator electrical connector before the HVAC module connector (s). This will allow the new actuator to be calibrated when the HVAC module is reconnected. If the actuator tests OK and:

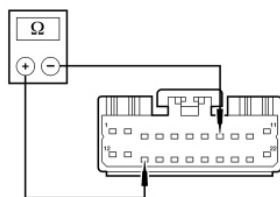
If the **low-side** resistance only is greater than 5,500 ohms, REPAIR circuit 438 (RD/WH) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

If the **low-side** resistance only is less than 250 ohms, REPAIR circuits 1130 (PK/LG) and 438 (RD/WH) for a short together. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

If the **high-side** resistance only is greater than 5,500 ohms, REPAIR circuit 436 (RD/LG) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

If the **high-side** resistance only is less than 250 ohms, REPAIR circuits 1130 (PK/LG) and 436 (RD/LG) for a short together. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

If both the **high-side and low-side** resistance is greater than 5,500 ohms, REPAIR circuit 1130 (PK/LG) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

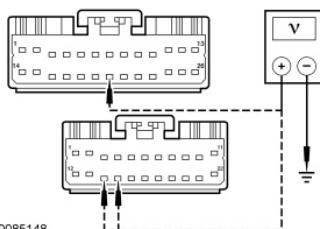


N0085146

- Is the resistance between 250 and 5,500 ohms?

F5 CHECK CIRCUITS 438 (RD/WH), 1123 (YE/WH) AND 1130 (PK/LG) FOR A SHORT TO VOLTAGE

- Ignition ON.
- Measure the voltage between ground and:
 - HVAC module C228a-20, circuit 438 (RD/WH), harness side.
 - For DTC B1263, HVAC module C228b-15, circuit 1123 (YE/WH), harness side.
 - For DTC B1264, HVAC module C228b-14, circuit 1130 (PK/LG), harness side.



N0085148

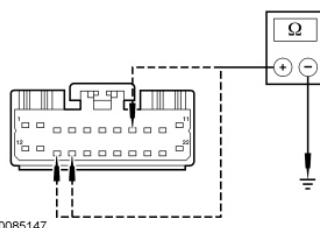
- Is any voltage present?

Yes
REPAIR circuit 438 (RD/WH), 1123 (YE/WH) or 1130 (PK/LG) for a short to voltage. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

No
GO to [F6](#).

F6 CHECK CIRCUITS 436 (RD/LG), 1123 (YE/WH) AND 1130 (PK/LG) FOR A SHORT TO GROUND

- Ignition OFF.
- Measure the resistance between ground and:
 - HVAC module C228b-8, circuit 436 (RD/LG), harness side.
 - For DTC B1263, HVAC module C228b-15, circuit 1123 (YE/WH), harness side.
 - For DTC B1264, HVAC module C228b-14, circuit 1130 (PK/LG), harness side.



N0085147

- Is the resistance greater than 10,000 ohms?

Yes
If diagnosing DTC B1263, GO to [F7](#).

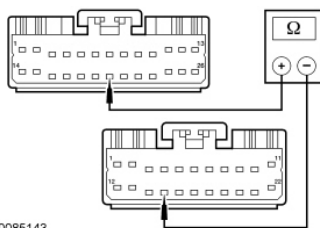
If diagnosing DTC B1264, GO to [F8](#).

No
REPAIR circuits 436 (RD/LG), 1123 (YE/WH) or 1130 (PK/LG) for a short to ground. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

F7 CHECK THE DOOR ACTUATOR OPERATION

NOTE: If a jumper fuse opens while carrying out this test step, repair the circuit (s) for a short.

- With the fused jumper connections made as directed below, measure the resistance between HVAC module C228a-20, circuit 438 (RD/WH), harness side and HVAC module C228b-15, circuit 1123 (YE/WH), harness side.

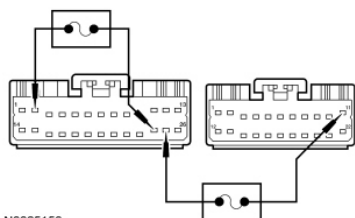


N0085143

- Connect a fused jumper wire between:
 - HVAC module C228a-25, circuit 1380 (TN/YE), harness side and HVAC module C228b-11, circuit 1566 (RD/YE), harness side.
 - HVAC module C228a-24, circuit 1379 (PK/LB), harness side and HVAC module C228a-2, circuit 57 (BK), harness side.

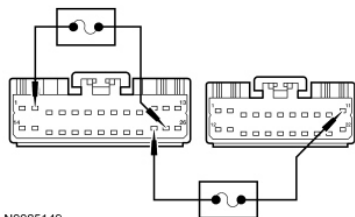
Yes
INSPECT for broken door and linkage. REPAIR as necessary. If no condition is found, GO to [F11](#).

No
GO to [F9](#).



N0085150

- Remove the fused jumpers.
- Connect a fused jumper wire between:
 - HVAC module C228a-24, circuit 1379 (PK/LB), harness side and HVAC module C228b-11, circuit 1566 (RD/YE), harness side.
 - HVAC module C228a-25, circuit 1380 (TN/YE), harness side and HVAC module C228a-2, circuit 57 (BK), harness side.



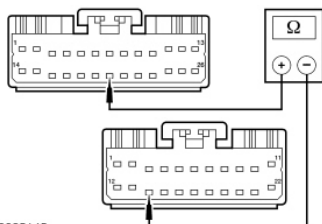
N0085149

- Does the resistance smoothly increase and/or decrease when the jumpers are connected?

F8 CHECK THE DOOR ACTUATOR OPERATION

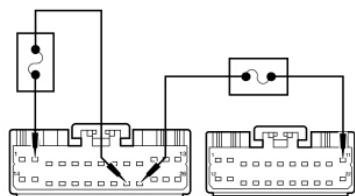
NOTE: If a jumper fuse opens while carrying out this test step, repair the circuit (s) for a short.

- With the fused jumper connections made as directed below, measure the resistance between HVAC module C228a-20, circuit 438 (RD/WH), harness side and HVAC module C228b-14, circuit 1130 (PK/LG), harness side.



N0085145

- Connect a fused jumper wire between:
 - HVAC module C228a-23, circuit 1376 (BK/LB), harness side and HVAC module C228b-11, circuit 1566 (RD/YE), harness side.
 - HVAC module C228a-22, circuit 1375 (PK/YE), harness side and HVAC module C228a-2, circuit 57 (BK), harness side.



N0085152

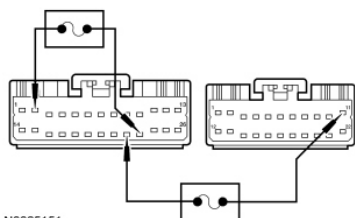
- Remove the fused jumpers.
- Connect a fused jumper wire between:
 - HVAC module C228a-22, circuit 1375 (PK/YE), harness side and HVAC module C228b-11, circuit 1566 (RD/YE), harness side.
 - HVAC module C228a-23, circuit 1376 (BK/LB), harness side and HVAC module C228a-2, circuit 57 (BK), harness side.

Yes

INSPECT for broken door and linkage. REPAIR as necessary. If no condition is found, GO to [F11](#).

No

GO to [F9](#).



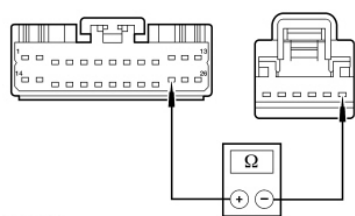
N0085151

- Does the resistance smoothly increase and/or decrease when the jumpers are connected?

F9 CHECK THE ACTUATOR MOTOR DRIVE CIRCUITS FOR AN OPEN

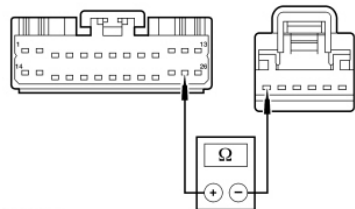
NOTE: Access to the connector in the following step is difficult. Before performing this step, visually inspect the actuator and its harness for obvious damage. If no damage is evident, proceed with the test.

- Ignition OFF.
- Disconnect: **For DTC B1263**, Panel/Defrost Door Actuator C2248.
- Disconnect: **For DTC B1264**, Floor Door Actuator C234.

DTC B1263

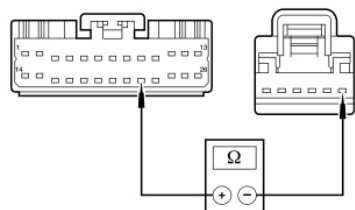
N0085153

- **NOTE:** For **DTC B1263** only.
- Measure the resistance between HVAC module C228a-24, circuit 1379 (PK/LB), harness side and panel/defrost door actuator C2248-1, circuit 1379 (PK/LB), harness side.

DTC B1263

N0085154

- **NOTE:** For **DTC B1263** only.
- Measure the resistance between HVAC module C228a-25, circuit 1380 (TN/YE), harness side and panel/defrost door actuator C2248-6, circuit 1380 (TN/YE), harness side.

DTC B1264

N0085155

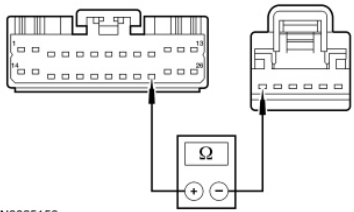
- **NOTE:** For **DTC B1264** only.
- Measure the resistance between HVAC module C228a-22, circuit 1375 (PK/YE), harness side and floor door actuator C234-1, circuit 1375 (PK/YE), harness side.

DTC B1264**Yes**

INSPECT for broken door and linkage. REPAIR as necessary. If no condition is found, GO to [F10](#).

No

REPAIR the circuit(s) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

 N0085156 - NOTE: For DTC B1264 only. - Measure the resistance between HVAC module C228a-23, circuit 1376 (BK/LB), harness side and floor door actuator C234-6, circuit 1376 (BK/LB), harness side. - Are the resistances less than 5 ohms?	
F10 CHECK THE ACTUATOR CONNECTION - Disconnect the actuator connector. - Check for: - corrosion. - pushed-out terminals. - damaged terminals. - Connect and correctly seat the actuator connector. - Clear the DTCs. - Operate the system and verify the concern is still present. - Is the concern still present?	Yes INSTALL a new floor door actuator and panel/defrost door actuator. If a new actuator is installed, CONNECT the actuator electrical connectors before the HVAC module connectors. This will allow the new actuator to be calibrated when the HVAC module is reconnected. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. No The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. TEST the system for normal operation.
F11 MODULE ACTUATOR POSITION CALIBRATION NOTE: The purpose of the module actuator position calibration is to allow the HVAC module to reinitialize and calibrate the actuator stop points. To carry out the calibration, follow the steps below. - Ignition OFF. - Inspect the module connectors for: - corrosion. - pushed-out terminals. - damaged terminals. - Connect and correctly seat all the HVAC module connectors. - Ignition ON. - Clear the DTCs. - Select any position except OFF. - NOTE: The HVAC module will now initialize and calibrate the actuators. Calibration of the actuators will take approximately 30 seconds. - Operate the system and verify the concern is still present. - Is the concern still present?	Yes INSTALL a new HVAC module. REFER to Section 412-01. TEST the system for normal operation. No The system is now operating correctly at this time. The concern may have been caused by a foreign object in the HVAC case or temporary binding that restricted actuator door travel. CHECK any actuator external linkage. If condition recurs, INSPECT actuator linkage and door for binding and CHECK HVAC case for foreign objects.

Pinpoint Test G: DTC B2268 Or DTC B2269 — Steering Wheel Auxiliary Control Switch Open Circuit Or Short To Ground

Refer to Wiring Diagrams Cell [55](#), Automatic Climate Control System for schematic and connector information.

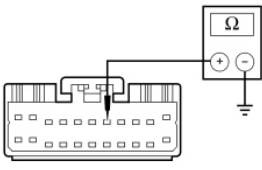
Normal Operation

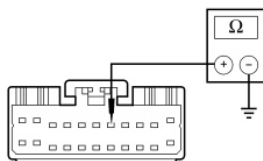
Under normal operation, the steering wheel control switch receives a ground through circuit 57 (BK). The EATC module senses the resistance (depending on what button is pressed) from the steering wheel control switch through circuit 1070 (BN/LB).

Possible Causes

- An open in circuit 57 (BK) or circuit 1070 (BN/LB)
- A short to ground or voltage in circuit 1070 (BN/LB)
- Steering wheel control switch
- Electronic automatic temperature control (EATC) module

PINPOINT TEST G: DTC B2268 OR DTC B2269 — STEERING WHEEL AUXILIARY CONTROL SWITCH OPEN CIRCUIT OR SHORT TO GROUND

Test Step	Result / Action to Take
G1 CHECK THE INPUT TO THE EATC MODULE - Ignition OFF. - Disconnect: EATC Module C228b. - Measure the resistance between EATC module C228b-7, circuit 1070 (BN/LB) and ground.  A0048643 - Is the resistance reading between 4,500 and 5,000 ohms?	Yes GO to G2. No If the resistance is less than 4,500 ohms, GO to G3. If the resistance is greater than 5,000 ohms, GO to G4.
G2 CHECK THE STEERING WHEEL AUXILIARY CONTROL SWITCH OUTPUT Measure the resistance between EATC module C228b-7, circuit 1070 (BN/LB) and ground.	Yes GO to G6.



A0048643

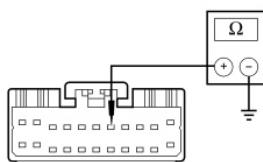
- Press each steering wheel auxiliary control switch and compare the resistance reading to the chart below.

Switch	Resistance (ohms)
TEMP UP	379-387
TEMP DOWN	1695-1730
NO FUNCTION	4468-4558

- Are the resistance readings within the range?

G3 CHECK CIRCUIT 1070 (BN/LB) FOR A SHORT TO GROUND

- Disconnect: Steering Wheel Control Switch.
- Measure the resistance between EATC module C228b-7, circuit 1070 (BN/LB) and ground.

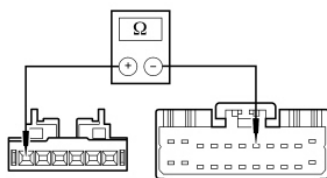


A0048643

- Is the resistance reading less than 10,000 ohms?

G4 CHECK CIRCUIT 1070 (BN/LB) FOR AN OPEN

- Disconnect: Steering Wheel Auxiliary Control Switch.
- Measure the resistance between EATC module C228b-7, circuit 1070 (BN/LB) and steering wheel auxiliary control switch C2208-6, circuit 1070 (BN/LB).

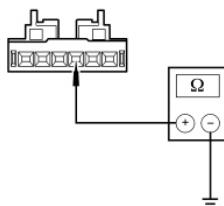


N0000315

- Is the resistance less than 5 ohms?

G5 CHECK CIRCUIT 57 (BK) FOR AN OPEN

- Measure the resistance between steering wheel auxiliary control switch C2208-3, circuit 57 (BK) and ground.



N0000882

- Is the resistance less than 5 ohms?

G6 CHECK MODULE CONNECTION

- Carry out the Electronic Automatic Temperature Control (EATC) Module Cold Boot Process.
- Carry out the EATC on-demand self test.
- Operate the system.
- Does the concern return?

No
INSTALL a new steering wheel auxiliary control switch. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

Yes
REPAIR circuit 1070 (BN/LB) for a short to ground. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

No
INSTALL a new steering wheel auxiliary control switch. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

Yes
GO to [G5](#).

No
REPAIR circuit 1070 (BN/LB) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

Yes
INSTALL a new steering wheel auxiliary control switch. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

No
REPAIR circuit 57 (BK) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

Yes
INSTALL a new EATC module. REFER to [Section 412-01](#). TEST the system for normal operation.

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. TEST the system for normal operation.

Pinpoint Test H: No Communication With The Electronic Automatic Temperature Control Module

Refer to Wiring Diagrams Cell [55](#), Automatic Climate Control System for schematic and connector information.

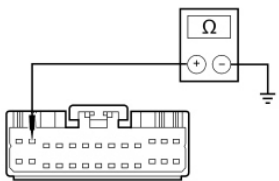
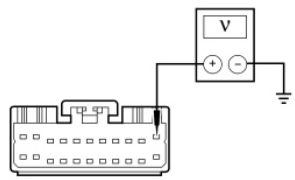
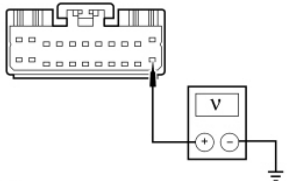
Normal Operation

Under normal operation, the electronic automatic temperature control (EATC) module is grounded through circuit 57 (BK). The EATC module receives battery voltage through circuit 1566 (RD/YE) and ignition voltage through circuit 1812 (BN/WH).

Possible Causes

- Fuse(s)
- An open in circuit 57 (BK), 1566 (RD/YE) or 1812 (BN/WH)

PINPOINT TEST H: NO COMMUNICATION WITH THE ELECTRONIC AUTOMATIC TEMPERATURE CONTROL MODULE

Test Step	Result / Action to Take
H1 CHECK CIRCUIT 676 (PK/OG) FOR AN OPEN • Ignition OFF. • Disconnect: EATC Module C228a. • Measure the resistance between EATC module C228a-2, circuit 676 (PK/OG) and ground.  A0040170 • Is the resistance less than 5 ohms?	Yes GO to H2. No REPAIR circuit 676 (PK/OG) for an open. TEST the system for normal operation.
H2 CHECK CIRCUIT 1566 (RD/YE) FOR B+ • Disconnect: EATC Module C228b. • Measure the voltage between EATC module C228b-11, circuit 1566 (RD/YE) and ground.  A0050661 • Is the voltage B+?	Yes GO to H3. No VERIFY the central junction box (CJB) fuse 27 (10A) is OK. If OK, REPAIR circuit 1566 (RD/YE) for an open. TEST the system for normal operation.
H3 CHECK CIRCUIT 1812 (BN/WH) FOR B+ • Ignition ON. • Measure the voltage between EATC module C228b-22, circuit 1812 (BN/WH) and ground.  A0050662 • Is the voltage B+?	Yes REFER to Section 418-00 to diagnose a network concern. No VERIFY the central junction box (CJB) fuse 15 (10A) is OK. If OK, REPAIR circuit 1812 (BN/WH) for an open. TEST the system for normal operation.

Pinpoint Test I: The EATC System Is Inoperative, Intermittent Or Incorrect Operation

Refer to Wiring Diagrams Cell [55](#), Automatic Climate Control System for schematic and connector information.

Normal Operation

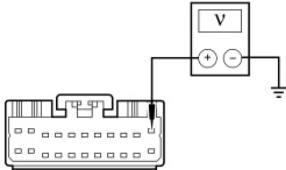
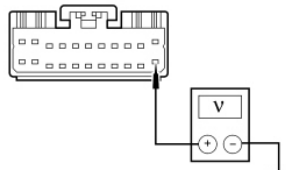
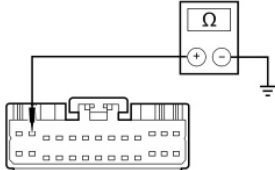
Under normal operation, the electronic automatic temperature control (EATC) module is grounded through circuit 57 (BK). The EATC module receives battery voltage through circuit 1566 (RD/YE) and ignition voltage through circuit 1812 (BN/WH).

Possible Causes

- Fuse(s)
- An open in circuit 57 (BK), 1566 (RD/YE) or 1812 (BN/WH)

PINPOINT TEST I: THE EATC SYSTEM IS INOPERATIVE, INTERMITTENT OR INCORRECT OPERATION

Test Step	Result / Action to Take
I1 VERIFY AUTOMATIC OPERATION	
- Ignition ON. - With the engine running, press the AUTOMATIC button. Does the indicator above the AUTO button illuminate and the selected temperature for both the driver and passenger appear in the display window?	Yes GO to I2. No GO to I11.
I2 CARRY OUT THE EATC MODULE SELF-TEST	
- Ignition ON. - Carry out the EATC module self-test. Refer to the Electronic Automatic Temperature Control Module Self-Test in this section. Record the DTCs displayed, if any. Were any DTCs displayed as a result of the EATC self-test?	Yes REFER to the EATC Module Diagnostic Trouble Code (DTC) Index. CARRY OUT the necessary diagnosis and REPAIR as required. No GO to I3.
I3 CHECK THE VACUUM FLUORESCENT DISPLAY	
- Exit self-test by pressing the DEFROST button. Observe the button indicators and function symbols displayed on the vacuum fluorescent display while changing the temperature, blower speed and functions. Are the display and indicators correct and complete without any missing elements?	Yes GO to I4. No INSTALL a new EATC module. TEST the system for normal operation.
I4 CHECK THE BLOWER MANUAL OVERRIDE OPERATION	
- Press the blower motor speed override control fully up and fully down. Does the blower motor speed increase from low speed to high and high speed to low?	Yes GO to I5. No If the blower motor is inoperative, GO to Pinpoint Test M. If the blower motor does not operate correctly, GO to Pinpoint Test N.
I5 VERIFY THE DEFROST OVERRIDE OPERATION	
- Press the override button for DEFROST operation. Is outside air being discharged from the windshield defroster nozzle and the side window demisters?	Yes GO to I6. No GO to Pinpoint Test F.
I6 VERIFY THE FLOOR OVERRIDE OPERATION	
- Press the override button for FLOOR operation. Is outside air being discharged from the floor duct?	Yes GO to I7. No GO to Pinpoint Test F.
I7 VERIFY THE PANEL OVERRIDE OPERATION	
- Press the override button for PANEL operation. Is outside air being discharged from the instrument panel registers?	Yes GO to I8. No GO to Pinpoint Test F.
I8 VERIFY THE A/C CLUTCH DOES NOT ENGAGE IN THE PANEL MODE	
- Press the override button for PANEL operation. - Verify that the A/C request button indicator is not illuminated. If illuminated, press the A/C request button to turn the A/C indicator off and disengage the A/C compressor clutch. Does the A/C clutch engage when the PANEL override button is pressed?	Yes GO to Pinpoint Test L. No GO to I9.
I9 VERIFY THE RECIRC OVERRIDE OPERATION	
- Press the PANEL and RECIRC override buttons. Is recirculated air being discharged from the instrument panel registers?	Yes GO to I10. No GO to Pinpoint Test E.
I10 VERIFY A/C CLUTCH ENGAGEMENT IN THE A/C MODE	
- Make sure the ambient air temperature is above 5°C (41°F). - Press the override button for A/C operation. Does the A/C clutch engage when the PANEL and A/C override button is pressed?	Yes The test is complete. The system is functioning normally. No GO to Pinpoint Test K.
I11 CHECK THE EATC MODULE FUNCTIONS	
- Press each function button and observe the display. Does the EATC carry out and display any functions?	Yes GO to I14. No GO to I12.
I12 CHECK THE VOLTAGE TO THE EATC	
- Ignition OFF. - Disconnect: EATC C228b. - Ignition ON. - Measure the voltage between ground EATC module C228b-11, circuit 1655 (RD/YE).	Yes GO to I13. No VERIFY the central junction box (CJB) fuse 15 (10A) and fuse 27 (10A) is OK. If OK, REPAIR the affected circuit. TEST the system for normal operation.

 A0050661 Measure the voltage between ground EATC module C228b-22, circuit 1812 (BN/WH).	
 A0050662 Are the voltages greater than 10 volts?	
I13 CHECK THE GROUND CIRCUIT TO THE EATC - Ignition OFF. - Disconnect: EATC C228a. - Measure the resistance between EATC module C228a-2, circuit 676 (PK/OG) and ground.  A0040170 - Is the resistance less than 5 ohms?	Yes GO to I14. No REPAIR circuit 676 (PK/OG) for an open. TEST the system for normal operation.
I14 CHECK MODULE CONNECTION - Carry out the Electronic Automatic Temperature Control (EATC) Module Cold Boot Process. - Carry out the EATC on-demand self test. - Operate the system. - Does the concern return?	Yes INSTALL a new EATC module. REFER to Section 412-01. TEST the system for normal operation. 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. TEST the system for normal operation.

Pinpoint Test J: Insufficient, Erratic Or No Heat

Normal Operation

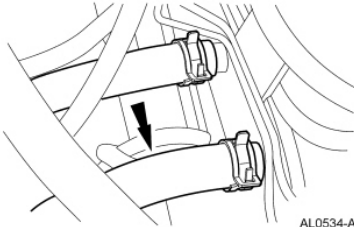
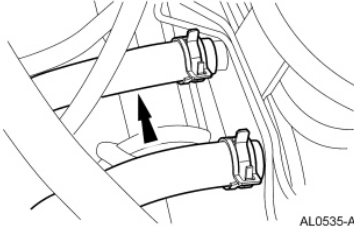
Under normal operation, warm coolant flows from the engine through the heater core and back to the engine.

Possible Causes

- Plugged heater core
- Coolant level
- Temperature blend door

PINPOINT TEST J: INSUFFICIENT, ERRATIC OR NO HEAT

Test Step	Result / Action to Take
J1 CHECK FOR CORRECT ENGINE COOLANT LEVEL - Ignition OFF. - Check the engine coolant level when hot and when cold. - Is the engine coolant at the correct level (hot and cold)?	Yes GO to J3. No GO to J2.
J2 CHECK THE COOLANT SYSTEM INCLUDING THE RADIATOR CAP FOR LEAKS - Fill the engine cooling system to the specified level. - Pressure check the engine cooling system, including the radiator cap. Refer to Section 303-03. It is not necessary to check the components separately at this time. - Does the engine cooling system, including the radiator cap, hold pressure?	Yes GO to J3. No REPAIR the cooling system leak. TEST the system for normal operation.
J3 CHECK FOR HOT WATER TO THE HEATER CORE INLET HOSE	Yes

⚠ WARNING: The heater core inlet hose will become too hot to handle and can cause serious burns if the system is working correctly. - Allow the engine to reach normal operating temperature. - Feel the heater core inlet hose.  AL0534-A - Is the heater core inlet hose too hot to handle?	GO to J4. No GO to Section 303-03 to check the cooling system function.
J4 CHECK THE HEATER CORE OUTLET HOSE FOR HOT WATER ⚠ WARNING: The heater core outlet hose will become too hot to handle and can cause serious burns if the system is working correctly. - Allow the engine to reach normal operating temperature. - Feel the heater core outlet hose.  AL0535-A - Is the heater core outlet hose cool or cold?	Yes CARRY OUT the Heater Core Component Test. REFER to Heater Core under Component Tests in this section to determine whether a plugged or partial plugged condition exists. No GO to Pinpoint Test A.

Pinpoint Test K: The Air Conditioning (A/C) Is Inoperative

Refer to Wiring Diagrams Cell [55](#), Automatic Climate Control System for schematic and connector information.

Normal Operation

Under normal operation, when A/C is requested, a message is sent over the bus from the electronic automatic temperature control (EATC) module, through the instrument cluster, to the powertrain control module (PCM). The PCM receives input from the A/C cycling switch through circuit 883 (PK/LB). Voltage is provided to the A/C cycling switch through circuit 1040 (RD/BK)/348 (VT).

The PCM provides a ground for the A/C clutch relay coil through circuit 73 (OG/LB). The A/C clutch relay coil receives voltage through circuit 391 (RD/YE). Voltage for the A/C clutch relay switch is provided through circuit 1810 (LG/OG). When the relay is activated, voltage is supplied to the A/C clutch solenoid through circuit 321 (GY/WH). Ground is supplied for the A/C clutch through circuit 57 (BK).

The A/C cycling switch is used for A/C compressor cycling. The switch is used by the PCM to turn off the A/C compressor before the line pressures are low enough to drop the evaporator temperature to low and freeze the condensation.

When an A/C request is received by the PCM, the A/C compressor clutch will only be engaged through the A/C clutch relay if all of the following conditions are met:

- The PCM does not detect excessively high or low refrigerant pressure from the A/C pressure transducer.
- The PCM does not detect excessively low refrigerant pressure from the A/C cycling switch.
- The PCM does not detect excessively high engine coolant temperature.
- The PCM does not detect an ambient air temperature too low.
- The PCM has not detected a Wide Open Throttle (WOT) condition.

Possible Causes

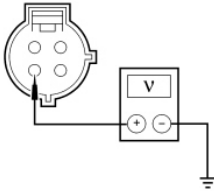
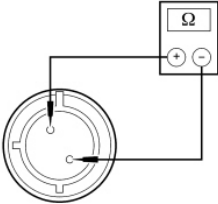
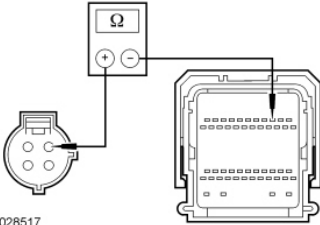
- Fuse(s)
- Wiring, terminals or connectors
- A/C pressure transducer
- PCM
- A/C clutch relay
- Electronic automatic temperature control (EATC) module
- A/C cycling switch
- A/C compressor clutch field coil
- A/C clutch air gap

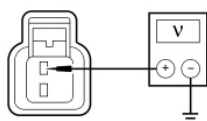
PINPOINT TEST K: THE AIR CONDITIONING (A/C) IS INOPERATIVE

NOTE: Before carrying out the following test, diagnose any PCM or instrument cluster DTCs.

NOTE: Before carrying out the following test, check that the A/C system pressure is above 290 kPa (42 psi). If the pressure is below 290 kPa (42 psi), refer to [Fluorescent Dye Leak Detection](#) in this section.

Test Step	Result / Action to Take
-----------	-------------------------

K1 CHECK THE A/C PRESSURE PCM PID - Ignition ON. - Enter the following diagnostic mode on the scan tool: A/C Pressure PCM PID. - With the manifold gauge set connected, compare the pressure readings of the manifold gauge set and the A/C pressure PID. Are the pressure values of the manifold gauge set and the A/C pressure PID similar?	Yes GO to K2 . No INSTALL a new A/C pressure transducer. TEST the system for normal operation.
K2 CHECK THE A/C REQUEST (ACCS) PCM PID WITH THE A/C ON - Start the engine. - Enter the following diagnostic mode on the scan tool: A/C REQUEST PCM PID. - Press the PANEL and A/C manual override buttons on the EATC module. Does the A/C REQUEST PCM PID read ON?	Yes GO to K4 . No GO to K3 .
K3 CHECK THE A/C SWITCH EATC PID WITH THE A/C ON - Enter the following diagnostic mode on the scan tool: A/C SWITCH EATC PID. - Press the PANEL and A/C manual override buttons on the EATC module. Does the A/C SWITCH EATC PID read ON?	Yes GO to K5 . No GO to K16 .
K4 CHECK THE A/C CLUTCH RELAY PID WITH THE A/C ON - Enter the following diagnostic mode on the scan tool: PCM A/C CLUTCH RELAY PID. Does the PCM A/C CLUTCH RELAY PID read ON?	Yes GO to K8 . No GO to K17 .
K5 CHECK CYCLING SWITCH VOLTAGE - Ignition OFF. - Disconnect: A/C Cycling Switch C1081. - Ignition ON. - Measure the voltage between cycling switch C1081-4, circuit 348 (VT)/1040 (RD/BK) and ground.  A0040571 Is the voltage greater than 10 volts?	Yes GO to K6 . No VERIFY the central junction box (CJB) fuse 31 (10A) is OK. If OK, REPAIR circuit 348 (VT)/1040 (RD/BK) for an open. TEST the system for normal operation.
K6 CHECK CYCLING SWITCH - Ignition OFF. - Measure the resistance between the cycling switch terminals.  N0029346 Is the resistance less than 21 ohms?	Yes GO to K7 . No INSTALL a new cycling switch. TEST the system for normal operation.
K7 CHECK CIRCUIT 883 (PK/LB) FOR AN OPEN - Disconnect: PCM C175B. - Measure the resistance between A/C cycling switch C1081-1, circuit 883 (PK/LB) and PCM C175B-3, circuit 883 (PK/LB).  N0028517 Is the resistance less than 5 ohms?	Yes GO to K17 . No REPAIR circuit 883 (PK/LB) for an open. TEST the system for normal operation.
K8 CHECK THE VOLTAGE AT THE A/C COMPRESSOR CLUTCH FIELD COIL - Ignition OFF. - Disconnect: A/C Compressor Clutch Field Coil C100. - Start the engine. - Press the PANEL and A/C manual override buttons on the EATC module. - Measure the voltage between A/C compressor clutch field coil C100-1, circuit 321 (GY/WH) and ground.	Yes GO to K9 . No GO to K11 .

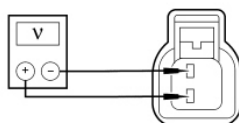


A0048576

- Is the voltage greater than 10 volts?

K9 CHECK THE GROUND AT THE A/C COMPRESSOR CLUTCH FIELD COIL

- Measure the voltage between A/C compressor clutch field coil C100-2, circuit 57 (BK) and A/C compressor clutch field coil C100-1, circuit 321 (GY/WH).



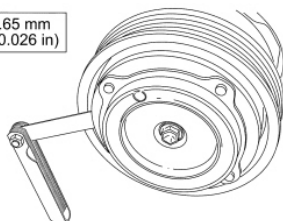
A0034113

- Is the voltage greater than 10 volts?

K10 CHECK THE A/C COMPRESSOR CLUTCH AIR GAP

- Measure the A/C compressor clutch air gap at 3 equally spaced locations between the clutch hub and the A/C compressor clutch pulley.

0.35-0.65 mm
(0.014-0.026 in)

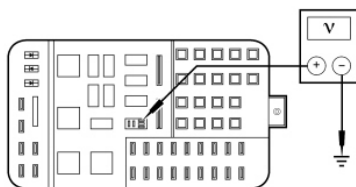


N0043653

- Is the A/C compressor clutch air gap greater than 0.65 mm (0.026 in)?

K11 CHECK CIRCUIT 391 (RD/YE) FOR VOLTAGE

- Ignition OFF.
- Disconnect: A/C Clutch Relay.
- Ignition ON.
- Measure the voltage between A/C clutch relay socket pin 2, circuit 391 (RD/YE) and ground.



N0051398

- Is the voltage greater than 10 volts?

K12 CHECK THE RELAY OUTPUT FROM THE PCM

NOTICE: The following step uses a test light to simulate normal circuit loads. Use only the test lamp recommended in the Special Tools table at the beginning of this section or equivalent. To avoid connector terminal damage, use the Rotunda Flex Probe Kit for the test light probe connection to the vehicle. Do not use the test lamp probe directly on any connector.

- Start the engine.
- Press the PANEL and A/C manual override buttons on the EATC module.
- Connect a 12-volt test lamp between A/C clutch relay socket pin 1, circuit 73 (OG/LB) and pin 2, circuit 391 (RD/YE).

Yes
GO to [K10](#).

No
REPAIR circuit 57 (BK). TEST the system for normal operation.

Yes
ADJUST the A/C compressor clutch gap. REFER to [Air Conditioning \(A/C\) Clutch Air Gap Adjustment](#) in this section. TEST the system for normal operation.

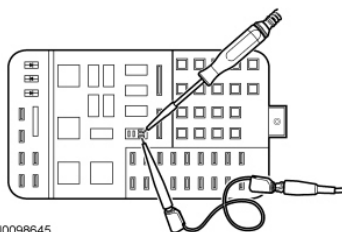
No
INSTALL a new A/C compressor clutch field coil. REFER to [Section 412-01](#). TEST the system for normal operation.

Yes
GO to [K12](#).

No
VERIFY the battery junction box (BJB) fuse 21 (15A) is OK. If OK, REPAIR circuit 391 (RD/YE) for an open. TEST the system for normal operation.

Yes
GO to [K13](#).

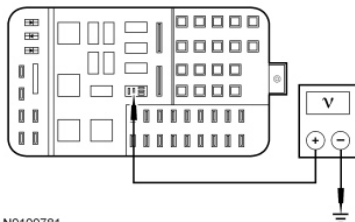
No
GO to [K15](#).



- Does the test lamp illuminate?

K13 CHECK CIRCUIT 1810 (LG/OG) FOR AN OPEN

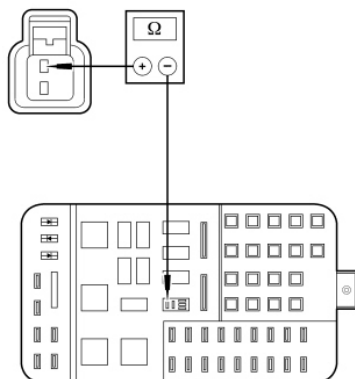
- Ignition ON.
- Measure the voltage between A/C clutch relay socket pin 5, circuit 1810 (LG/OG) and ground.



- Is the voltage greater than 10 volts?

K14 CHECK CIRCUIT 321 (GY/WH) FOR AN OPEN

- Ignition OFF.
- Measure the resistance between A/C clutch relay socket pin 3, circuit 321 (GY/WH) and A/C compressor clutch field coil C100-1, circuit 321 (GY/WH).



- Is the resistance less than 5 ohms?

K15 CHECK CIRCUIT 73 (OG/LB) FOR AN OPEN

- Ignition OFF.
- Disconnect: PCM C175B.
- Measure the resistance between A/C clutch relay socket pin 1, circuit 73 (OG/LB) and PCM C175B-25, circuit 73 (OG/LB).

Yes
GO to [K14](#).

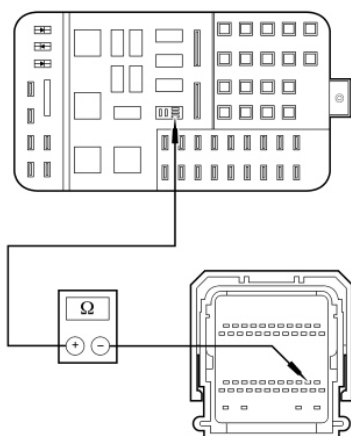
No
VERIFY the battery junction box (BJB) fuse 11 (15A) is OK. If OK, REPAIR circuit 1810 (LG/OG) for an open. TEST the system for normal operation.

Yes
INSTALL a new A/C clutch relay. TEST the system for normal operation.

No
REPAIR circuit 321 (GY/WH) for an open. TEST the system for normal operation.

Yes
GO to [K17](#).

No
REPAIR circuit 73 (OG/LB) for an open. CLEAR the DTCs. TEST the system for normal operation.



- Is the resistance less than 5 ohms?

K16 CHECK THE HVAC MODULE CONNECTION

- Inspect the module connectors for:
 - corrosion.
 - pushed-out terminals.
 - damaged terminals.
- Connect and correctly seat all the HVAC module connectors.
- Clear the DTCs.
- Operate the system and verify the concern is still present.
- Is the concern still present?

Yes
INSTALL a new HVAC module. REFER to [Section 412-01](#). TEST the system for normal operation.

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. TEST the system for normal operation.

K17 CHECK THE PCM CONNECTION

- Disconnect all the PCM connectors.
- Inspect the module connectors for:
 - corrosion.
 - pushed-out terminals.
 - damaged terminals.
- Connect and correctly seat all the PCM connectors.
- Clear the DTCs.
- Operate the system and verify the concern is still present.
- Is the concern still present?

Yes
INSTALL a new PCM. TEST the system for normal operation.

No
The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

Pinpoint Test L: The Air Conditioning (A/C) Is Always On

Refer to Wiring Diagrams Cell [55](#), Automatic Climate Control System for schematic and connector information.

Normal Operation

Under normal operation, when A/C is requested, a message is sent over the bus from the electronic automatic temperature control (EATC) module, through the instrument cluster, to the powertrain control module (PCM). The PCM receives input from the A/C cycling switch through circuit 883 (PK/LB). Voltage is provided to the A/C cycling switch through circuit 1040 (RD/BK)/348 (VT).

The PCM provides a ground for the A/C clutch relay coil through circuit 73 (OG/LB). The A/C clutch relay coil receives voltage through circuit 391 (RD/YE). Voltage for the A/C clutch relay switch is provided through circuit 1810 (LG/OG). When the relay is activated, voltage is supplied to the A/C clutch solenoid through circuit 321 (GY/WH). Ground is supplied for the A/C clutch through circuit 57 (BK).

The A/C cycling switch is used for A/C compressor cycling. The switch is used by the PCM to turn off the A/C compressor before the line pressures are low enough to drop the evaporator temperature to low and freeze the condensation.

When an A/C request is received by the PCM, the A/C compressor clutch will only be engaged through the A/C clutch relay if all of the following conditions are met:

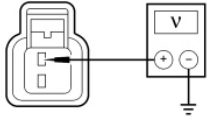
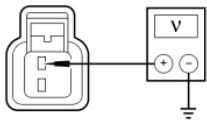
- The PCM does not detect excessively high or low refrigerant pressure from the A/C pressure transducer.
- The PCM does not detect excessively low refrigerant pressure from the A/C cycling switch.
- The PCM does not detect excessively high engine coolant temperature.
- The PCM does not detect an ambient air temperature too low.
- The PCM has not detected a Wide Open Throttle (WOT) condition.

Possible Causes

- Wiring, terminals or connectors
- A/C pressure transducer
- PCM
- A/C clutch relay
- Electronic automatic temperature control (EATC) module
- A/C clutch air gap

PINPOINT TEST L: THE AIR CONDITIONING (A/C) IS ALWAYS ON

NOTE: Before carrying out the following test, diagnose any PCM or instrument cluster DTCs.

Test Step	Result / Action to Take
L1 CHECK THE A/C PRESSURE PCM PID - Ignition ON. - Enter the following diagnostic mode on the scan tool: A/C Pressure PCM PID. - With the manifold gauge set connected, compare the pressure readings of the manifold gauge set and the A/C pressure PID. Are the pressure values of the manifold gauge set and the A/C pressure PID similar?	Yes GO to L2. No INSTALL a new A/C pressure transducer. TEST the system for normal operation.
L2 CHECK A/C REQUEST PCM PID (ACCS) WITH THE A/C OFF - Enter the following diagnostic mode on the scan tool: A/C REQUEST PCM PID. - Press the OFF manual override button on the EATC module. Does the A/C REQUEST PCM PID read OFF?	Yes GO to L4. No GO to L3.
L3 CHECK A/C SWITCH EATC PID WITH THE A/C OFF - Enter the following diagnostic mode on the scan tool: A/C SWITCH EATC PID. - Press the OFF manual override button on the EATC module. Does the A/C SWITCH EATC PID read OFF?	Yes GO to L6. No GO to L7.
L4 CHECK FOR VOLTAGE TO THE A/C COMPRESSOR CLUTCH FIELD COIL - Ignition OFF. - Disconnect: A/C Compressor Clutch Field Coil C100. - Ignition ON. - Measure the voltage between A/C compressor clutch field coil C100-1, circuit 321 (GY/WH) and ground.  A0048576 Is the voltage greater than 10 volts?	Yes GO to L5. No ADJUST the A/C compressor clutch gap. REFER to Air Conditioning (A/C) Clutch Air Gap Adjustment in this section. TEST the system for normal operation.
L5 CHECK CIRCUIT 321 (GY/WH) FOR A SHORT TO VOLTAGE - Ignition OFF. - Disconnect: A/C Clutch Relay. - Ignition ON. - Measure the voltage between A/C compressor clutch field coil C100-1, circuit 321 (GY/WH) and ground.  A0048576 Is the voltage greater than 10 volts?	Yes REPAIR circuit 321 (GY/WH) for a short to voltage. TEST the system for normal operation. No INSTALL a new A/C clutch relay. CHECK the A/C clutch diode. TEST the system for normal operation. INSTALL a new diode if necessary.
L6 CHECK THE EATC MODULE CONNECTION - Inspect the module connectors for: - corrosion. - pushed-out terminals. - damaged terminals. - Connect and correctly seat all the EATC module connectors. - Clear the DTCs. - Operate the system and verify the concern is still present. Is the concern still present?	Yes INSTALL a new EATC module. REFER to Section 412-01. TEST the system for normal operation. 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. TEST the system for normal operation.
L7 CHECK THE PCM CONNECTION - Disconnect all the PCM connectors. - Inspect the module connectors for: - corrosion. - pushed-out terminals. - damaged terminals. - Connect and correctly seat all the PCM connectors. - Clear the DTCs. - Operate the system and verify the concern is still present. Is the concern still present?	Yes INSTALL a new PCM. TEST the system for normal operation. No The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

Pinpoint Test M: The Blower Motor Is Inoperative

Refer to Wiring Diagrams Cell [55](#), Automatic Climate Control System for schematic and connector information.

Normal Operation

Under normal operation, the blower motor relay coil receives voltage through circuit 181 (BN/OG). The coil receives ground from the electronic automatic temperature control (EATC) module through circuit 364 (BK/LG) if any position but OFF is selected. Voltage is supplied to the relay switch contact through circuit 181 (BN/OG). When the relay coil is energized, voltage

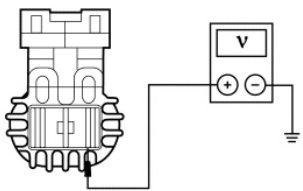
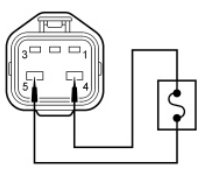
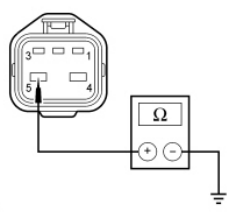
is delivered to the blower motor through circuit 371 (PK/WH). Ground for the motor is provided through circuit 515 (OG/RD) from the blower control module. Ground for the blower control module is provided by circuit 57 (BK).

The blower motor control module receives a 1-2 volt signal from the EATC module through circuit 752 (YE/RD) to determine the desired blower motor speed. The EATC module receives a feedback voltage from the blower motor control module through circuit 260 (RD/OG) to determine actual blower motor speed. When the highest blower motor setting is selected, the EATC module sends 12 volts to the blower control module through circuit 754 (LG/WH).

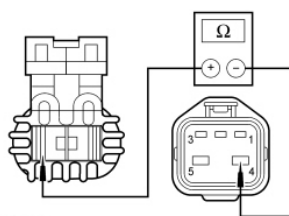
Possible Causes

- Fuse
- An open in circuits 57 (BK), 181 (BN/OG), 515 (OG/RD), 371 (PK/WH) or 754 (LG/WH)
- A short to ground in circuit 754 (LG/WH)
- A short to voltage in circuit 364 (BK/LG)
- Blower motor
- Blower motor relay
- Blower motor control module
- Electronic automatic temperature control (EATC) module

PINPOINT TEST M: THE BLOWER MOTOR IS INOPERATIVE

Test Step	Result / Action to Take
M1 VERIFY THE BLOWER MOTOR OPERATION • Ignition ON. • Press the PANEL button on the EATC module. Adjust the blower motor setting to LO and then to HI. • Is the blower motor inoperative in all settings?	Yes GO to M2 . No GO to Pinpoint Test N .
M2 CHECK FOR VOLTAGE TO THE BLOWER MOTOR • Ignition OFF. • Disconnect: Blower Motor C1031. • Ignition ON. • Measure the voltage between blower motor C1031-1, circuit 371 (PK/WH) and ground.  AM0416-A • Is the voltage greater than 10 volts?	Yes GO to M3 . No GO to M8 .
M3 CHECK THE BLOWER MOTOR • Ignition OFF. • Connect: Blower Motor C1031. • Disconnect: Blower Motor Speed Control C1308. • Connect a fused jumper lead between blower motor speed control C1308-4, circuit 515 (OG/RD) and C1308-5, circuit 57 (BK).  A0032579 • Ignition ON. • Does the blower motor operate?	Yes GO to M6 . No GO to M4 .
M4 CHECK CIRCUIT 57 (BK) FOR AN OPEN • Ignition OFF. • Remove the fused jumper lead from the blower motor speed control C1308. • Measure the resistance between blower motor speed control C1308-5, circuit 57 (BK) and ground.  A0032576 • Is the resistance less than 5 ohms?	Yes GO to M5 . No REPAIR circuit 57 (BK) for an open. TEST the system for normal operation.
M5 CHECK CIRCUIT 515 (OG/RD) FOR AN OPEN	

- Disconnect: Blower Motor C1031.
- Measure the resistance between blower motor C1031-2, circuit 515 (OG/RD) and blower motor speed control C1308-4, circuit 515 (OG/RD).



A0032577

- Is the resistance less than 5 ohms?

Yes

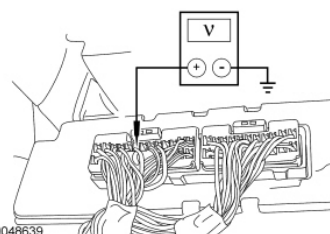
INSTALL a new blower motor. TEST the system for normal operation.

No

REPAIR circuit 515 (OG/RD) for an open. TEST the system for normal operation.

M6 CHECK THE EATC MODULE OUTPUT

- Ignition OFF.
- Remove the fused jumper lead from the blower motor speed control C1308.
- Connect: Blower Motor Speed Control C1308.
- Ignition ON.
- Adjust the blower motor speed to HI.
- Measure the voltage between EATC module C228a-8, circuit 754 (LG/WH) and ground by back-probing the EATC module C228a.



A0048639

- Is the voltage within 2 volts of battery voltage?

Yes

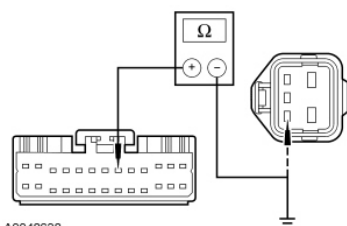
GO to [M7](#).

No

GO to [M13](#).

M7 CHECK CIRCUIT 754 (LG/WH) FOR AN OPEN OR SHORT TO GROUND

- Ignition OFF.
- Disconnect: Blower Motor Speed Control C1308.
- Disconnect: EATC Module C228a.
- Measure the resistance between EATC module C228a-8, circuit 754 (LG/WH) and blower motor speed control C1308-3, circuit 754 (LG/WH), and measure the resistance between EATC module C228a-8, circuit 754 (LG/WH) and ground.



A0048638

- Is the resistance less than 5 ohms between the EATC module and the blower motor speed control and greater than 10,000 ohms between the EATC module and ground?

Yes

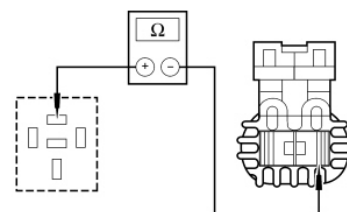
INSTALL a new blower motor speed control. TEST the system for normal operation.

No

REPAIR circuit 754 (LG/WH). TEST the system for normal operation.

M8 CHECK CIRCUIT 371 (PK/WH) FOR AN OPEN

- Ignition OFF.
- Disconnect: Blower Motor Relay.
- Measure the resistance between blower motor relay socket pin 87, circuit 371 (PK/WH) and blower motor C1031-1, circuit 371 (PK/WH).



A0032572

- Is the resistance less than 5 ohms?

Yes

GO to [M9](#).

No

REPAIR circuit 371 (PK/WH) for an open. TEST the system for normal operation.

M9 CHECK CIRCUIT 181 (BN/OG) FOR VOLTAGE

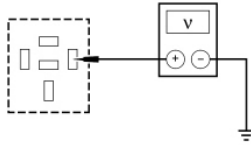
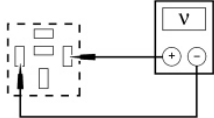
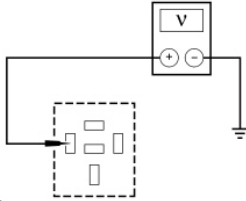
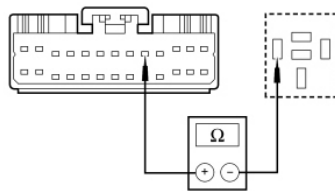
- Measure the voltage between blower motor relay socket pin 86, circuit 181 (BN/OG) and ground.

Yes

GO to [M10](#).

No

VERIFY the battery junction box (BJB) fuse 101 (40A) is OK. If OK, REPAIR circuit 181 (BN/OG) for an open. TEST the system for normal operation.

 A0020210 Is the voltage greater than 10 volts?	
M10 CHECK THE EATC MODULE OUTPUT - Ignition ON. - Measure the voltage between blower motor relay socket pin 86, circuit 181 (BN/OG) and socket pin 85, circuit 364 (BK/LG).  A0034149 - Is the voltage greater than 10 volts?	Yes INSTALL a new blower motor relay. TEST the system for normal operation. No GO to M11.
M11 CHECK CIRCUIT 364 (BK/LG) FOR SHORT TO VOLTAGE - Ignition OFF. - Disconnect: EATC Module C228b. - Ignition ON. - Measure the voltage between blower motor relay socket pin 85, circuit 364 (BK/LG) and ground.  A0013862 - Is voltage present?	Yes REPAIR circuit 364 (BK/LG) for a short to voltage. TEST the system for normal operation. No GO to M12.
M12 CHECK CIRCUIT 364 (BK/LG) FOR AN OPEN - Ignition OFF. - Measure the resistance between EATC module C228b-9, circuit 364 (BK/LG) and blower motor relay socket pin 85, circuit 364 (BK/LG).  A0048640 - Is the resistance less than 5 ohms?	Yes GO to M13. No REPAIR circuit 364 (BK/LG) for an open. TEST the system for normal operation.
M13 CHECK MODULE CONNECTION - Carry out the Electronic Automatic Temperature Control (EATC) Module Cold Boot Process. - Carry out the EATC on-demand self test. - Operate the system. - Does the concern return?	Yes INSTALL a new EATC module. REFER to Section 412-01. TEST the system for normal operation. 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. TEST the system for normal operation.

Pinpoint Test N: The Blower Motor Does Not Operate Correctly

Refer to Wiring Diagrams Cell [55](#), Automatic Climate Control System for schematic and connector information.

Normal Operation

Under normal operation, the blower motor relay coil receives voltage through circuit 181 (BN/OG). The coil receives ground from the electronic automatic temperature control (EATC)

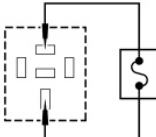
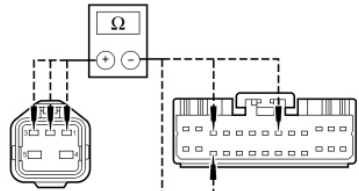
module through circuit 364 (BK/LG) if any position but OFF is selected. Voltage is supplied to the relay switch contact through circuit 181 (BN/OG). When the relay coil is energized, voltage is delivered to the blower motor through circuit 371 (PK/WH). Ground for the motor is provided through circuit 515 (OG/RD) from the blower control module. Ground for the blower control module is provided by circuit 57 (BK).

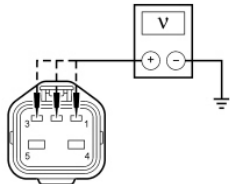
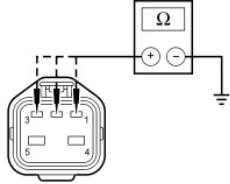
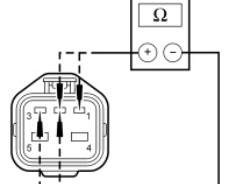
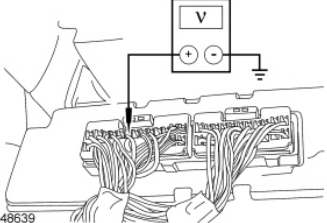
The blower motor control module receives a 1-2 volt signal from the EATC module through circuit 752 (YE/RD) to determine the desired blower motor speed. The EATC module receives a feedback voltage from the blower motor control module through circuit 260 (RD/OG) to determine actual blower motor speed. When the highest blower motor setting is selected, the EATC module sends 12 volts to the blower control module through circuit 754 (LG/WH).

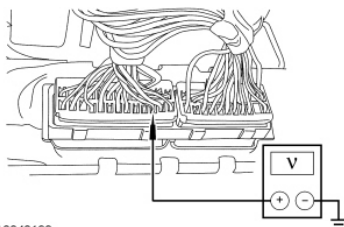
Possible Causes

- An open, short to voltage, ground or together in circuits 260 (RD/OG), 752 (YE/RD) or 754 (LG/WH)
- A short to ground in circuit 515 (OG/RD)
- Blower motor control module
- Electronic automatic temperature control (EATC) module

PINPOINT TEST N: THE BLOWER MOTOR DOES NOT OPERATE CORRECTLY

Test Step	Result / Action to Take
N1 CHECK CIRCUIT 515 (OG/RD) FOR A SHORT TO GROUND • Ignition OFF. • Disconnect: Blower Motor Speed Control C1308. • Ignition ON. • Press the PANEL button on the EATC module. Adjust the blower motor setting to LO and then to HI. • Does the blower motor operate?	Yes REPAIR circuit 515 (OG/RD) for a short to ground. TEST the system for normal operation. No GO to N2 .
N2 CHECK THE BLOWER MOTOR SPEED CONTROL • Ignition OFF. • Connect: Blower Motor Speed Control C1308. • Disconnect: EATC Module C228a. • Disconnect: Blower Motor Relay. • Connect a fused jumper wire between blower motor relay socket pin 30, circuit 181 (BN/OG) and pin 87, circuit 371 (PK/WH).  A0032587 • Ignition ON. • Does the blower motor operate?	Yes INSTALL a new blower motor speed control. TEST the system for normal operation. No GO to N3 .
N3 CHECK THE BLOWER MOTOR SPEED CONTROL CIRCUITS FOR AN OPEN • Ignition OFF. • Disconnect: Blower Motor Speed Control C1308. • Measure the resistance between blower motor speed control: ■ C1308-1, circuit 260 (RD/OG) and EATC module C228a-3, circuit 260 (RD/OG). ■ C1308-2, circuit 752 (YE/RD) and EATC module C228a-16, circuit 752 (YE/RD). ■ C1308-3, circuit 754 (LG/WH) and EATC module C228a-8, circuit 754 (LG/WH).  A0048641 • Are the resistances less than 5 ohms?	Yes GO to N4 . No REPAIR the affected circuit for an open. TEST the system for normal operation.
N4 CHECK THE BLOWER MOTOR SPEED CONTROL CIRCUITS FOR A SHORT TO VOLTAGE • Ignition ON. • Measure the voltage between blower motor speed control: ■ C1308-1, circuit 260 (RD/OG) and ground. ■ C1308-2, circuit 752 (YE/RD) and ground. ■ C1308-3, circuit 754 (LG/WH) and ground.	Yes REPAIR the affected circuit for a short to voltage. TEST the system for normal operation. No GO to N5 .

 A0033862 • Is voltage present?	
N5 CHECK THE BLOWER MOTOR SPEED CONTROL CIRCUITS FOR A SHORT TO GROUND • Ignition OFF. • Measure the resistance between blower motor speed control: ■ C1308-1, circuit 260 (RD/OG) and ground. ■ C1308-2, circuit 752 (YE/RD) and ground. ■ C1308-3, circuit 754 (LG/WH) and ground.  A0033863 • Are the resistances greater than 10,000 ohms?	Yes GO to N6. No REPAIR the affected circuit for a short to ground. TEST the system for normal operation.
N6 CHECK THE BLOWER MOTOR SPEED CONTROL CIRCUITS FOR SHORTS • Measure the resistance between blower motor speed control: ■ C1308-1, circuit 260 (RD/OG) and C1308-2, circuit 752 (YE/RD). ■ C1308-1, circuit 260 (RD/OG) and C1308-3, circuit 754 (LG/WH). ■ C1308-2, circuit 752 (YE/RD) and C1308-3, circuit 754 (LG/WH).  A0033864 • Are the resistances greater than 10,000 ohms?	Yes GO to N7. No REPAIR the affected circuits for a short together. TEST the system for normal operation.
N7 CHECK THE EATC MODULE HIGH BLOWER OUTPUT • Connect: EATC C228a. • Connect: Blower Motor Speed Control C1308. • Ignition ON. • Adjust the blower motor speed to HI. • Measure the voltage between EATC module C228a-8, circuit 754 (LG/WH) and ground by back-probing the EATC module C228a.  A0048639 • Is the voltage within 2 volts of battery voltage?	Yes GO to N8. No GO to N9.
N8 CHECK THE EATC MODULE BLOWER CONTROL OUTPUT • Adjust the blower motor speed to LO. • Measure the voltage between EATC module C228a-16, circuit 752 (YE/RD) and ground by back-probing the EATC module C228a.	Yes INSTALL a new blower motor speed control. TEST the system for normal operation. No GO to N9.

 A0040193 Is the voltage greater than 1 volt?	
N9 CHECK MODULE CONNECTION - Carry out the Electronic Automatic Temperature Control (EATC) Module Cold Boot Process. - Carry out the EATC on-demand self test. - Operate the system. - Does the concern return?	Yes INSTALL a new EATC module. REFER to Section 412-01. TEST the system for normal operation. 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. TEST the system for normal operation.

Pinpoint Test O: DTC B113E — Rear Climate Control Switch Circuit Short To Ground

Refer to Wiring Diagrams Cell [55](#), Automatic Climate Control System for schematic and connector information.

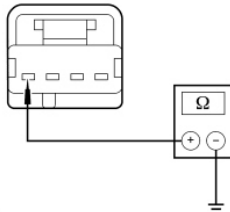
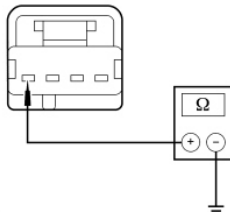
Normal Operation

Under normal operation, ground is provided to the rear climate control switch through circuit 676 (PK/OG). When the switch pressed, ground through an internal resistor is sent to the rear redundant control module (RRCM) through circuit 1349 (PK/LG).

Possible Causes

- A short to ground in circuit 1349 (PK/LG)
- Rear climate control switch
- Rear redundant control module (RRCM)

PINPOINT TEST O: DTC B113E — REAR CLIMATE CONTROL SWITCH CIRCUIT SHORT TO GROUND

Test Step	Result / Action to Take
O1 CHECK CIRCUIT 1349 (PK/LG) FOR GROUND - Ignition OFF. - Disconnect: Rear Redundant Control Module (RRCM) C3160a. - Measure the resistance between RRCM C3160a-4 pin 4, circuit 1349 (PK/LG) and ground.  N0039587 - Is the resistance greater than 10,000 ohms?	Yes GO to O2. No GO to O3.
O2 CHECK CIRCUIT 1349 (PK/LG) FOR A SHORT TO GROUND - Disconnect: Rear Climate Control Switch C3161. - Measure the resistance between RRCM C3160a-4 pin 4, circuit 1349 (PK/LG) and ground.  N0039587 - Is the resistance greater than 10,000 ohms?	Yes INSTALL a new rear climate control switch. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. No REPAIR circuit 1349 (PK/LG) for a short to ground. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
O3 CHECK RRCM MODULE CONNECTION - Clear the DTCs. - Disconnect all of the RRCM connectors. - Check for: - corrosion. - pushed-out connectors. - incorrectly seated connector.	Yes INSTALL a new RRCM. TEST the system for normal operation. No The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

- Connect the properly seat all of the RRCM connectors.
- Operate the system.
- Does the concern return?

Pinpoint Test P: DTC B113F — Rear Climate Control Switch Circuit Short To Battery

Refer to Wiring Diagrams Cell [55](#), Automatic Climate Control System for schematic and connector information.

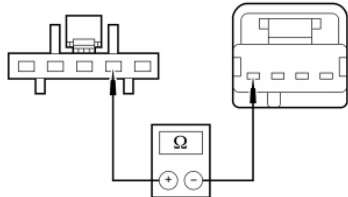
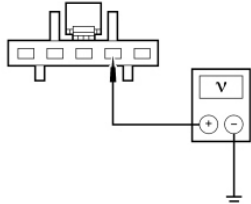
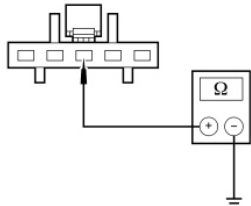
Normal Operation

Under normal operation, ground is provided to the rear climate switch through circuit 676 (PK/OG). When the switch pressed, ground through an internal resistor is sent to the rear redundant control module (RRCM) through circuit 1349 (PK/LG).

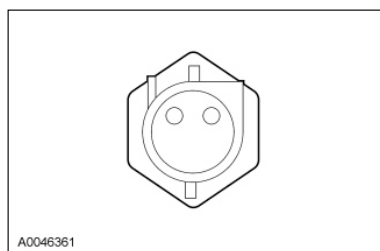
Possible Causes

- An open in circuit 676 (PK/OG) or 1349 (PK/LG)
- A short to voltage in circuit 1349 (PK/LG)
- Rear climate switch

PINPOINT TEST P: DTC B113E — REAR CLIMATE CONTROL SWITCH CIRCUIT SHORT TO BATTERY

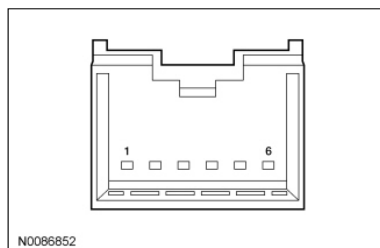
Test Step	Result / Action to Take
P1 CHECK CIRCUIT 1349 (PK/LG) FOR AN OPEN • Ignition OFF. • Disconnect: Rear Redundant Control Module (RRCM) C3160a. • Disconnect: Rear climate control switch C3161. • Measure the resistance between RRCM C3160a-4 pin 4, circuit 1349 (PK/LG) and the rear climate control switch C3161-2, circuit 1349 (PK/LG).  N0039588 • Is the resistance less than 5 ohms?	Yes GO to P2. No REPAIR circuit 1349 (PK/LG) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.
P2 CHECK CIRCUIT 1349 (PK/LG) FOR A SHORT TO VOLTAGE • Measure the voltage between rear climate control switch C3161-2, circuit 1349 (PK/LG) and ground.  N0039589 • Is voltage present?	Yes REPAIR circuit 1349 (PK/LG) for a short to voltage. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. No GO to P3.
P3 CHECK CIRCUIT 676 (PK/OG) FOR GROUND • Measure the resistance between rear climate control switch C3161-3, circuit 676 (PK/OG) and ground.  N0039590 • Is the resistance less than 5 ohms?	Yes INSTALL a new rear climate control switch. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation. No REPAIR circuit 676 (PK/OG) for an open. CLEAR the DTCs. REPEAT the self-test. TEST the system for normal operation.

Component Tests**Temperature Sensor — Ambient**



Ambient Temperature	Resistance
10-20 °C (50-68 °F)	37,000-58,000 ohms
20-30 °C (68-86 °F)	24,000-37,000 ohms
30-40 °C (86-104 °F)	16,000-24,000 ohms

Blend Door Actuator



Actuator Pins	Approx. Resistance
4 and 5	4,125-6,875 ohms
3 and 5	187-6,523 ohms
3 and 4	187-6,523 ohms
1 and 6	5-100 ohms

Heater Core



WARNING: Carbon monoxide is colorless, odorless and dangerous. If it is necessary to operate the engine with the vehicle in a closed area such as a garage, always use an exhaust collector to vent the exhaust gases outside the closed area.

- NOTE:** Testing of returned heater cores reveals that a large percentage of heater cores are functional and new heater cores were not required. If a heater core leak is suspected, the heater core must be tested by following the plugged heater core component test before the heater core pressure test. Carry out a system inspection by checking the heater system thoroughly as follows:

Inspect for evidence of coolant leakage at the heater water hose to heater core attachments. A coolant leak in the heater water hose could follow the heater core tube to the heater core and appear as a leak in the heater core.

- NOTE:** Spring-type clamps are installed as original equipment. Installation and overtightening of non-specification clamps can cause leakage at the heater water hose connection and damage the heater core.

Check the integrity of the heater water hose clamps.

Heater Core — Plugged



WARNING: The heater core inlet hose will become too hot to handle if the system is working correctly.

- Check to see that the engine coolant is at the correct level.
- Start the engine and turn on the heater.
- When the engine coolant reaches operating temperature, feel the heater core inlet and outlet hose to see if they are hot.

If the inlet hose is not hot:

- the thermostat is not working correctly.

If the outlet hose is not hot:

- the heater core may have an air pocket.
- the heater core may be restricted or plugged.

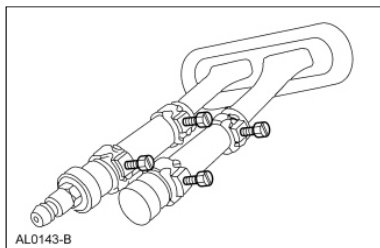
Heater Core — Pressure Test

Use the Radiator/Heater Core Pressure Tester to carry out the pressure test.

1. **NOTE:** Due to space limitations, a bench test may be necessary for pressure testing.

Drain the coolant from the cooling system.

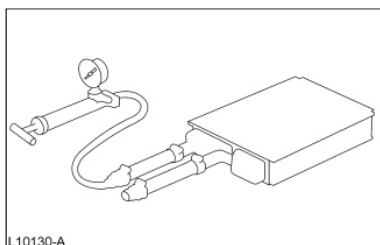
2. Disconnect the heater water hoses from the heater core.
3. Install a short piece of heater water hose, approximately 100 mm (4 in) long on each heater core tube.
4. Fill the heater core and heater water hoses with water and install Plug BT-7422-B and adapter BT-7422-A from the radiator/heater core pressure tester in the heater water hose ends. Secure the heater water hoses, plug and adapter with hose clamps.



5. Attach the pump and gauge assembly from the radiator/heater core pressure tester to the adapter.
6. Close the bleed valve at the base of the gauge. Pump 138 kPa (20 psi) of air pressure into the heater core.
7. Observe the pressure gauge for a minimum of 3 minutes.
8. If the pressure drops, check the heater water hose connections to the core tubes for leaks. If the heater water hoses do not leak, remove the heater core from the vehicle and carry out the bench test.

Heater Core — Bench Test

1. Remove the heater core from the vehicle. For additional information, refer to [Section 412-01](#).
2. Drain all of the coolant from the heater core.
3. Connect the 100 mm (4 in) test heater water hoses with plug and adapter to the core tubes. Then connect the radiator/heater core pressure tester to the adapter.
4. Apply 138 kPa (20 psi) of air pressure to the heater core. Submerge the heater core in water.
5. If a leak is observed, install a new heater core.



A/C Evaporator/Condenser Core — On-Vehicle Leak Test

1. Discharge and recover the refrigerant. For additional information, refer to [Air Conditioning \(A/C\) System Recovery, Evacuation and Charging](#) in this section.
2. **NOTE:** DO NOT leak test an A/C evaporator core with the suction accumulator/drier attached to the core tubes.
Disconnect the suspect A/C evaporator core or A/C condenser core from the A/C system. For additional information, refer to [Section 412-01](#).
3. Connect the appropriate test fittings from the R12-/R134a Air Conditioning Test Fitting Set to the evaporator or condenser tube connections.
4. **NOTE:** The automatic shut-off valves on some gauge set hoses do not open when connected to the test fittings. If available, use hoses without shut-off valves. If hoses with shut-off valves are used, make sure each valve opens when attached to the test fittings or install an adapter which will activate the valve. The test is not valid if the shut-off valve does not open.
Connect the red and blue hoses from the R134-a Manifold Gauge Set to the test fittings on the A/C evaporator core or A/C condenser core. Connect the yellow hose to a known good vacuum pump.
5. Open both gauge set valves and start the vacuum pump. Allow the vacuum pump to operate for a minimum of 45 minutes after the gauge set low pressure gauge indicates 101 kPa (30 in-Hg). The 45 minute evacuation is necessary to remove any refrigerant from oil left in the A/C evaporator core or A/C condenser core. If the refrigerant is not completely removed from the oil, outgassing will degrade the vacuum and appear as a refrigerant leak.
6. If the low pressure gauge reading will not drop to 101 kPa (30 in-Hg) when the valves on the gauge and manifold set are open and the vacuum pump is operating, close the gauge set valves and observe the low pressure gauge. If the pressure rises rapidly to zero, a large leak is indicated. Recheck the test fitting connections and gauge set connections before replacing the A/C evaporator core or A/C condenser core.
7. After evacuating for 45 minutes, close the gauge set valves and stop the vacuum pump. Observe the low pressure gauge; it should remain at the 101 kPa (30 in-Hg) mark.
 - If the low pressure gauge reading rises 34 or more kPa (10 or more in-Hg) of vacuum from the 101 kPa (30 in-Hg) position in 10 minutes, a leak is indicated.

- If a very small leak is suspected, wait 30 minutes and observe the vacuum gauge.
 - If a small amount of vacuum is lost, operate the vacuum pump with gauge valves open for an additional 30 minutes to remove any remaining refrigerant from the oil in the A/C evaporator core or A/C condenser core. Then recheck for loss of vacuum.
 - If a very small leak is suspected, allow the system to set overnight with vacuum applied and check for vacuum loss.
8. If the A/C evaporator core or A/C condenser core does leak, as verified by the above procedure, install a new A/C evaporator core or A/C condenser core. For additional information, refer to [Section 412-01](#).

A/C Compressor — External Leak Test

1. Install the appropriate fittings from the A/C Flush Adapter Kit on the rear head of the A/C compressor using the existing retaining bolts.
 2. Connect the high and low pressure lines of a manifold gauge set or a refrigerant recovery/recycling station, such as the R-134a A/C Service Center, to the corresponding fittings on the A/C pressure test adapter.
 3. Attach the center hose of the manifold gauge set to a refrigerant container standing in an upright position.
 4. Hand-rotate the compressor shaft 10 complete revolutions to distribute the oil inside the A/C compressor.
 5. Open the low pressure gauge valve, the high pressure gauge valve and the valve on the refrigerant container to allow the refrigerant vapor to flow into the A/C compressor.
 6. Using the Electronic Refrigerant Leak Detector, check for leaks at the compressor shaft seal and the compressor center seal.
 7. If a shaft seal leak or an external leak is found at the A/C compressor, install a new A/C compressor.
 8. When the leak test is complete, recover the refrigerant from the compressor.
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