

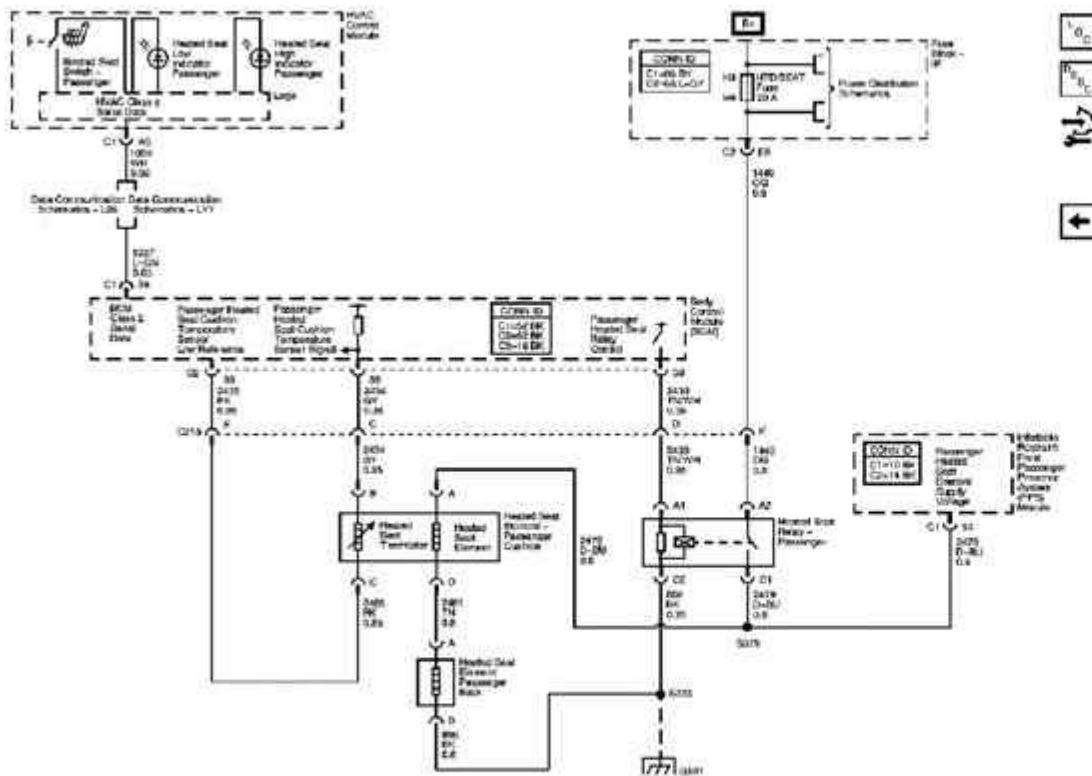


Fig. 2: Passenger Seat Heat Controls Schematic
 Courtesy of GENERAL MOTORS CORP.

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC B1920 or B2165	B1920: Driver Seat Heater Timer Circuit B2165: Front Passenger Seat Heater Timer Circuit
DTC B1925 or B2170	B1925: Driver Seat Heater Sensor Circuit B2170: Front Passenger Seat Heater Sensor Circuit
DTC B2508 or B2509	B2508: Driver Seat Heater Relay Circuit B2509: Front Passenger Seat Heater Relay Circuit

DIAGNOSTIC STARTING POINT - SEAT HEATING AND COOLING

Begin the system diagnosis with the **Diagnostic System Check - Vehicle**. The Diagnostic System Check will provide the following information:

- The identification of the control modules which command the system.
- The ability of the control modules to communicate through the serial data circuit.
- The identification of any stored diagnostic trouble codes (DTCs) and their status.

The use of the Diagnostic System Check will identify the correct procedure for diagnosing the system and where the procedure is located.

DTC B1920 OR B2165

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B1920

Driver Seat Heater Timer Circuit

DTC B2165

Front Passenger Seat Heater Timer Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Heated Seat Cushion Temperature Sensor Signal	B1920, B1925	B1920, B1925	B1920, B1925	-
Passenger Heated Seat Cushion Temperature Sensor Signal	B2165, B2170	B2165, B2170	B2165, B2170	-
Heated Seat Relay Switch B+ - Driver	1	1	1	-
Heated Seat Relay Switch B+ - Passenger	1	1	1	-
Driver Heated Seat Relay Control	B2508	B2508	B2508	-
Passenger Heated Seat Relay Control	B2509	B2509	B2509	-
Heated Seat Relay Switch Controlled Output - Driver	1	1	1	-
Heated Seat Relay Switch Controlled Output - Passenger	1	1	1	-
Driver Heated Seat Cushion Temperature Sensor Low Reference	1	1	1	-
Passenger Heated Seat Cushion Temperature Sensor Low Reference	1	1	1	-
Heated Seat Relay Coil Ground - Driver	-	1	-	-
Heated Seat Relay Coil Ground - Passenger	-	1	-	-
Heated Seat Element Ground - Driver	-	1	-	-
Heated Seat Element Ground - Passenger	-	1	-	-
1. Front Heated Seat Malfunction				

Circuit/System Description

The heated seat temperature sensor is located in the seat cushion just under the seat cover within the seat heating element. The body control module (BCM) supplies the heated seat temperature sensor with a temperature sensor signal circuit and a temperature sensor low reference circuit. The BCM monitors the voltage of the heated seat temperature sensor signal circuit to determine the temperature of the seat. The BCM cycles the heated seat relay on

and off in order to maintain the desired seat temperature based on the voltage feedback from the temperature sensor.

The BCM also monitors the sensor signal circuit for a change in voltage that is either too fast or too slow. The slow rate check is performed only when the heated seat is initially turned on with a cold seat in order to prevent setting a false DTC.

Conditions for Running the DTC

- DTC B1327 must not be present.
- Battery voltage must be between 9-16 volts.

Conditions for Setting the DTC**B1920**

The DTC will set when the BCM detects that the change in voltage of the driver temperature sensor signal circuit is either too slow or too fast.

B2165

The DTC will set when the BCM detects that the change in voltage of the passenger temperature sensor signal circuit is either too slow or too fast.

Actions Taken When the DTC Sets

The heated seat system for the affected seat will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set to history 3 seconds after the reference voltage returns to the normal operating range.
- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 50 consecutive malfunction-free ignition cycles have occurred.

Diagnostic Aids

- When DTC B1920 or B2165 are set as current, the BCM disables the heated seat function not allowing any heated seat relay control functions to occur. Cycling the ignition OFF then ON will reset the DTC and allow relay commands.
- Due to the nature of DTC B1920 and B2165, it may take up to 10 minutes for the DTCs to set. For purposes of testing in this diagnostic procedure the DTCs must be cleared or inactive.
- Faults to other heated seat system circuits other than the temperature sensor signal circuit may also cause DTC B1920 and B2165 to set.

Reference Information**Schematic Reference****Heated/Cooled Seat Schematics****Connector End View Reference****Component Connector End Views****Description and Operation**

Heated Seats Description and Operation

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References

Circuit/System Testing

1. Ignition OFF, disconnect the appropriate heated seat relay.
2. Ignition ON, verify that a test lamp does not illuminate between the control circuit terminal C1 and ground.
 - o If the test lamp illuminates, test the control circuit for a short to voltage.
3. Verify that a test lamp illuminates between the B+ circuit terminal A2 and ground.
 - o If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the B+ circuit fuse is open, test the control circuit terminal C1 for a short to ground.
4. Ignition OFF, test for less than 5.0 ohms of resistance between the ground circuit terminal C2 and ground.
 - o If greater than the specified range, test the ground circuit for an open/high resistance.
5. Ignition OFF, test for less than 5.0 ohms of resistance between the relay controlled output circuit terminal C1 and ground.
 - o If greater than the specified range, test the relay controlled output circuit terminal C1 for an open/high resistance.
6. Connect a test lamp between the relay control circuit terminal A1 and ground.
7. Command the appropriate heated seat ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - o If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - o If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
8. Ignition OFF, disconnect the harness connector at the appropriate heated seat element.
9. Ignition OFF, test for less than 5.0 ohms of resistance between the low reference circuit terminal C and ground.
 - o If greater than the specified range, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the BCM.
10. Ignition ON, test for 9.8-10.2 volts between the signal circuit terminal B and ground.
 - o If less than the specified range, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
 - o If greater than the specified range, test the signal circuit for a short to voltage. If the circuit tests normal, replace the BCM.
11. If all circuits test normal, test or replace the appropriate heated seat element.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Driver Seat and Passenger Seat Cushion Heater Replacement**
- **Control Module References** for BCM replacement, setup, and programming

DTC B1925 OR B2170

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B1925

Driver Seat Heater Sensor Circuit

DTC B2170

Front Passenger Seat Heater Sensor Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Heated Seat Cushion Temperature Sensor Signal	B1920, B1925	B1920, B1925	B1920, B1925	-
Passenger Heated Seat Cushion Temperature Sensor Signal	B2165, B2170	B2165, B2170	B2165, B2170	-
Heated Seat Relay Switch B+ - Driver	1	1	1	-
Heated Seat Relay Switch B+ - Passenger	1	1	1	-
Driver Heated Seat Relay Control	B2508	B2508	B2508	-
Passenger Heated Seat Relay Control	B2509	B2509	B2509	-
Heated Seat Relay Switch Controlled Output - Driver	1	1	1	-
Heated Seat Relay Switch Controlled Output - Passenger	1	1	1	-
Driver Heated Seat Cushion Temperature Sensor Low Reference	1	1	1	-
Passenger Heated Seat Cushion Temperature Sensor Low Reference	1	1	1	-
Heated Seat Relay Coil Ground - Driver	-	1	-	-
Heated Seat Relay Coil Ground - Passenger	-	1	-	-
Heated Seat Element Ground - Driver	-	1	-	-

Heated Seat Element Ground - Passenger	-	1	-	-
1. Front Heated Seat Malfunction				

Circuit/System Description

The heated seat temperature sensor is located in the seat cushion just under the seat cover within the seat heating element. The body control module (BCM) supplies the heated seat temperature sensor with a temperature sensor signal circuit and a temperature sensor low reference circuit. The BCM monitors the voltage of the heated seat temperature sensor signal circuit to determine the temperature of the seat. The BCM cycles the heated seat relay on and off in order to maintain the desired seat temperature based on the voltage feedback from the temperature sensor.

The BCM also monitors the sensor signal circuit for a change in voltage that is either too fast or too slow. The slow rate check is performed only when the heated seat is initially turned on with a cold seat in order to prevent setting a false DTC.

Conditions for Running the DTC

- DTC B1327 must not be present.
- Battery voltage must be between 9-16 volts.

Conditions for Setting the DTC

B1925

The DTC will set when the BCM detects a short to ground or voltage in the driver temperature sensor signal circuit.

B2170

The DTC will set when the BCM detects a short to ground or voltage in the passenger temperature sensor signal circuit.

Actions Taken When the DTC Sets

The heated seat system for the affected seat will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set to history 3 seconds after the reference voltage returns to the normal operating range.
- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 50 consecutive malfunction-free ignition cycles have occurred.

Diagnostic Aids

When DTC B1925 or B2170 are set as current, the BCM disables the heated seat function not allowing any heated seat relay control functions to occur. Cycling the ignition OFF then ON will reset the DTC and allow relay commands.

Reference Information

Schematic Reference

Heated/Cooled Seat Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Heated Seats Description and Operation

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References

Circuit/System Testing

1. Ignition OFF, disconnect the appropriate heated seat cushion heater element.
2. Ignition OFF, test for less than 5.0 ohms of resistance between the low reference circuit terminal C and ground.
 - If greater than the specified range, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the BCM.
3. Ignition ON, test for 9.8-10.2 volts between the signal circuit terminal B and ground.
 - If less than the specified range, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
 - If greater than the specified range, test the signal circuit for a short to voltage. If the circuit tests normal, replace the BCM.
4. If all circuits test normal, test or replace the appropriate heated seat element.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Driver Seat and Passenger Seat Cushion Heater Replacement**
- **Control Module References** for BCM replacement, setup, and programming

DTC B2508 OR B2509

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B2508

Driver Seat Heater Relay Circuit

DTC B2509

Front Passenger Seat Heater Relay Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Heated Seat Cushion Temperature Sensor Signal	B1920, B1925	B1920, B1925	B1920, B1925	-
Passenger Heated Seat Cushion Temperature Sensor Signal	B2165, B2170	B2165, B2170	B2165, B2170	-
Heated Seat Relay Switch B+ - Driver	1	1	1	-
Heated Seat Relay Switch B+ - Passenger	1	1	1	-
Driver Heated Seat Relay Control	B2508	B2508	B2508	-
Passenger Heated Seat Relay Control	B2509	B2509	B2509	-
Heated Seat Relay Switch Controlled Output - Driver	1	1	1	-
Heated Seat Relay Switch Controlled Output - Passenger	1	1	1	-
Driver Heated Seat Cushion Temperature Sensor Low Reference	1	1	1	-
Passenger Heated Seat Cushion Temperature Sensor Low Reference	1	1	1	-
Heated Seat Relay Coil Ground - Driver	-	1	-	-
Heated Seat Relay Coil Ground - Passenger	-	1	-	-
Heated Seat Element Ground - Driver	-	1	-	-
Heated Seat Element Ground - Passenger	-	1	-	-
1. Front Heated Seat Malfunction				

Circuit/System Description

The driver and passenger heated seats are controlled by separate heated seat switches. Both switches are located in the HVAC control module. When a heated seat switch is pressed, the HVAC control module sends a class 2 serial data message to the body control module (BCM) indicating the heated seat command. In response to this signal, the BCM applies battery positive voltage through the heated seat relay control circuit energizing the relay coil. The relay closes its switch contacts applying battery positive voltage through the element supply voltage circuit to the seat heating elements. The BCM then sends a class 2 serial data message back to the HVAC control module to illuminate the appropriate temperature indicator.

Conditions for Running the DTC

- DTC B1327 must not be present.
- Battery voltage must be between 9-16 volts.

Conditions for Setting the DTC

B2508

The DTC will set when the BCM detects a short to ground or voltage in the driver heated seat relay control circuit.

B2509

The DTC will set when the BCM detects a short to ground or voltage in the passenger heated seat relay control circuit.

Actions Taken When the DTC Sets

The heated seat system for the affected seat will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set to history 3 seconds after the reference voltage returns to the normal operating range.
- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 50 consecutive malfunction-free ignition cycles have occurred.

Diagnostic Aids

When DTC B2508 or B2509 are set as current, the BCM disables the heated seat function not allowing any heated seat relay control functions to occur. Cycling the ignition OFF then ON will reset the DTC and allow relay commands.

Reference Information**Schematic Reference****Heated/Cooled Seat Schematics****Connector End View Reference****Component Connector End Views****Description and Operation****Heated Seats Description and Operation****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference**Control Module References****Circuit/System Testing**

1. Ignition OFF, disconnect the appropriate heated seat relay.
2. Ignition OFF, test for less than 5.0 ohms of resistance between the ground circuit terminal C2 and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.

3. Connect a test lamp between the relay control circuit terminal A1 and ground.
4. Command the appropriate heated seat ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the appropriate heated seat relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Relay Replacement (Attached to Wire Harness)** or **Relay Replacement (Within an Electrical Center)**
- **Control Module References** for BCM replacement, setup, and programming

SYMPTOMS - SEAT HEATING AND COOLING

IMPORTANT: The following steps must be completed before using the symptom tables.

1. Refer to the **Heated Seats Description and Operation** in order to familiarize yourself with the system functions.
2. If you are diagnosing a heated seat concern perform the **Diagnostic System Check - Vehicle** , before using the symptom tables in order to verify that all of the following are true:
 - There are no DTCs set.
 - The control module(s) can communicate via the serial data link.

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the power seats. Refer to **Checking Aftermarket Accessories** .
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.
- Inspect the seat adjuster track for conditions which may cause binding or objects within the seat adjustment range which obstruct movement or interfere with wiring.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections** .

Symptom List

Refer to **Front Heated Seat Malfunction**.

FRONT HEATED SEAT MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

2008 Buick LaCrosse CXL

2008 ACCESSORIES & EQUIPMENT Seat Heating and Cooling - LaCrosse

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Heated Seat Cushion Temperature Sensor Signal	B1920, B1925	B1920, B1925	B1920, B1925	-
Passenger Heated Seat Cushion Temperature Sensor Signal	B2165, B2170	B2165, B2170	B2165, B2170	-
Heated Seat Relay Switch B+ - Driver	1	1	1	-
Heated Seat Relay Switch B+ - Passenger	1	1	1	-
Driver Heated Seat Relay Control	B2508	B2508	B2508	-
Passenger Heated Seat Relay Control	B2509	B2509	B2509	-
Heated Seat Relay Switch Controlled Output - Driver	1	1	1	-
Heated Seat Relay Switch Controlled Output - Passenger	1	1	1	-
Driver Heated Seat Cushion Temperature Sensor Low Reference	1	1	1	-
Passenger Heated Seat Cushion Temperature Sensor Low Reference	1	1	1	-
Heated Seat Relay Coil Ground - Driver	-	1	-	-
Heated Seat Relay Coil Ground - Passenger	-	1	-	-
Heated Seat Element Ground - Driver	-	1	-	-
Heated Seat Element Ground - Passenger	-	1	-	-
1. Front Heated Seat Malfunction				

Circuit/System Description

The driver and passenger heated seats are controlled by separate heated seat switches. Both switches are located in the HVAC control module. When a heated seat switch is pressed, the HVAC control module sends a class 2 serial data message to the body control module (BCM) indicating the heated seat command. In response to this signal, the BCM applies battery positive voltage through the heated seat relay control circuit energizing the relay coil. The relay closes its switch contacts applying battery positive voltage through the element supply voltage circuit to the seat heating elements. The BCM then sends a class 2 serial data message back to the HVAC control module to illuminate the appropriate temperature indicator.

Reference Information**Schematic Reference****Heated/Cooled Seat Schematics****Connector End View Reference****Component Connector End Views****Description and Operation**

Heated Seats Description and Operation

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References

Circuit/System Verification

1. Ignition ON, observe the scan tool driver heated seat parameter while turning the driver seat heater switch ON and OFF. The reading should change between OFF, LOW, and HIGH.
 - If the reading does not change between the commanded states, refer to Heated Seat Switch Malfunction in Circuit/System Testing.
2. Ignition ON, observe the scan tool passenger heated seat parameter while turning the driver seat heater switch ON and OFF. The reading should change between OFF, LOW, and HIGH.
 - If the reading does not change between the commanded states, refer to Heated Seat Switch Malfunction in Circuit/System Testing.

Circuit/System Testing

Heated Seat Malfunction

1. Ignition OFF, disconnect the appropriate heated seat relay.
2. Ignition ON, verify that a test lamp does not illuminate between the control circuit terminal C1 and ground.
 - If the test lamp illuminates, test the control circuit for a short to voltage.
3. Verify that a test lamp illuminates between the B+ circuit terminal A2 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the B+ circuit fuse is open, test the control circuit terminal C1 for a short to ground.
4. Ignition OFF, test for less than 5.0 ohms of resistance between the ground circuit terminal C2 and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
5. Connect a test lamp between the relay control circuit terminal A1 and ground.
6. Command the appropriate heated seat ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
7. Ignition OFF, disconnect the harness connector at the appropriate heated seat back element.
8. Test for less than 5.0 ohms of resistance between the ground circuit terminal B and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
9. Connect the harness connector at the heated seat back element.
10. Ignition OFF, disconnect the harness connector at the appropriate heated seat cushion element.

11. Test for less than 5.0 ohms of resistance between the voltage supply circuit terminal D and ground.
 - o If greater than the specified range, test the voltage supply circuit for an open/high resistance. If the circuit tests normal, test or replace the heated seat back element.
12. Test for less than 5.0 ohms of resistance between terminal A and terminal D.
 - o If greater than the specified range, test or replace the heated seat cushion element.
13. Connect the harness connector at the heated seat cushion element.
14. Test for less than 5.0 ohms of resistance between the relay controlled output circuit terminal C1 and ground.
 - o If greater than the specified range, test the relay controlled output circuit for an open/high resistance.
15. If all circuits test normal, test or replace the appropriate heated seat relay.

Heated Seat Switch Malfunction

1. Ignition ON, observe the scan tool driver heated seat parameter while turning the driver seat heater switch ON and OFF. The reading should change between OFF, LOW, and HIGH.
 - o If the reading does not change as the switch is activated, replace the HVAC control module.
2. Ignition ON, observe the driver heated seat LOW and HIGH indicators while turning the driver seat heater switch to the LOW and HIGH positions. The indicators should turn ON and OFF as the switch is activated.
 - o If either the LOW or HIGH indicators does not illuminate, replace the HVAC control module.
3. Ignition ON, observe the scan tool passenger heated seat parameter while turning the driver seat heater switch ON and OFF. The reading should change between OFF, LOW, and HIGH.
 - o If the reading does not change as the switch is activated, replace the HVAC control module.
4. Ignition ON, observe the passenger heated seat LOW and HIGH indicators while turning the passenger seat heater switch to the LOW and HIGH positions. The indicators should turn ON and OFF as the switch is activated.
 - o If either the LOW or HIGH indicators does not illuminate, replace the HVAC control module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Relay Replacement (Attached to Wire Harness) or Relay Replacement (Within an Electrical Center)**
- **Driver Seat and Passenger Seat Back Cushion Heater Replacement**
- **Driver Seat and Passenger Seat Cushion Heater Replacement**
- **Control Module References** for BCM and HVAC control module replacement, setup, and programming

REPAIR INSTRUCTIONS

FRONT SEAT HEATER RELAY REPLACEMENT

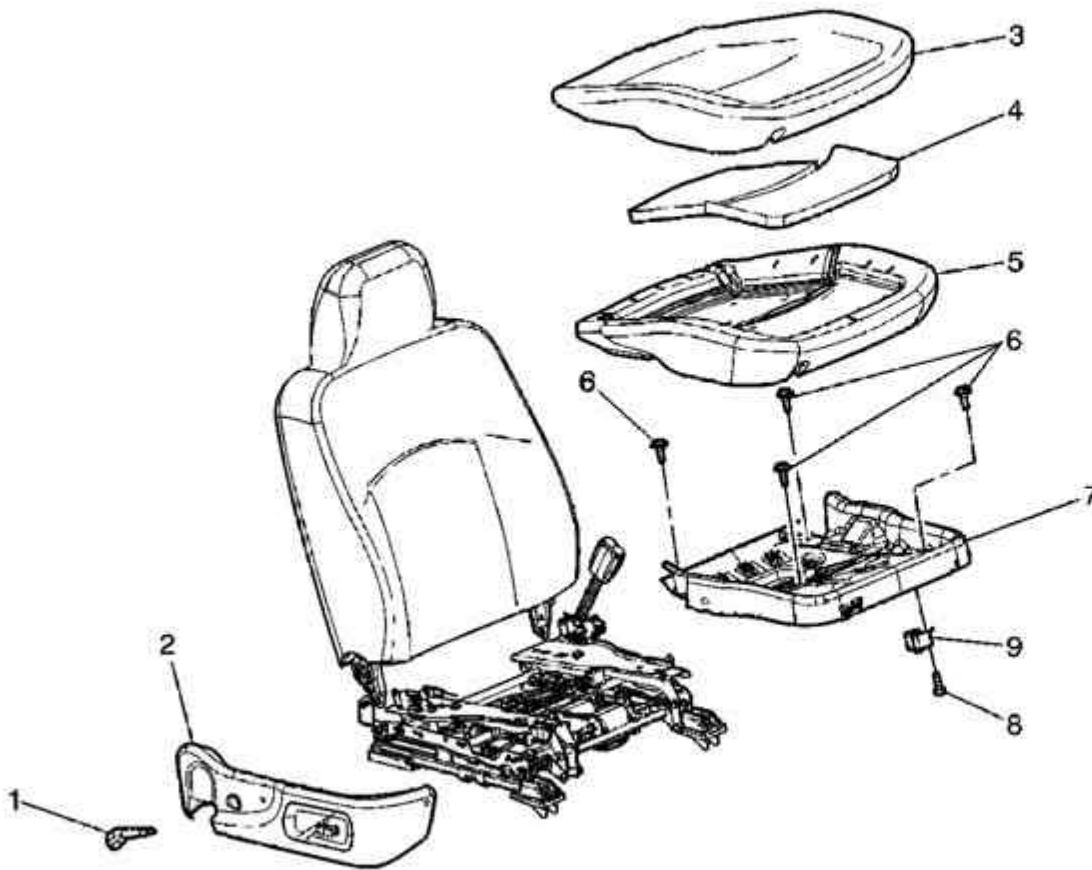


Fig. 3: View Of Front Heated Seat Components
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures	
1. Remove the front bucket seat. Refer to Front Seat Replacement - Bucket . 2. Re-zero the inflatable restraint passenger presence system whenever the seat cushion or any component of the passenger presence system is removed. Refer to Passenger Presence System Rezeroing .	
1	Seat Recliner Handle Refer to Driver Seat and Passenger Seat Recliner Handle Replacement .
2	Seat Adjuster Finish Cover Refer to Front Seat Adjuster Track Finish Cover Replacement .
3	Seat Cushion Cover Refer to Front Seat Cushion Cover Replacement .
4	Seat Cushion Heater Assembly Tip: Disconnect the electrical connector.
5	Seat Cushion Pad
6	Seat Cushion Bolt (Qty: 4) NOTE: Refer to Fastener Notice . Tighten: 25 N.m (18 lb ft)
7	Seat Cushion Frame Assembly
8	Seat Cushion Heater Relay Screw
9	Seat Cushion Heater Relay

Removal Procedure

1. Remove the front seat. Refer to **Front Seat Replacement - Bucket**.

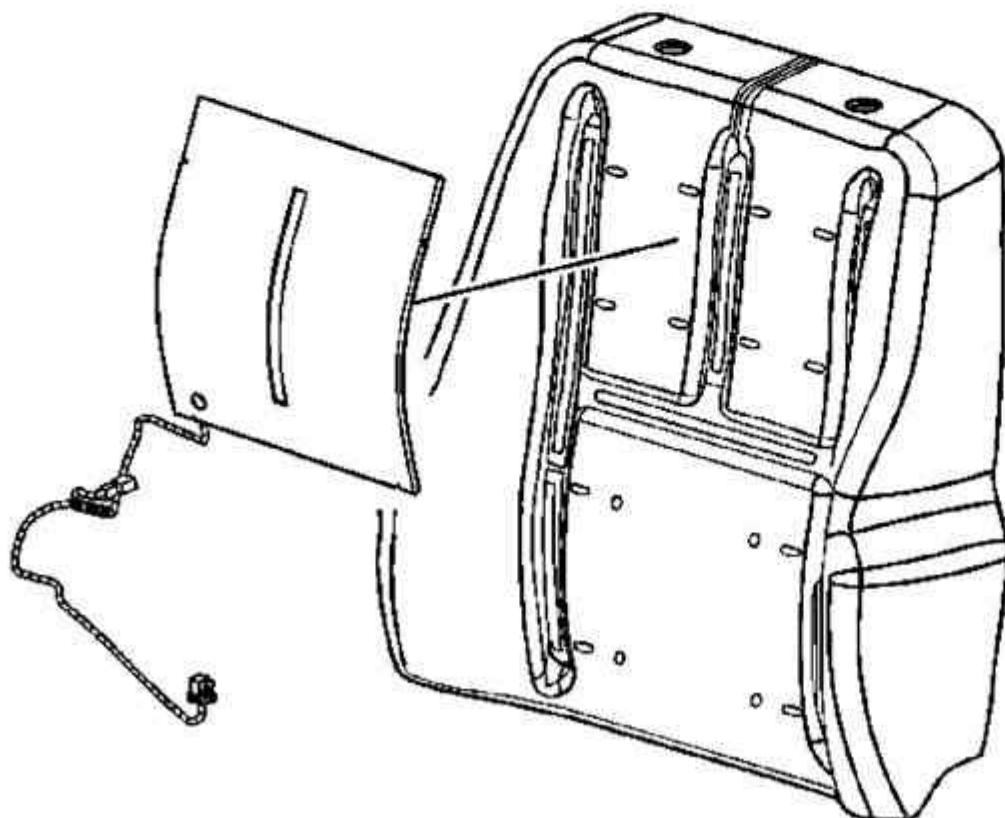


Fig. 4: Locating Front Seat Back Heater Element & Electrical Connector
Courtesy of GENERAL MOTORS CORP.

2. Disconnect the electrical connector from the seat back cushion heater.
3. Remove the seat back cover. Refer to **Front Seat Back Cushion Cover Replacement**.
4. Gently pull on the heater element in order to remove the element from the seat back. Do NOT damage the seat back.

Installation Procedure

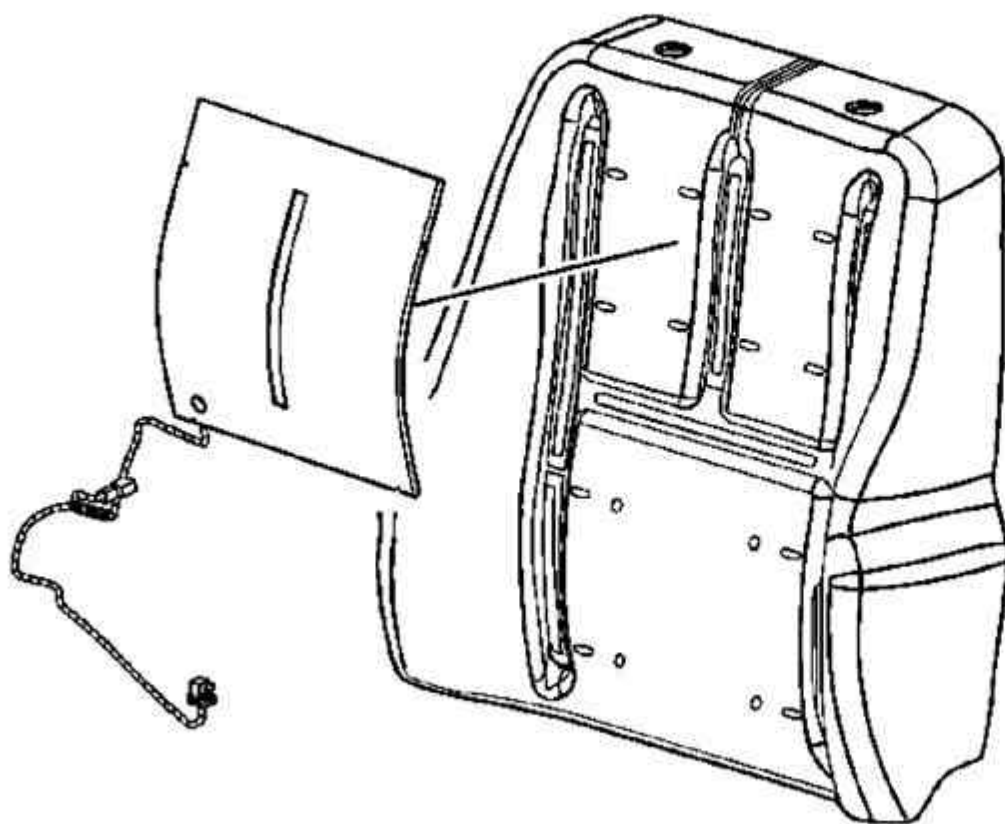


Fig. 5: Locating Front Seat Back Heater Element & Electrical Connector
Courtesy of GENERAL MOTORS CORP.

1. Peel off the self-stick tape from the heater element.
2. Position the heater element over the seat back. Press firmly to engage the adhesive.
3. Route and connect the electrical connector to the seat back cushion. Secure the wire with tie straps.
4. Install the seat back cover. Refer to **Front Seat Back Cushion Cover Replacement**.
5. Install the front seat. Refer to **Front Seat Replacement - Bucket**.

DRIVER SEAT AND PASSENGER SEAT CUSHION HEATER REPLACEMENT

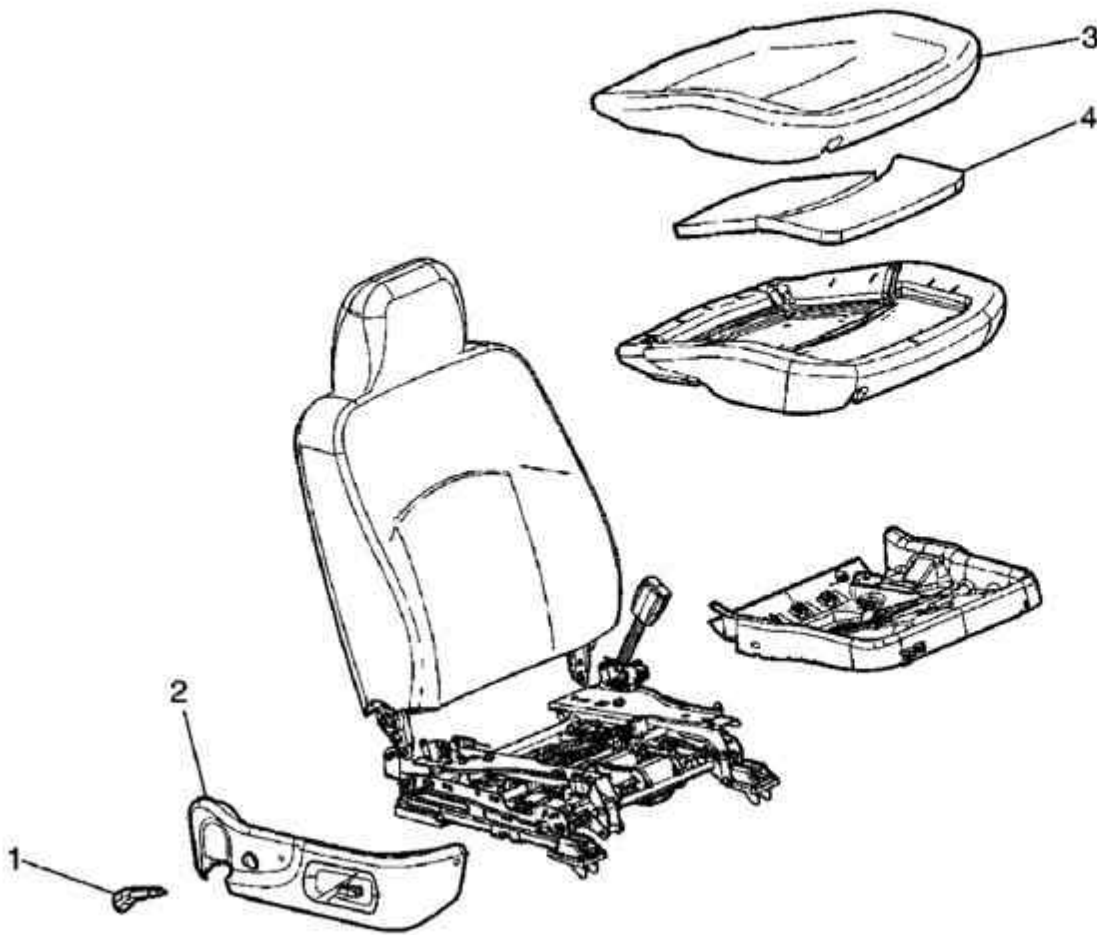


Fig. 6: View Of Front Seat Cushion Heater Element
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
Preliminary Procedures	
1. Remove the front bucket seat. Refer to <u>Front Seat Replacement - Bucket</u> . 2. Re-zero the inflatable restraint passenger presence system whenever the seat cushion or any component of the passenger presence system is removed. Refer to <u>Passenger Presence System Rezeroing</u> .	
1	Handle, Seat Recliner Refer to <u>Driver Seat and Passenger Seat Recliner Handle Replacement</u> .
2	Cover, Seat Adjuster Finish Cover Refer to <u>Front Seat Adjuster Track Finish Cover Replacement</u> .
3	Cover, Seat Cushion Refer to <u>Front Seat Cushion Cover Replacement</u> .
4	Heater Assembly, Seat Cushion Tip: Disconnect the electrical connector.

DESCRIPTION AND OPERATION

HEATED SEATS DESCRIPTION AND OPERATION

Heated Seats System Components

The driver and front passenger heated seats each consist of the following components:

- Body control module (BCM)

- Heated seat element - back
- Heated seat element - cushion
- Heated seat relay
- Heated seat switch
- Heated seat thermistor
- HVAC control module
- HTD SEAT 20 amp fuse - LH
- HTD SEAT 20 amp fuse - RH

Power and Ground

Battery positive voltage is supplied at all times to both front heated seat relays from the HTD SEAT fuses located in the instrument panel (I/P) fuse block. Both heated seat relay coils are grounded through ground G301.

Heated Seat Operation

The driver and passenger heated seats are controlled by separate heated seat switches. Both switches are located in the HVAC control module. When a heated seat switch is pressed, the HVAC control module sends a class 2 serial data message to the body control module (BCM) indicating the heated seat command. In response to this signal, the BCM applies battery positive voltage through the heated seat relay control circuit energizing the relay coil. The relay closes its switch contacts applying battery positive voltage through the element supply voltage circuit to the seat heating elements. The BCM then sends a class 2 serial data message back to the HVAC control module to illuminate the appropriate temperature indicator.

Temperature Regulation

When the ignition is turned to the ON position, the heated seats will initialize in the OFF state. With each activation of the heated seat switch, the body control module (BCM) will cycle temperature setting in the following manner: HIGH, LOW, and OFF.

The heated seat system is designed in order to warm the seat cushion and seat back to approximately 42°C (107.6°F) when in the high heat position, and 37°C (98.6°F) when in the low heat position. The BCM monitors the seat temperature through the temperature sensor signal circuit and the temperature sensor (thermistor) that is located in the seat cushion. The temperature sensor is a variable resistor, its resistance changes as the temperature of the seat changes. When the temperature sensor resistance indicates to the BCM that the seat has reached the desired temperature, the module removes battery voltage from the heated seat relay control circuit de-energizing the relay. The relay then opens its switch contacts removing battery voltage from the heated seat element supply voltage circuit and the seat heating elements. The module will then cycle the relay control circuit on and off in order to maintain the desired temperature.

Load Management

During Heated Seats Load Shed Level 1, the body control module (BCM) will cycle the heated seat operation 16.0 seconds ON and 4.0 seconds OFF. During Heated Seats Load Shed Level 2, the BCM will deactivate the heated seat operation, and signal the HVAC control module turn off the appropriate heated seat temperature indicators.

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