

Seat Heating and Cooling

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Description and Operation

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Heated Seats Description and Operation

The heated seat system consists of the following components:

- Seat heating switch
- Seat back heating element
- Seat cushion heating element

Heated Seat Operation

This heated seat system does not utilize a control module for heated seat operation. The seat heating switch directly controls seat heating with one temperature setting. With the ignition ON, ignition voltage is applied to the driver and passenger seat heating switches through 15A fuse located in the instrument panel fuse block. Ground is supplied to the switches through the switch ground circuit and the ground connection. This ground circuit is used only for the purpose of illuminating heated seat ON indicator. When a heated seat switch is pressed, ignition voltage is applied through the switch contacts and the control circuit activating the seat heating elements.

The heating elements for the seat cushion and back are wired in parallel with a harness and wire connector connecting the two together. This heated seat system utilizes a self-regulating heating element system, which is different from the non-regulated heating element systems with seat temperature sensors used on other GM vehicles. In the self-regulating type of system, the heating element material itself regulates the seat surface temperature based on the effective voltage applied to the heating element.

Diagnostic Information and Procedures

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Symptoms - Seat Heating and Cooling

Important:

Review the system description in order to familiarize yourself with the system functions. Refer to [Heated Seats Description and Operation](#)

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the heated seat system. Refer to [Checking Aftermarket Accessories](#)
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

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](#) in order to diagnose the symptom.

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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.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ignition Voltage	1	1	â€”	â€”
Seat Heating Element Voltage Control	1	1	3	â€”
Seat Heating Element Ground	â€”	1	â€”	â€”
Seat Heating Switch Ground	â€”	2	â€”	â€”
1. Heated seat is inoperative 2. Heated seat indicator is inoperative 3. Heated seat is always ON				

Circuit/System Description

With the ignition ON, ignition voltage is applied to the driver and passenger seat heating switches through a 15â€‰A fuse located in the instrument panel fuse block. Ground is supplied to both the driver and passenger the seat heating switches through the switch ground circuit and the ground connection. This ground circuit is used only for the purpose of illuminating heated seat ON indicator. When a seat heating switch is pressed, ignition voltage is applied through the switch contacts and the control circuit activating the seat heating element.

Reference Information

Schematic Reference

[Heated/Cooled Seat Schematics](#)

Connector End View Reference

[Master Electrical Component List](#)

Description and Operation

[Heated Seats Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Circuit/System Verification

1. Ignition ON.
2. Verify the appropriate heated seat turns ON and OFF when cycling the S32â€‰Seat Heating Switch ON and OFF.
3.
 - If the heated seat does not turn ON or OFF

- Refer to Circuit/System Testing "Heated Seat Circuit Test"

4.

- **If the heated seat turns ON and OFF**

5. Verify the seat heating switch indicator turns ON and OFF when cycling the S32"Seat Heating Switch ON and OFF.

6.

- **If the indicator does not turn ON or OFF**

- Refer to Circuit/System Testing "Heated Seat Switch Indicator Circuit Test"

7.

- **If the indicator turns ON or OFF**

8. All OK.

Circuit/System Testing

Heated Seat Circuit Test

1. Ignition OFF, disconnect the harness connector at the appropriate S32"Seat Heating Switch, ignition ON.

2. Verify a test lamp illuminates between the ignition circuit terminal"2 and ground.

3.

- **If the test lamp does not illuminate**

4.

1. Ignition OFF, remove the test lamp.

2. Test for infinite resistance between the ignition circuit and ground.

3.

- If less than infinite resistance, repair the short to ground on the circuit.

4.

- If infinite resistance

5. Test for less than 2" in the ignition circuit end to end.

6.

- If 2" or greater, repair the open/high resistance in the circuit.

- If less than 2", refer to [Power Mode Mismatch](#).

5.

- **If the test lamp illuminates**

6. Ignition OFF, connect the harness connector at the S32"Seat Heating Switch and disconnect the harness connector at the E14"Seat Heating Element.

7. Test for less than 10" between the ground circuit terminal"2 and ground.

8.

- **If 10" or greater**

9.

1. Ignition OFF.

2. Test for less than 2 Ω in the ground circuit end to end.

3.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , repair the open/high resistance in the ground connection.

10.

- **If less than 10 Ω ,**

11. Install a test lamp between the control circuit terminal and ground, ignition ON.

12. Verify the test lamp turns ON and OFF when commanding heated seat ON and OFF using the S32 Seat Heating Switch.

13.

- **If the test lamp remains OFF**

14.

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S32 Seat Heating Switch.

2. Test for infinite resistance between the control circuit and ground.

3.

- If less than infinite resistance, repair the short to ground on the circuit.

4.

- If infinite resistance

5. Test for less than 2 Ω in the control circuit end to end.

6.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , test or replace the S32 Seat Heating Switch.

15.

- **If the test lamp remains ON**

16.

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S32 Seat Heating Switch, ignition ON.

2. Test for less than 1V between the control circuit and ground.

3.

- If 1V or greater, repair the short to voltage on the circuit.
- If less than 1V, test or replace the S32 Seat Heating Switch.

17.

- **If the test lamp turns ON and OFF**

18. Test or replace the E14 Seat Cushion Heating Element.

Heated Seat Switch Indicator Circuit Test

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the appropriate S32 Seat Heating Switch. It may take up to 2min for all vehicle systems to power down.

2. Test for less than 10 Ω between the ground circuit terminal and ground.

3.

- If 10 Ω or greater

4.

1. Ignition OFF.
2. Test for less than 2 Ω in the ground circuit end to end.
3.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , repair the open/high resistance in the ground connection.

5.

- If less than 10 Ω

6. Test or replace the S32 Seat Heating Switch.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Front Seat Back Heater Replacement](#)
- [Front Seat Cushion Heater Replacement](#)

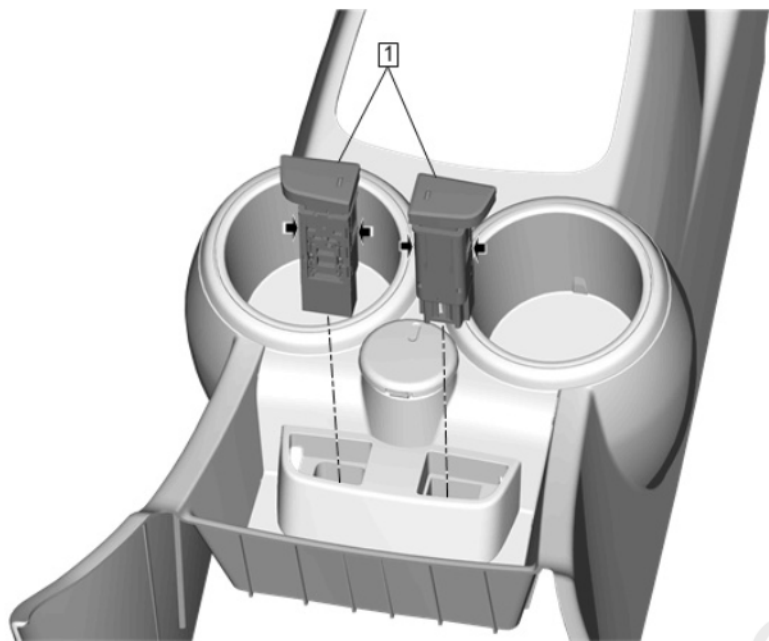
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Repair Instructions

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Driver or Passenger Seat Heater Switch Replacement

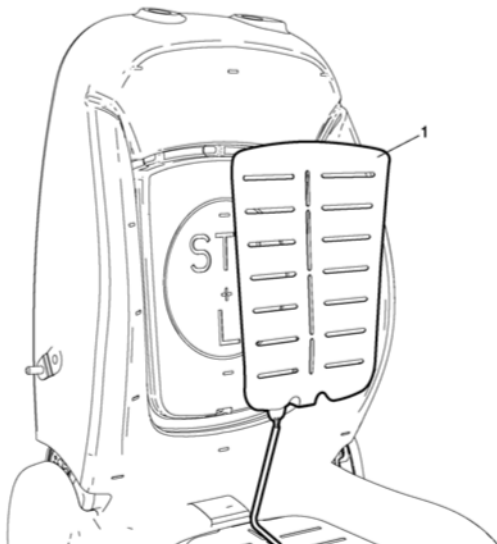


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Callout	Component Name
Preliminary Procedure	
Front Floor Console Replacement	
1	Driver or Passenger Seat Heater Switch [2>x]
	Procedure
	Release the retaining tabs and remove the drive or passenger seat heater switch from the switch bezel.

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Front Seat Back Heater Replacement





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Callout	Component Name
Preliminary Procedures	
1. Remove the front seat back cushion cover. Refer to Driver or Passenger Seat Back Cushion Cover Replacement .	
2. Disconnect the electric harness connector.	
1	Front Seat Back Cushion Heating Mat Note: Separate the seat cushion heater mat from the seat cushion pad by pulling the heater mat away from the pad. Use a heat gun to loosen the glue : moving slowly from one end to the other, slowly peeling the heater mat up as you go. This makes removal easier and ensures minimum damage to the underlying foam. Be careful not to use overly high temperatures or hold the heat gun in one place for too long as this can damage the foam.

Related Part Information

Part Name	Catalog Name	Part Code
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Part Name	Catalog Name	Part Code
Front Seat Back Heater	HEATER PKG,F/SEAT BK	0204Y
Front Seat Back Heater	HEATER,F/SEAT BK (NON FUNCTIONAL)	0205A
Front Seat Back Heater	HEATER KIT,F/SEAT BK	1599Y
Front Seat Back Heater	HEATER,F/SEAT BK	1600A
Driver Seat Back Heater	HEATER,D/SEAT BK	5510A
Passenger Seat Back Heater	HEATER,P/SEAT BK	8810A

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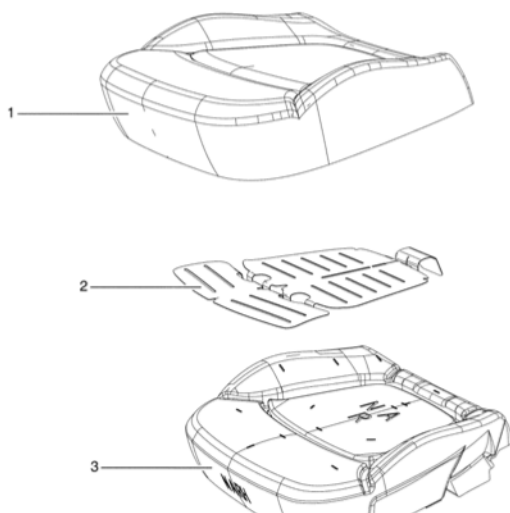
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Front Seat Cushion Heater Replacement





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Callout	Component Name

Callout	Component Name
Warning: Refer to SIR Warning. Warning: To avoid personal injury, perform a passenger presence sensor rezeroing/ learn on the passenger presence system whenever you remove or replace the seat cushion trim. Failure to do so may cause the system to malfunction. Warning: The passenger seat cushion assembly is serviced in a kit with the airbag front passenger presence module, cushion pad (and if equipped, heat mat, vent mat, vent mat support, comfort pads). All components in the service kit are assembled and calibrated as a unit and must be replaced as a complete assembly to prevent possible injury to the occupant. Using only some of the components in the service kit will cause the passenger presence system to operate improperly. Preliminary Procedures 1. Remove the driver or passenger seat. Refer to Front Seat Removal and Installation. 2. Driver or Passenger Seat Cushion Pad Replacement	
1	Front Seat Cushion Cover Procedure Separate the seat cushion from the seat cushion pad by pulling the cover away from the pad.
2	Front Seat Cushion Heater Note: Separate the seat cushion heater mat from the seat cushion pad by pulling the heater mat away from the pad. Use a heat gun to loosen the glue : moving slowly from one end to the other, slowly peeling the heater mat up as you go. This makes removal easier and ensures minimum damage to the underlying foam. Be careful not to use overly high temperatures or hold the heat gun in one place for too long as this can damage the foam.
3	Front Seat Cushion Pad Note: The seat belt presence sensor and heat mat, if equipped, are integral parts of the seat cushion pad.

Related Part Information

Part Name	Catalog Name	Part Code
Front Seat Cushion Heater	HEATER KIT,F/SEAT CUSH	1499Y
Front Seat Cushion Heater	HEATER,F/SEAT CUSH	1500A
Front Seat Cushion Heater	HEATER PKG,F/SEAT CUSH	1501Y
Front Seat Cushion Heater	HEATER,F/SEAT CUSH (NON FUNCTIONAL)	1502A
Driver Seat Cushion Heater	HEATER KIT,D/SEAT CUSH	5499Z
Driver Seat Cushion Heater	HEATER,D/SEAT CUSH	5500A
Passenger Seat Cushion Heater	HEATER KIT,P/SEAT CUSH	8799Z
Passenger Seat Cushion Heater	HEATER,P/SEAT CUSH	8800A

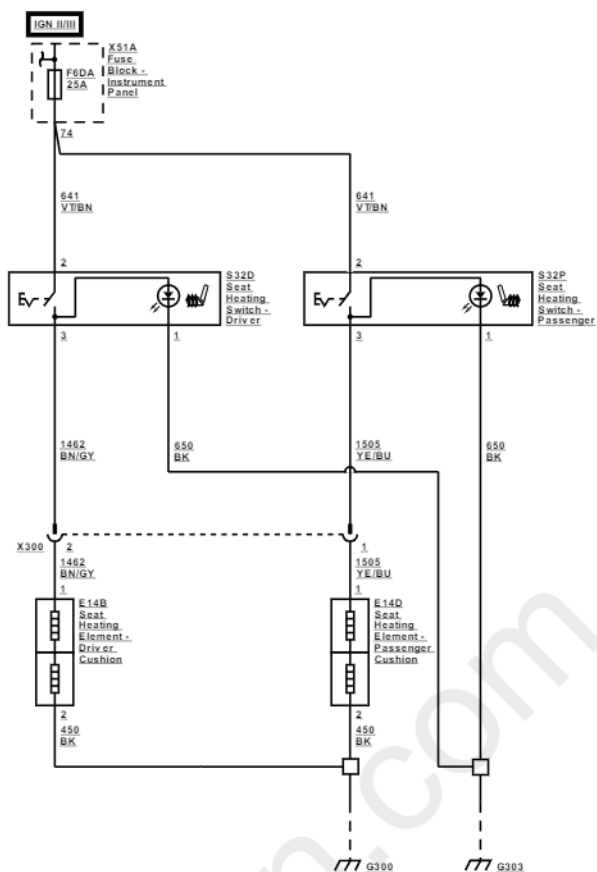
Schematic and Routing Diagrams

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Heated|Cooled Seat Schematics

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Heated Seats



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