

2007 Cadillac Escalade

2007 ACCESSORIES & EQUIPMENT Seat Heating and Cooling - Avalanche, Escalade, Suburban, Tahoe & Yukon

2007 ACCESSORIES & EQUIPMENT

Seat Heating and Cooling - Avalanche, Escalade, Suburban, Tahoe & Yukon

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

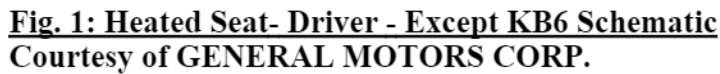
Fastener Tightening Specifications

Application	Specification	
	Metric	English
Front Heated Seat Module Bolt	2 N.m	18 lb in
Front Seat Back Blower Bolt	9 N.m	80 lb in
Front Seat Climate Control Module Bolt	2 N.m	18 lb in
Front Seat Cushion Blower Bolt	2 N.m	25 lb in
Rear Seat Heater Module Screw	3 N.m	25 lb in
Seat Heater Switch Screw	9 N.m	80 lb in
Seat Heater and Ventilation Switch Screw	3 N.m	25 lb in

SCHEMATIC AND ROUTING DIAGRAMS

HEATED/COOLED SEAT SCHEMATICS

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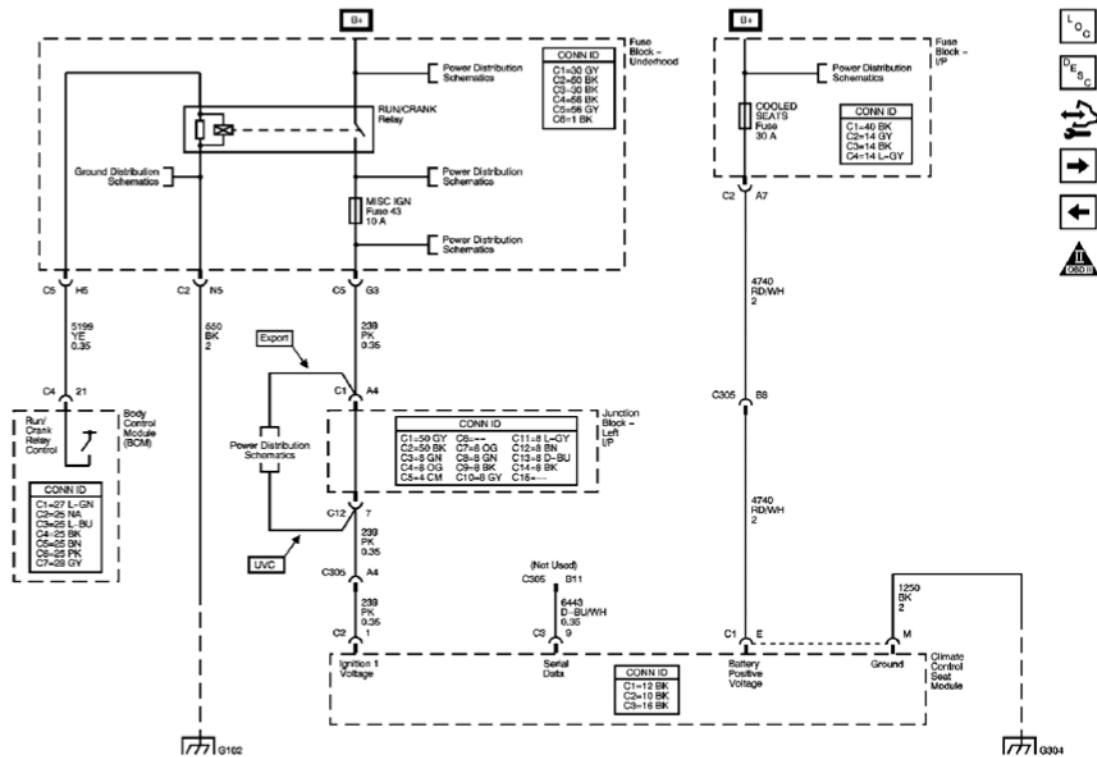
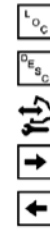


Fig. 3: Heated/Cooled Seat Module Power and Ground - KB6 Schematic
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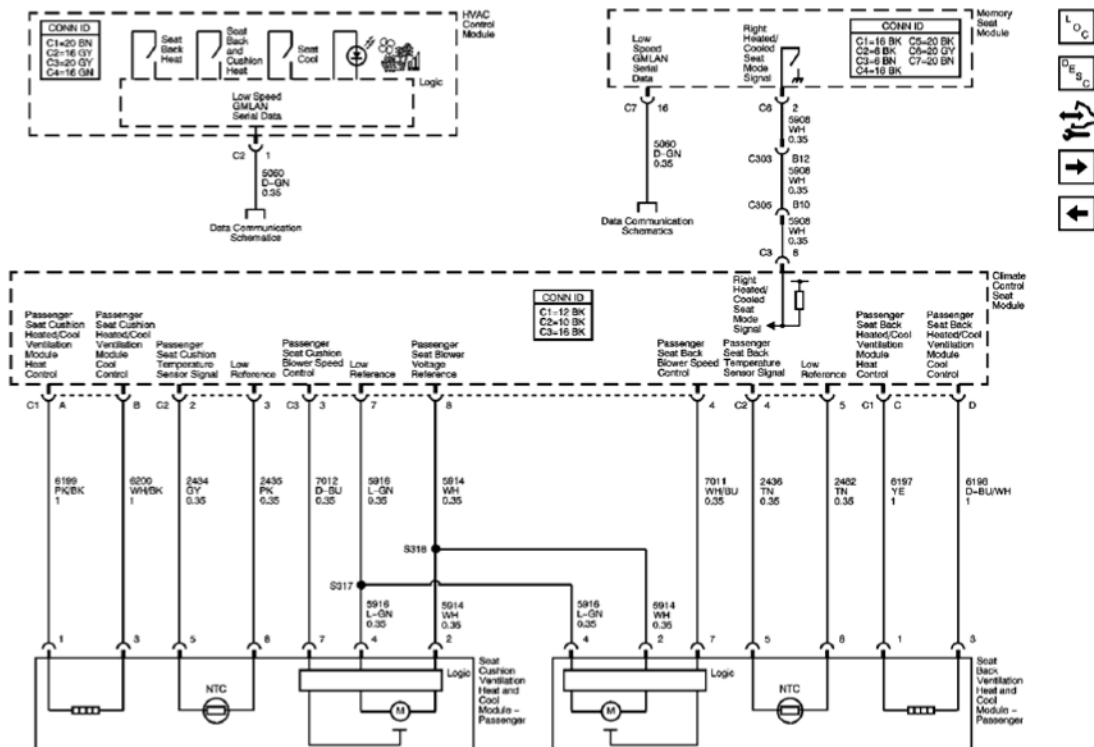


Fig. 5: Heated/Cooled Seat - Passenger - KB6 Schematic
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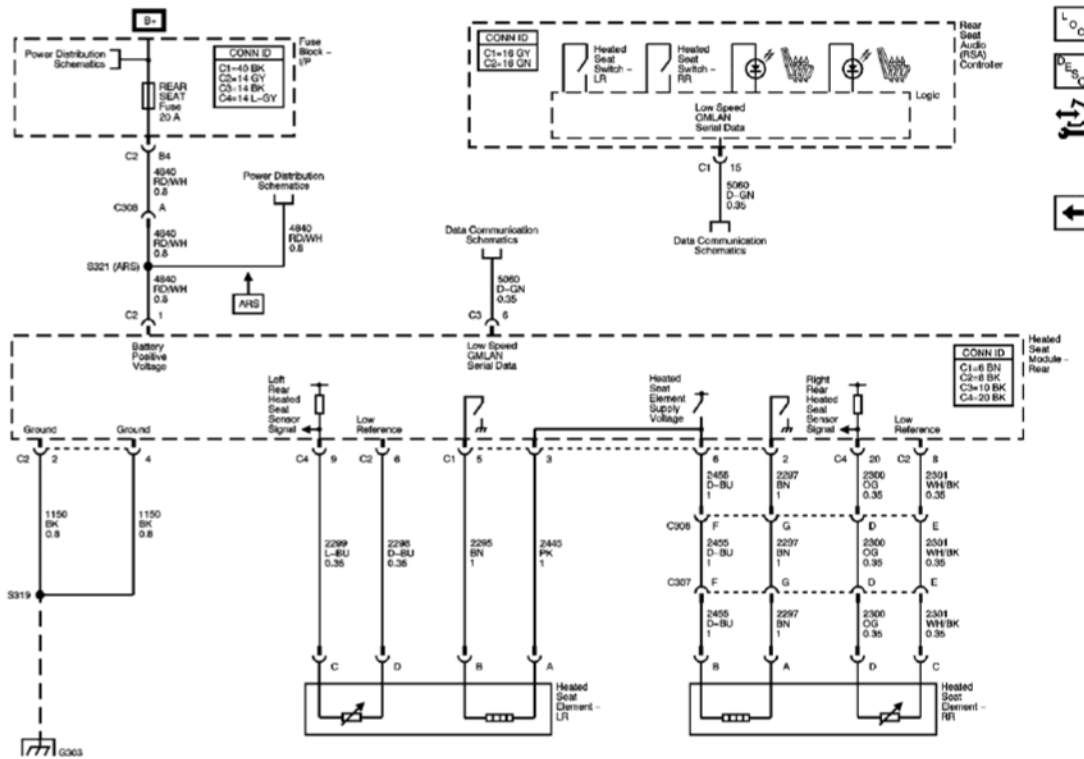


Fig. 6: Heated Seat - Rear - KA6 Schematic
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

HEATED/COOLED SEAT COMPONENT VIEWS

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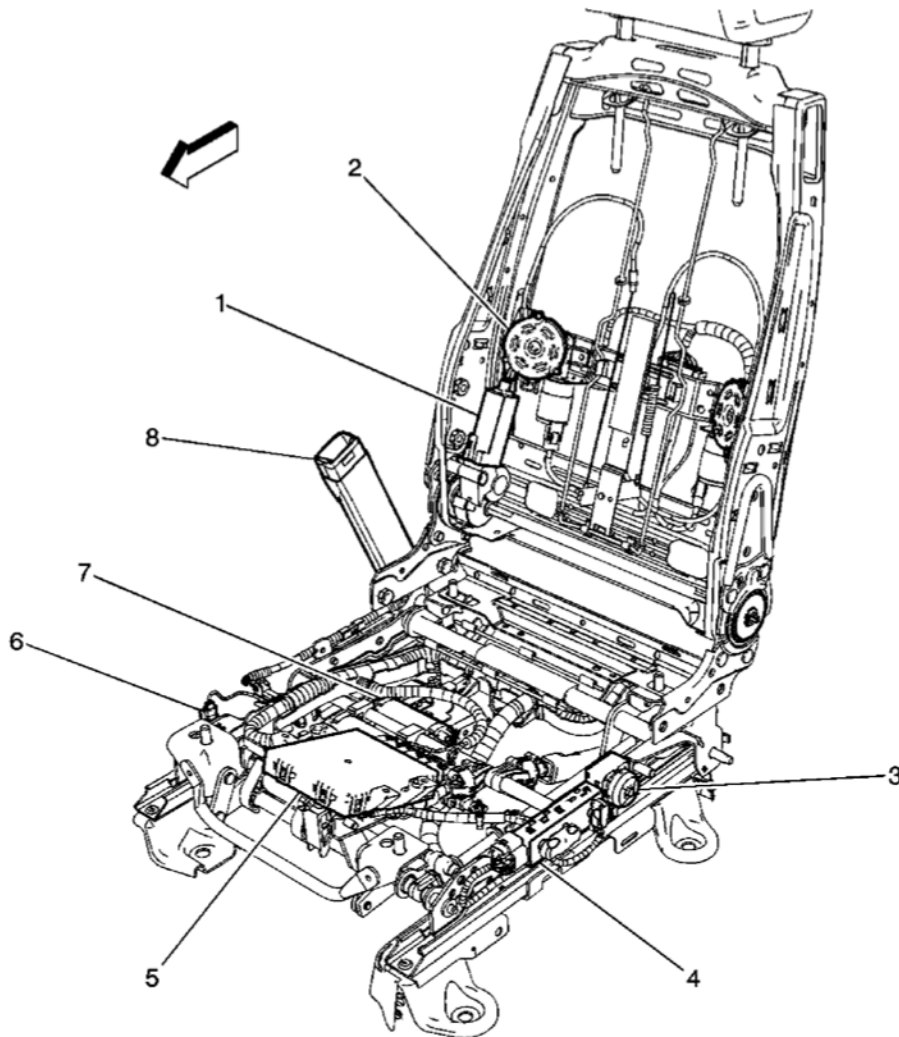


Fig. 7: Driver Seat

Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 7

Callout	Component Name
1	Seat Recline Motor - Driver (AN3)
2	Lumbar Adjuster Assembly - Driver (AN3)
3	Seat Lumbar Switch - Driver (AN3)
4	Seat Adjuster Switch - Driver
5	Memory Seat Module (AN3)
6	Inflatable Restraint Seat Position Sensor (SPS) - Left
7	Seat Adjuster Assembly - Driver
8	Seat Belt Buckle

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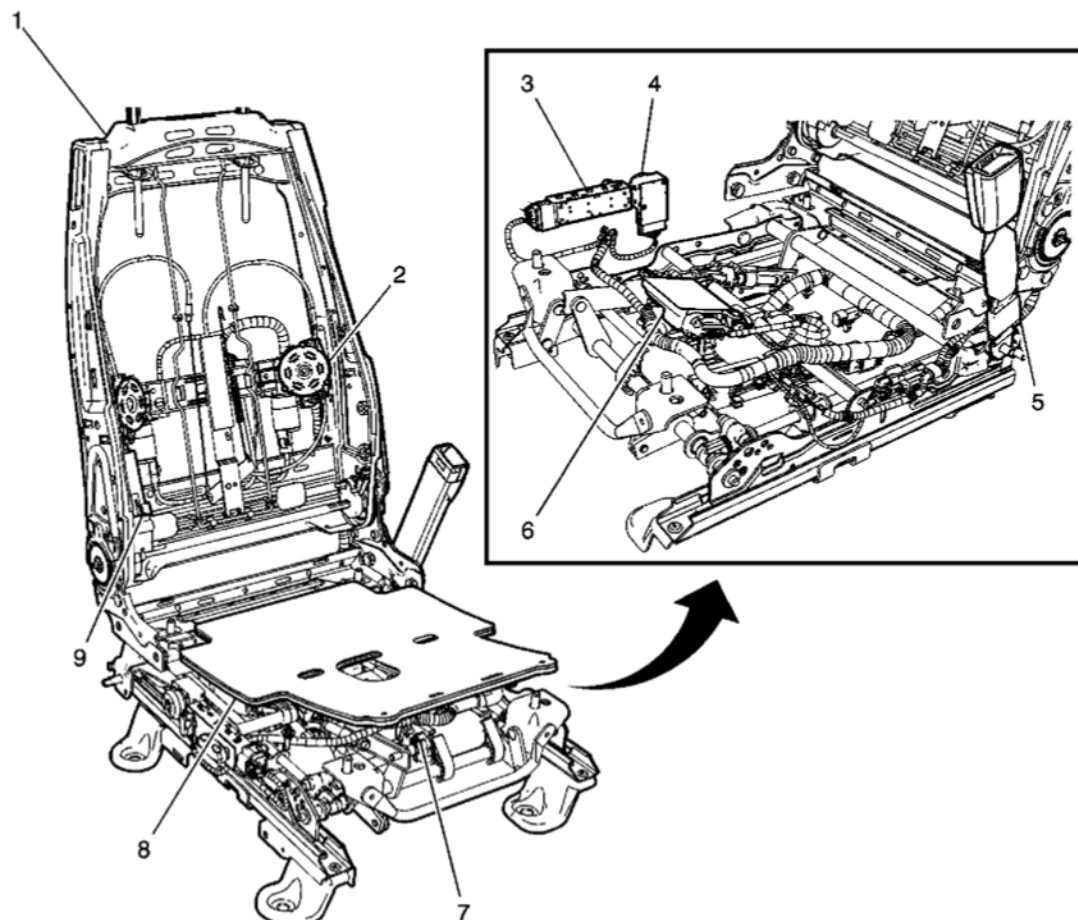


Fig. 8: Passenger Seat

Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 8

Callout	Component Name
1	Seat Frame
2	Lumbar Adjuster Assembly - Passenger (AN3)
3	Seat Adjuster Switch - Passenger
4	Seat Lumbar Switch - Passenger (AN3)
5	Seat Belt Buckle
6	Inflatable Restraint Front Passenger Presence System (PPS) Module
7	Seat Adjuster Assembly - Passenger
8	Inflatable Restraint Front Passenger Presence System (PPS) Sensor
9	Seat Recline Motor - Passenger (AN3)

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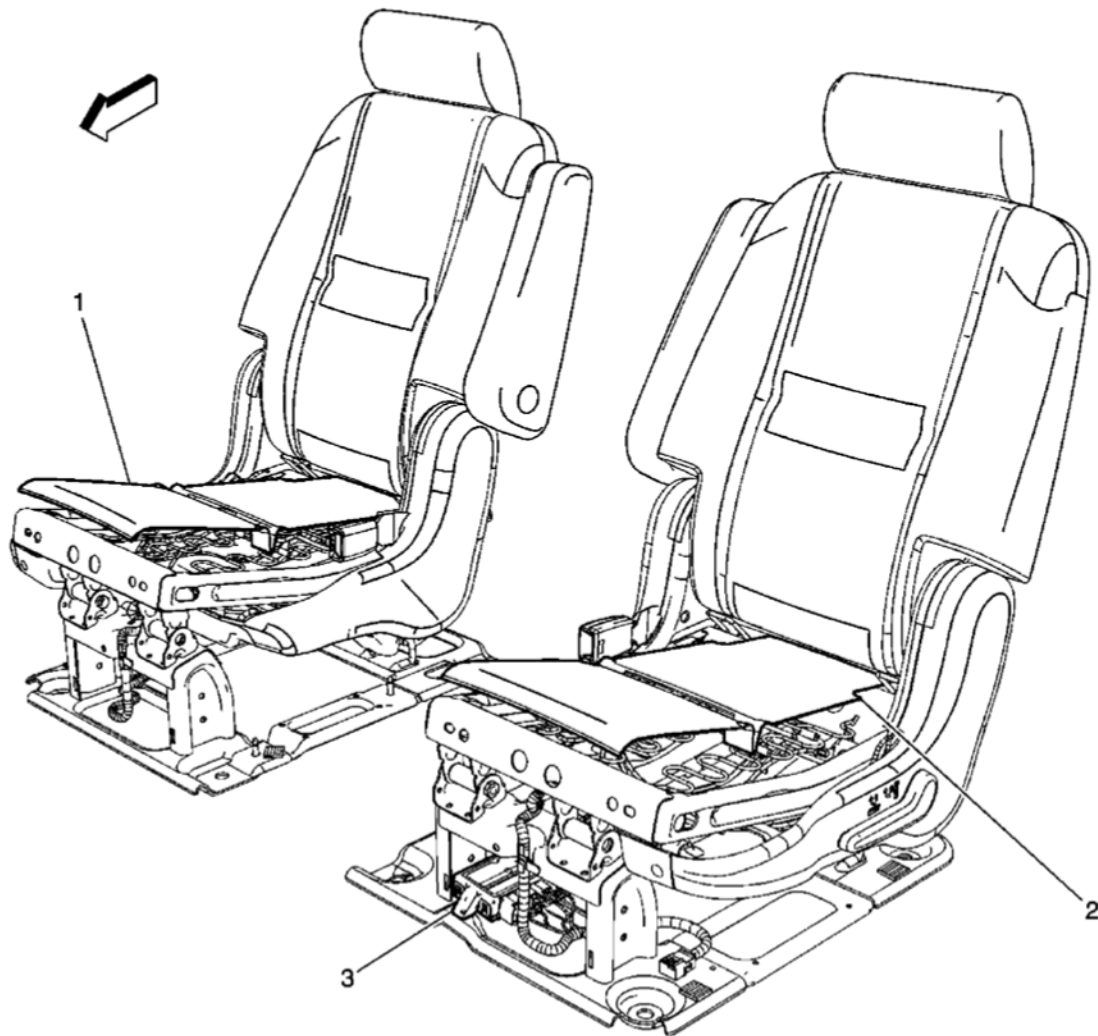


Fig. 9: Rear Seats

Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 9

Callout	Component Name
1	Heated Seat Element - RR
2	Heated Seat Element - LR
3	Heated Seat Module - Rear

VISUAL IDENTIFICATION

HEATED/COOLED SEAT CONNECTOR END VIEWS

Climate Control Seat Module C1 (KB6)

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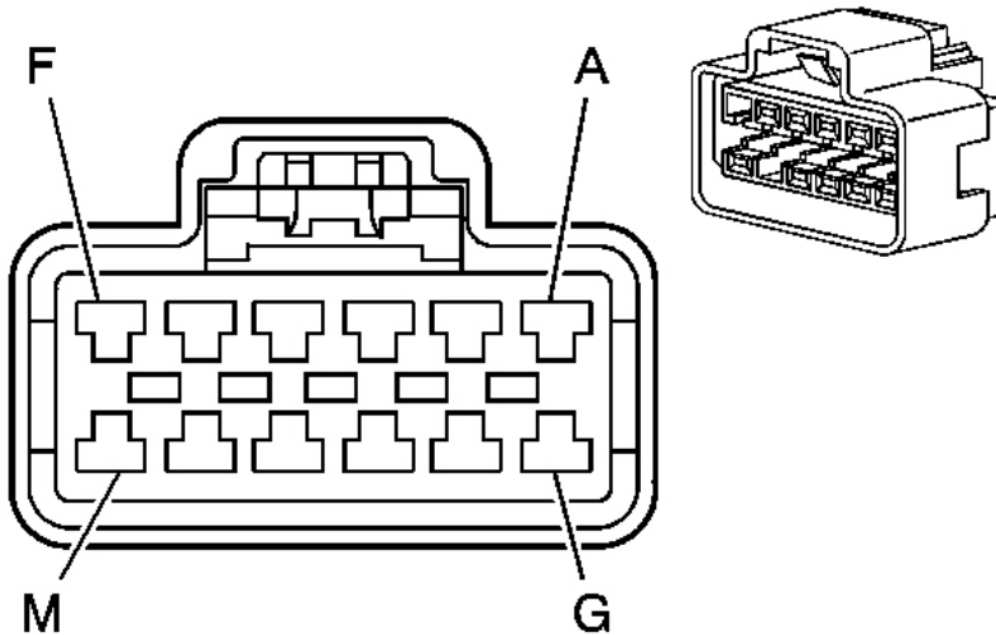


Fig. 10: Climate Control Seat Module C1 (KB6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Climate Control Seat Module C1 (KB6) Connector Parts Information

Connector Part Information

- OEM: 15326110
- Service: 15306171
- Description: 12-Way F 280 GT Series (BK)

Terminal Part Information

- Terminal/Tray: TBD
- Core/Insulation Crimp: TBD
- Release Tool/Test Probe: TBD

Climate Control Seat Module C1 (KB6) Connector Terminal Identification

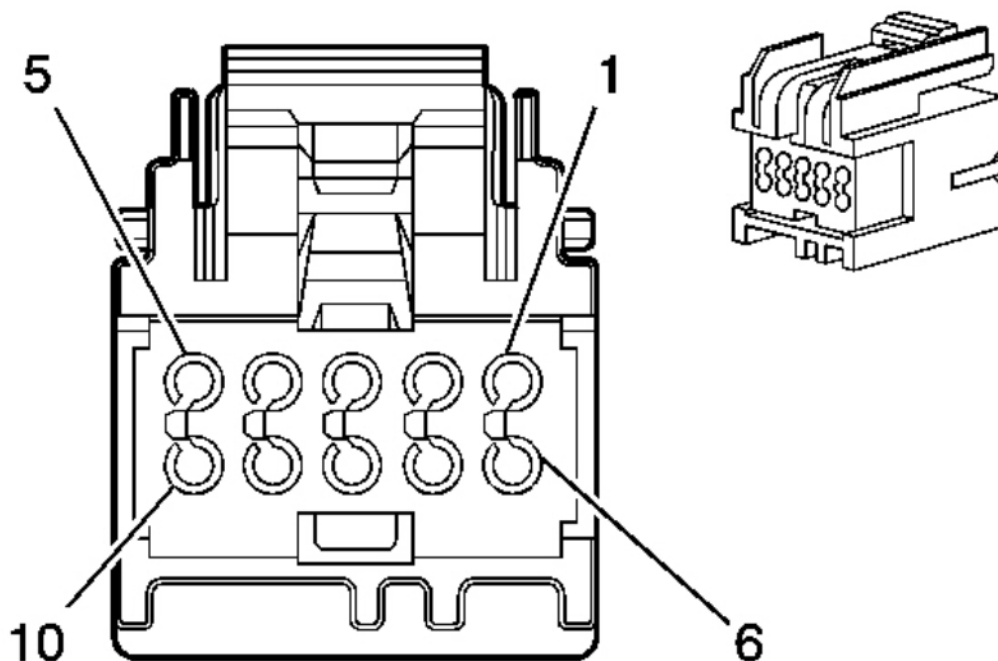
Pin	Wire Color	Circuit No.	Function
A	PK/BK	6199	Passenger Seat Cushion Heated/Cool Ventilation Module Heat Control
			Passenger Seat Cushion Heated/Cool

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B	WH/BK	6200	Ventilation Module Cool Control
C	YE	6197	Passenger Seat Back Heated/Cool Ventilation Module Heat Control
D	D-BU/WH	6198	Passenger Seat Back Heated/Cool Ventilation Module Cool Control
E	RD/WH	4740	Battery Positive Voltage
F	RD/WH	4640	Battery Positive Voltage
G	D-GN	6195	Driver Seat Cushion Heated/Cool Ventilation Module Heat Control
H	PU	6196	Driver Seat Cushion Heated/Cool Ventilation Module Cool Control
J	BN	6193	Driver Seat Back Heated/Cool Ventilation Module Heat Control
K	OG	6194	Driver Seat Back Heated/Cool Ventilation Module Cool Control
L	-	-	Not Used
M	BK	1250	Ground

Climate Control Seat Module C2 (KB6)



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Fig. 11: Climate Control Seat Module C2 (KB6) Connector End View
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Climate Control Seat Module C2 (KB6) Connector Parts Information

Connector Part Information

- OEM: 15431080
- Service: 88988292
- Description: 10-Way F Micro-Pack 64 Series (BK)

Terminal Part Information

- Terminal/Tray: TBD
- Core/Insulation Crimp: TBD
- Release Tool/Test Probe: TBD

Climate Control Seat Module C2 (KB6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	PK	239	Ignition 1 Voltage
2	GY	2434	Passenger Seat Cushion Temperature Sensor Signal
3	PK	2435	Low Reference
4	TN	2436	Passenger Seat Back Temperature Sensor Signal
5	TN	2482	Low Reference
6	-	-	Not Used
7	YE/BK	2079	Driver Seat Cushion Temperature Sensor Signal
8	YE	2080	Low Reference
9	BN	6193	Driver Seat Back Temperature Sensor Signal
10	OG	6194	Low Reference

Climate Control Seat Module C3 (KB6)

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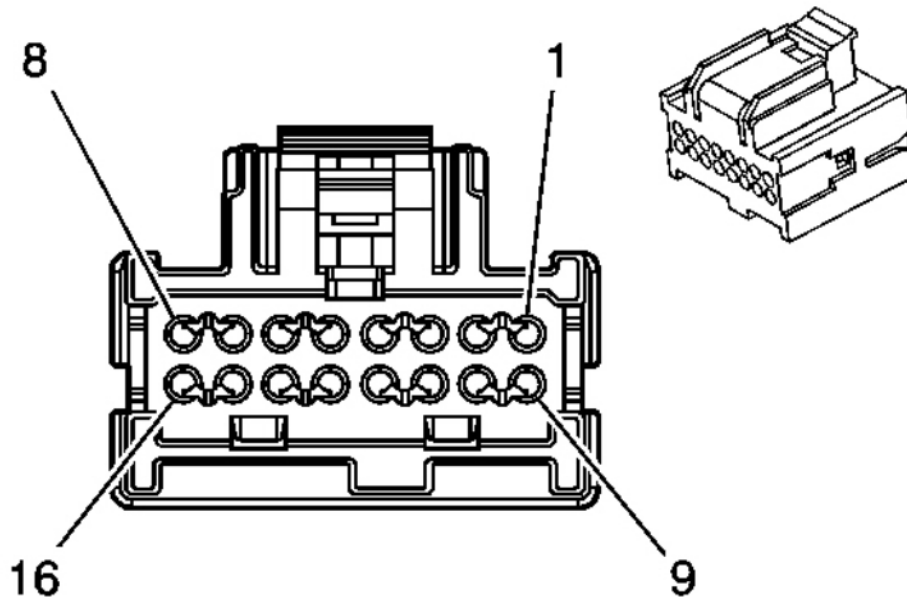


Fig. 12: Climate Control Seat Module C3 (KB6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Climate Control Seat Module C3 (KB6) Connector Parts Information

Connector Part Information

- OEM: 15394150
- Service: See Catalog
- Description: 16-Way F (BK)

Terminal Part Information

- Terminal/Tray: TBD
- Core/Insulation Crimp: TBD
- Release Tool/Test Probe: TBD

Climate Control Seat Module C3 (KB6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1-2	-	-	Not Used
3	D-BU	7012	Passenger Seat Cushion Blower Speed Control

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4	WH/BU	7011	Passenger Seat Back Blower Speed Control
5	-	-	Not Used
6	WH	5908	Right Heated/Cooled Seat Mode Signal
7	L-GN	5916	Low Reference
8	WH	5914	Passenger Seat Blower Voltage Reference
9	PU	6433	Serial Data
10	-	-	Not Used
11	OG	7009	Driver Seat Cushion Blower Speed Control
12	TN	7010	Driver Seat Back Blower Speed Control
13	-	-	Not Used
14	D-GN	5906	Left Heated/Cooled Seat Mode Signal
15	GY	5912	Low Reference
16	D-GN	5918	Driver Seat Blower Voltage Reference

Heated Seat Element - Driver Back (Except KB6)

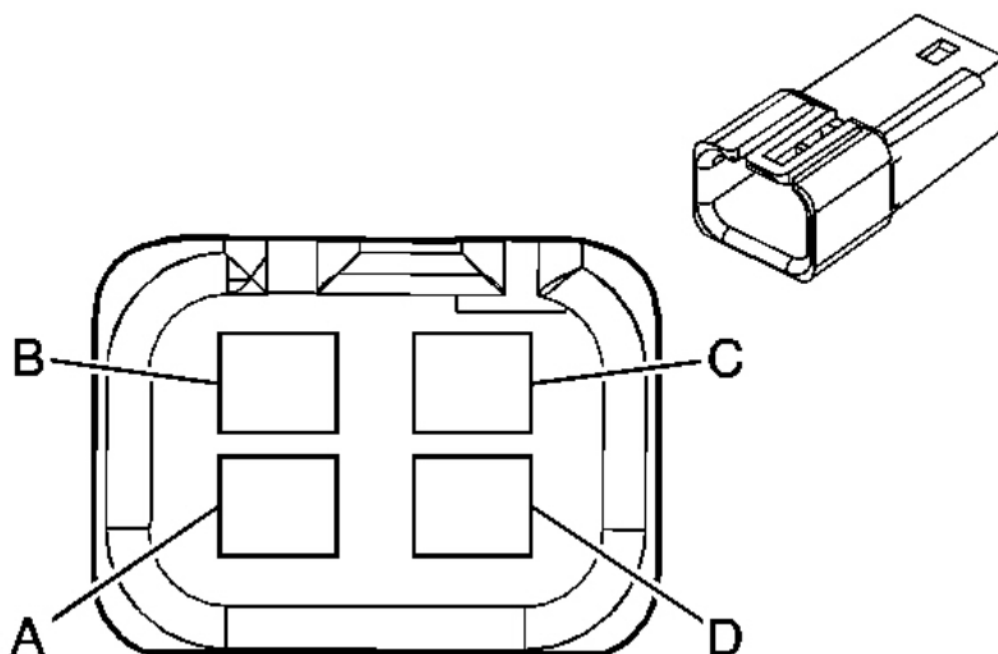


Fig. 13: Heated Seat Element - Driver Back (Except KB6) Connector End View
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Heated Seat Element - Driver Back (Except KB6) Connector Parts Information

Connector Part Information

- OEM: 12066498
- Service: 12085536
- Description: 4-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: Pins A, B - E/A
- Core/Insulation Crimp: Pins C, D - E/C
- Release Tool/Test Probe: 12094429/J-35616-3 (GY)

Heated Seat Element - Driver Back (Except KB6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	PK	2077	Heated Seat Cushion Element Supply Voltage
B	PU	2424	Ground
C	D-BU	2425	Driver Heated Seat Back Temperature Sensor Signal
D	PK	2426	Low Reference

Heated Seat Element - Driver Cushion (Except KB6)

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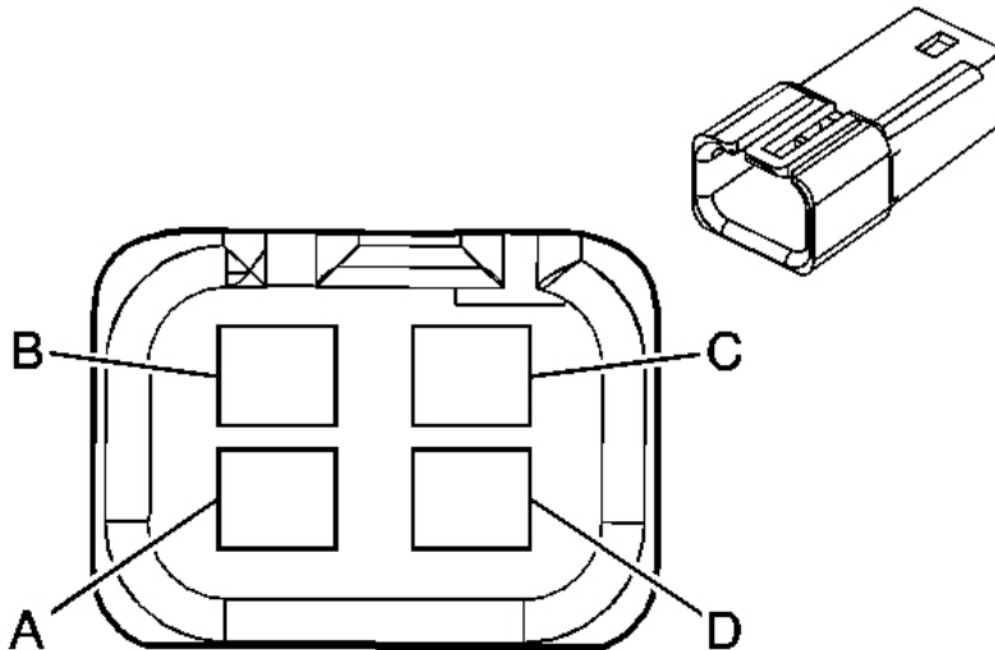


Fig. 14: Heated Seat Element - Driver Cushion (Except KB6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Heated Seat Element - Driver Cushion (Except KB6) Connector Parts Information

Connector Part Information

- OEM: 12066498
- Service: 12085536
- Description: 4-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: Pins A, B - E/A
- Core/Insulation Crimp: Pins C, D - E/C
- Release Tool/Test Probe: 12094429/J-35616-3 (GY)

Heated Seat Element - Driver Cushion (Except KB6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	PK	2077	Heated Seat Cushion Element Supply

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			Voltage
B	L-GN	2078	Ground
C	YE/BK	2079	Driver Heated Seat Cushion Temperature Sensor Signal
D	YE	2080	Low Reference

Heated Seat Element - LR (KA6)

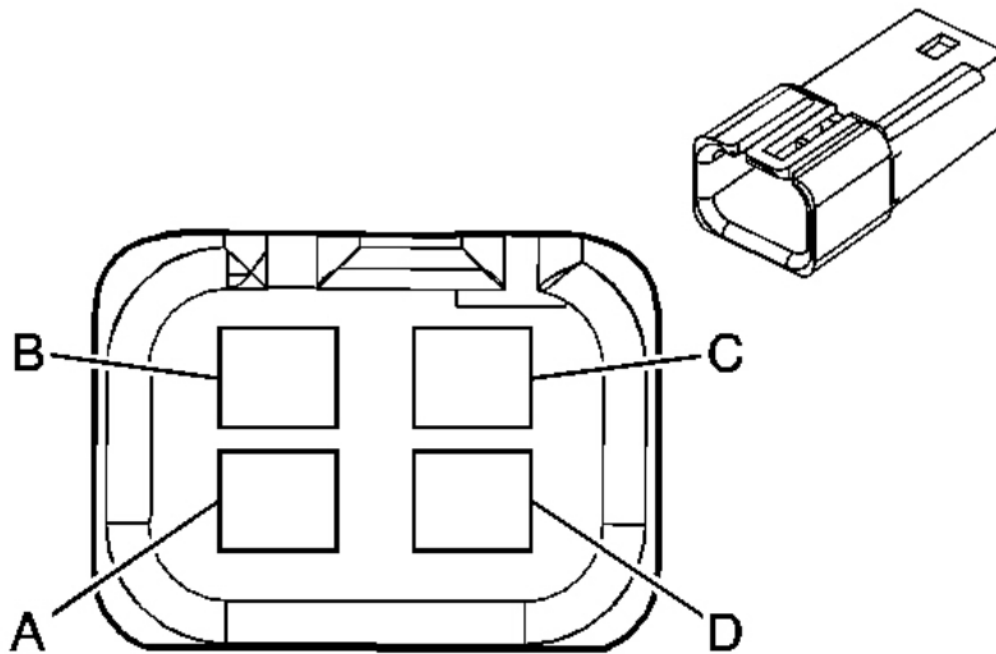


Fig. 15: Heated Seat Element - LR (KA6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Heated Seat Element - LR (KA6) Connector Parts Information

Connector Part Information

- OEM: 12066498
- Service: 12085536
- Description: 4-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: TBD

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- Core/Insulation Crimp: TBD
- Release Tool/Test Probe: TBD

Heated Seat Element - LR (KA6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	PK	2445	Heated Seat Element Supply Voltage
B	BN	2295	Ground
C	L-BU	2299	Left Rear Heated Seat Sensor Signal
D	D-BU	2298	Low Reference

Heated Seat Element - Passenger Back (Except KB6)

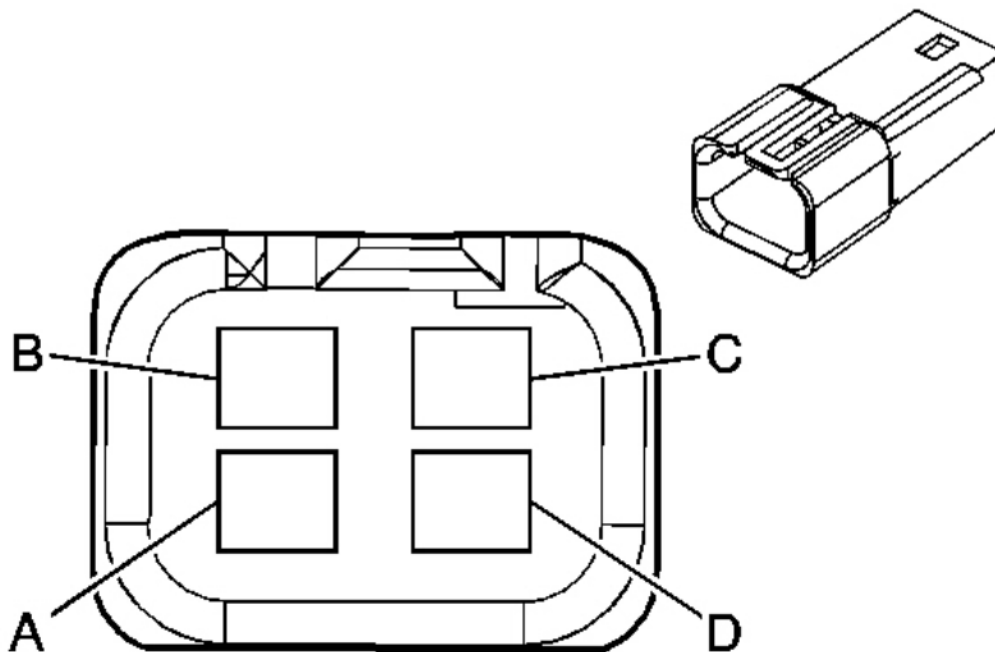


Fig. 16: Heated Seat Element - Passenger Back (Except KB6) Connector End View
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Heated Seat Element - Passenger Back (Except KB6) Connector Parts Information

Connector Part Information

- OEM: 12066498

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- Service: 12085536
- Description: 4-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: Pins A, B - E/A
- Core/Insulation Crimp: Pins C, D - E/C
- Release Tool/Test Probe: 12094429/J-35616-3 (GY)

Heated Seat Element - Passenger Back (Except KB6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	D-BU	2479	Heated Seat Cushion Element Supply Voltage
B	L-BU	2433	Ground
C	TN	2436	Passenger Heated Seat Back Temperature Sensor Signal
D	TN/BK	2482	Low Reference

Heated Seat Element - Passenger Cushion (Except KB6)

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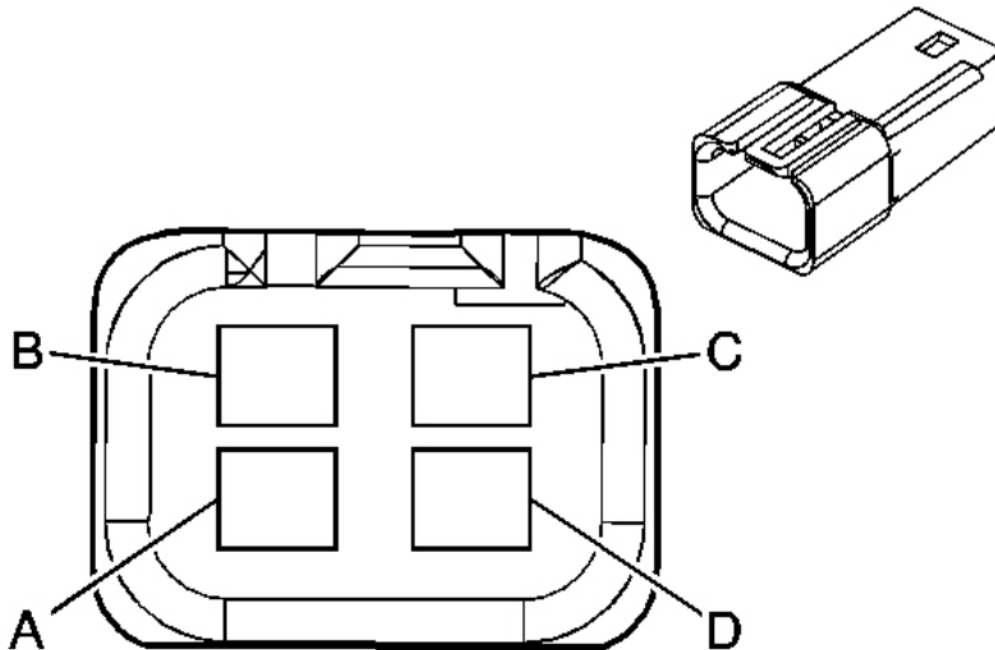


Fig. 17: Heated Seat Element - Passenger Cushion (Except KB6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Heated Seat Element - Passenger Cushion (Except KB6) Connector Parts Information

Connector Part Information

- OEM: 12066498
- Service: 12085536
- Description: 4-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: Pins A, B - E/A
- Core/Insulation Crimp: Pins C, D - E/C
- Release Tool/Test Probe: 12094429/J-35616-3 (GY)

Heated Seat Element - Passenger Cushion (Except KB6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	D-BU	2479	Heated Seat Cushion Element Supply

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			Voltage
B	PK	2480	Ground
C	GY	2434	Passenger Heated Seat Cushion Temperature Sensor Signal
D	PK	2435	Low Reference

Heated Seat Element - RR (KA6)

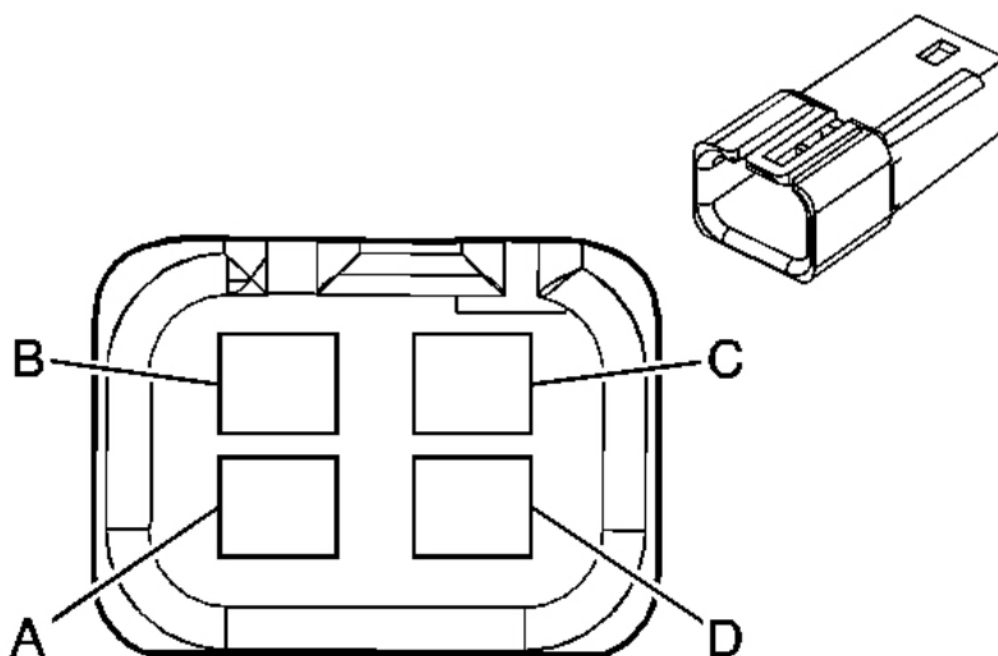


Fig. 18: Heated Seat Element - RR (KA6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Heated Seat Element - RR (KA6) Connector Parts Information

Connector Part Information

- OEM: 12066498
- Service: 12085536
- Description: 4-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: TBD

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- Core/Insulation Crimp: TBD
- Release Tool/Test Probe: TBD

Heated Seat Element - RR (KA6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	D-BU	2455	Heated Seat Element Supply Voltage
B	BN	2297	Ground
C	OG	2300	Right Rear Heated Seat Sensor Signal
D	WH/BK	2301	Low Reference

Heated Seat Module - Rear C1 (KA6)

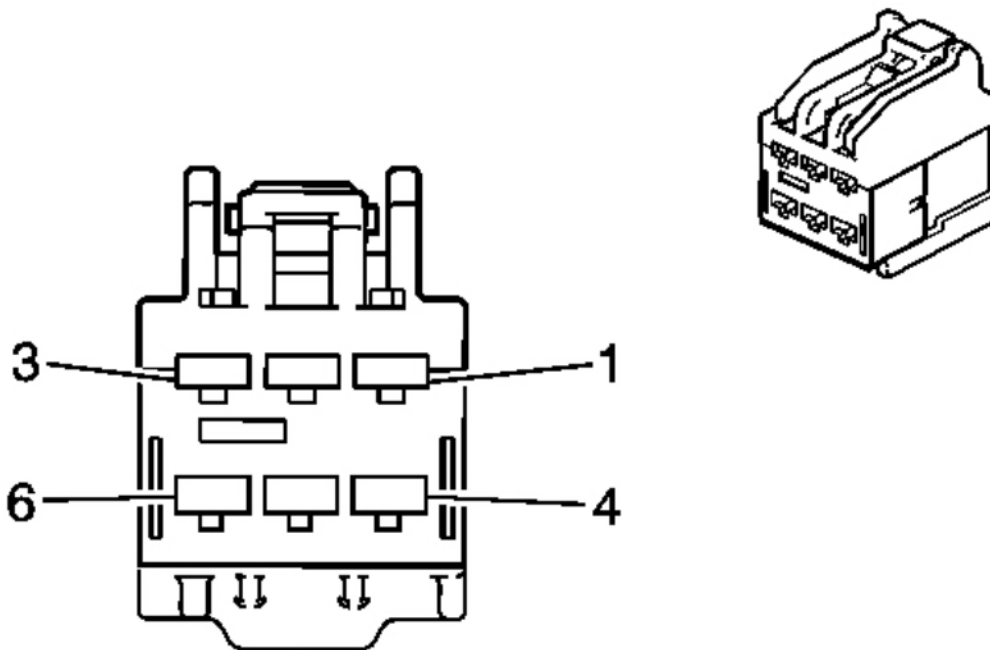


Fig. 19: Heated Seat Module - Rear C1 (KA6) Connector End View
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Heated Seat Module - Rear C1 (KA6) Connector Parts Information

Connector Part Information

- OEM: 6098-4606

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- Service: 15134095
- Description: 6-Way F (BK)

Terminal Part Information

- Terminal/Tray: 8100-4444/22
- Core/Insulation Crimp: 2/A
- Release Tool/Test Probe: 15315247/J-35616-35 (VT)

Heated Seat Module - Rear C1 (KA6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	-	-	Not Used
2	BN	2297	Ground
3	PK	2455	Heated Seat Element Supply Voltage
4	-	-	Not Used
5	BN	2295	Ground
6	D-BU	2445	Heated Seat Element Supply Voltage

Heated Seat Module - Rear C2 (KA6)

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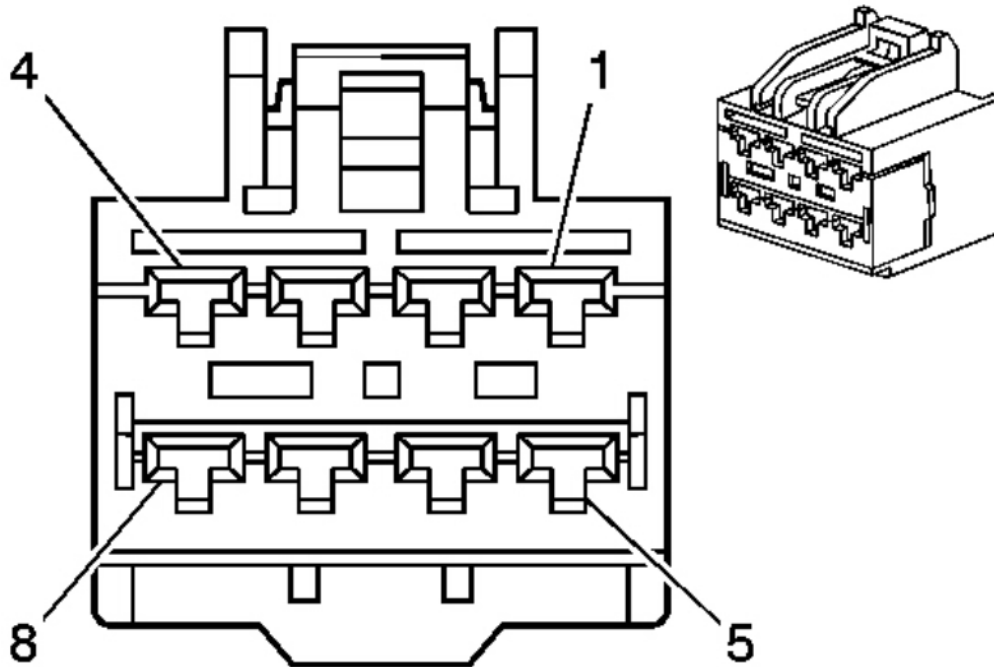


Fig. 20: Heated Seat Module - Rear C2 (KA6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Heated Seat Module - Rear C2 (KA6) Connector Parts Information

Connector Part Information

- OEM: 6098-4713
- Service: 88988652
- Description: 8-Way F (BK)

Terminal Part Information

- Pins: TBD
- Terminal/Tray: TBD
- Core/Insulation Crimp: TBD
- Release Tool/Test Probe: TBD

Heated Seat Module - Rear C2 (KA6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function

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1	RD/WH	4840	Battery Positive Voltage
2	BK	1150	Ground
3	-	-	Not Used
4	BK	1150	Ground
5	-	-	Not Used
6	D-BU	2298	Low Reference
7	-	-	Not Used
8	WH/BK	2301	Low Reference

Heated Seat Module - Rear C3 (KA6)

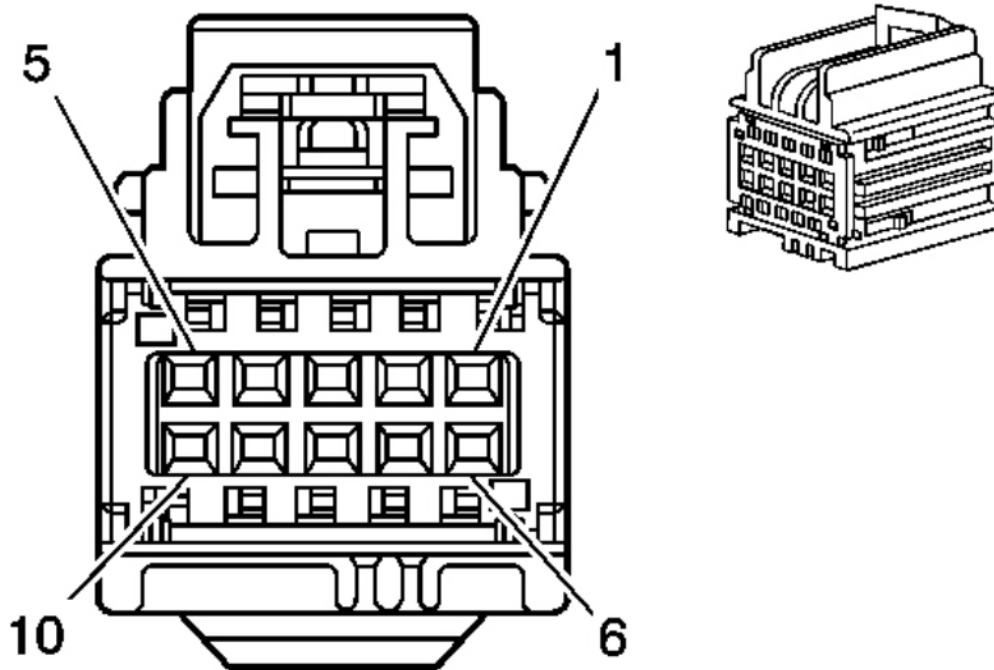


Fig. 21: Heated Seat Module - Rear C3 (KA6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Heated Seat Module - Rear C3 (KA6) Connector Parts Information

Connector Part Information

- OEM: 7283-9040-30
- Service: 15127042

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- Description: 10-Way F (BK)

Terminal Part Information

- Pins: TBD
- Terminal/Tray: TBD
- Core/Insulation Crimp: TBD
- Release Tool/Test Probe: TBD

Heated Seat Module - Rear C3 (KA6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1-5	-	-	Not Used
6	D-GN	5060	Low Speed GMLAN Serial Data
7-10	-	-	Not Used

Heated Seat Module - Rear C4 (KA6)

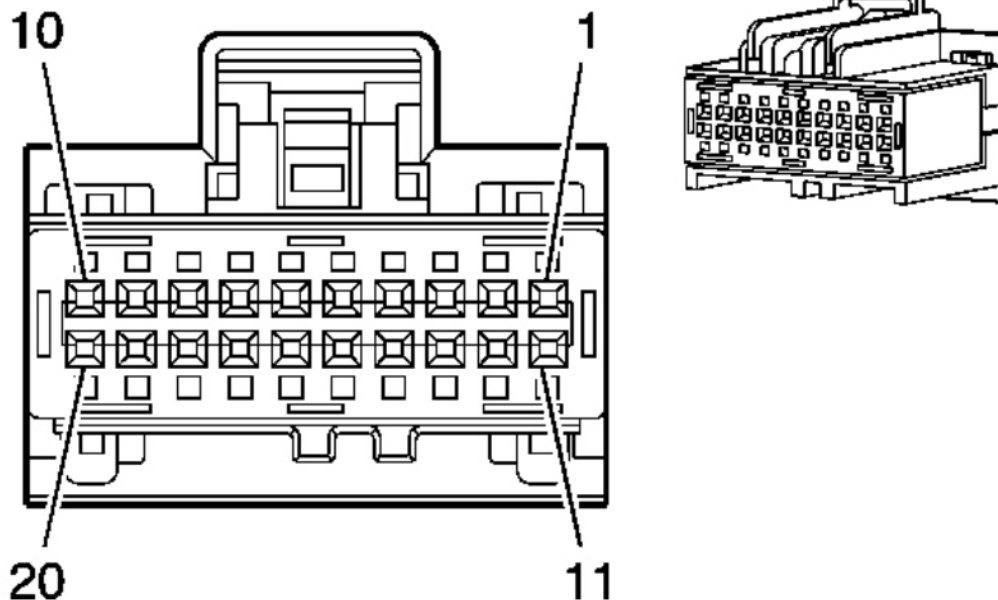


Fig. 22: Heated Seat Module - Rear C4 (KA6) Connector End View
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Heated Seat Module - Rear C4 (KA6) Connector Parts Information

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Connector Part Information

- OEM: 31410-1200
- Service: 15126711
- Description: 20-Way F (BK)

Terminal Part Information

- Terminal/Tray:TBD
- Core/Insulation Crimp: TBD
- Release Tool/Test Probe: TBD

Heated Seat Module - Rear C4 (KA6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	-	-	Not Used
2	BK	1150	Ground
3-8	-	-	Not Used
9	L-BU	2299	Left Rear Heated Seat Sensor Signal
10-19	-	-	Not Used
20	OG	2300	Right Rear Heated Seat Sensor Signal

Seat Back Ventilation Heat & Cool Module - Driver (KB6)

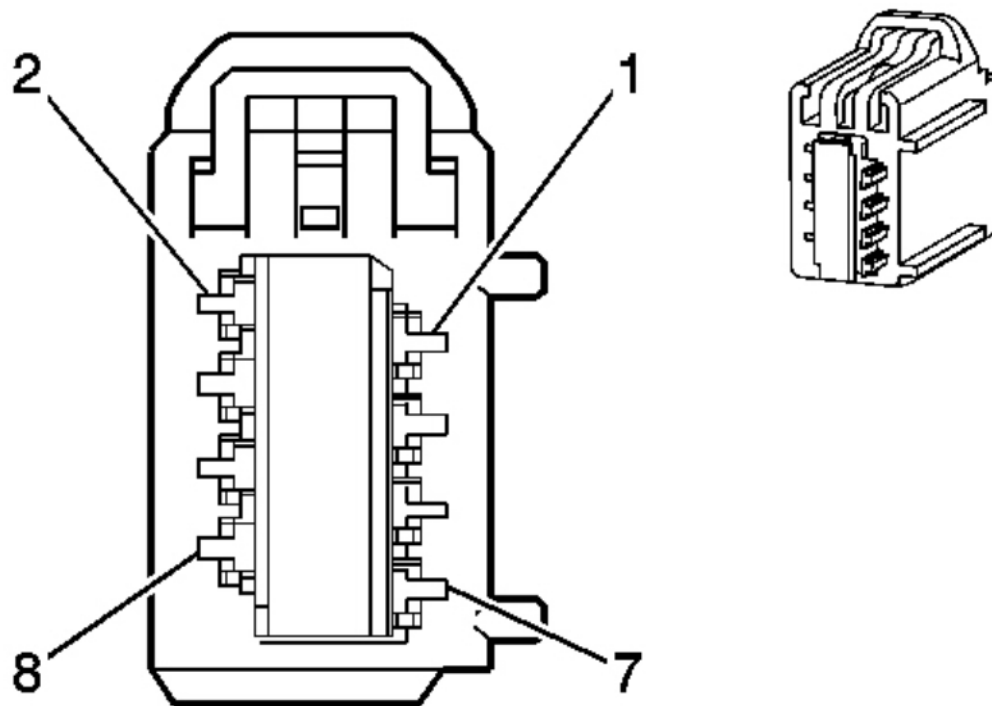


Fig. 23: Seat Back Ventilation Heat & Cool Module - Driver (KB6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Seat Back Ventilation Heat & Cool Module - Driver (KB6) Connector Parts Information

Connector Part Information

- OEM: E3575-001
- Service: See Catalog
- Description: 8-Way F 1.5mm Unsealed (BK)

Terminal Part Information

- Terminal/Tray: TBD
- Core/Insulation Crimp: TBD
- Release Tool/Test Probe: TBD

Seat Back Ventilation Heat & Cool Module - Driver (KB6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function

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1	BN	6193	Driver Seat Back Heated/Cool Ventilation Module Heat Control
2	D-GN	5918	Driver Seat Blower Voltage Reference
3	OG	6194	Driver Seat Back Heated/Cool Ventilation Module Cool Control
4	GY	5912	Low Reference
5	D-BU	2425	Driver Seat Back Temperature Sensor Signal
6	-	-	Not Used
7	TN	7010	Driver Seat Back Blower Speed Control
8	PK	2426	Low Reference

Seat Back Ventilation Heat & Cool Module - Passenger (KB6)

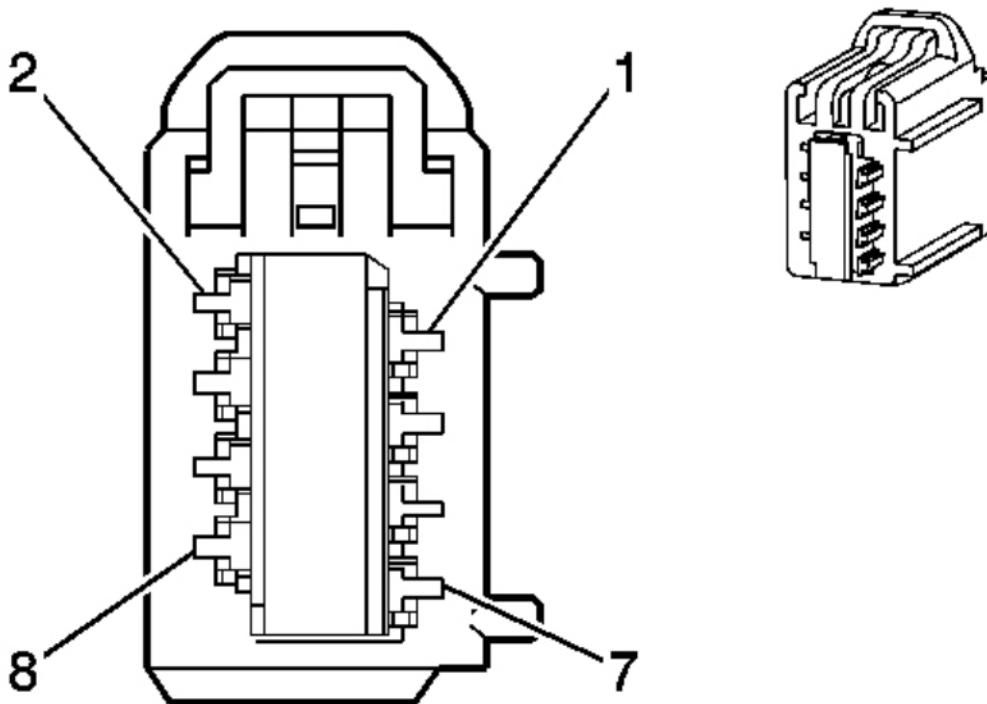


Fig. 24: Seat Back Ventilation Heat & Cool Module - Passenger (KB6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Seat Back Ventilation Heat & Cool Module - Passenger (KB6) Connector Parts Information

Connector Part Information

2007 Cadillac Escalade

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- OEM: E3575-001
- Service: See Catalog
- Description: 8-Way F 1.5mm Unsealed (BK)

Terminal Part Information

- Terminal/Tray: TBD
- Core/Insulation Crimp: TBD
- Release Tool/Test Probe: TBD

Seat Back Ventilation Heat & Cool Module - Passenger (KB6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	YE	6197	Passenger Seat Back Heated/Cool Ventilation Module Heat Control
2	WH	5194	Passenger Seat Blower Voltage Reference
3	D-BU/WH	6198	Passenger Seat Back Heated/Cool Ventilation Module Cool Control
4	L-GN	5916	Low Reference
5	TN	2436	Passenger Seat Back Temperature Sensor Signal
6	-	-	Not Used
7	WH/BU	7011	Passenger Seat Back Blower Speed Control
8	TN	2482	Low Reference

Seat Cushion Ventilation Heat and Cool Module - Driver (KB6)

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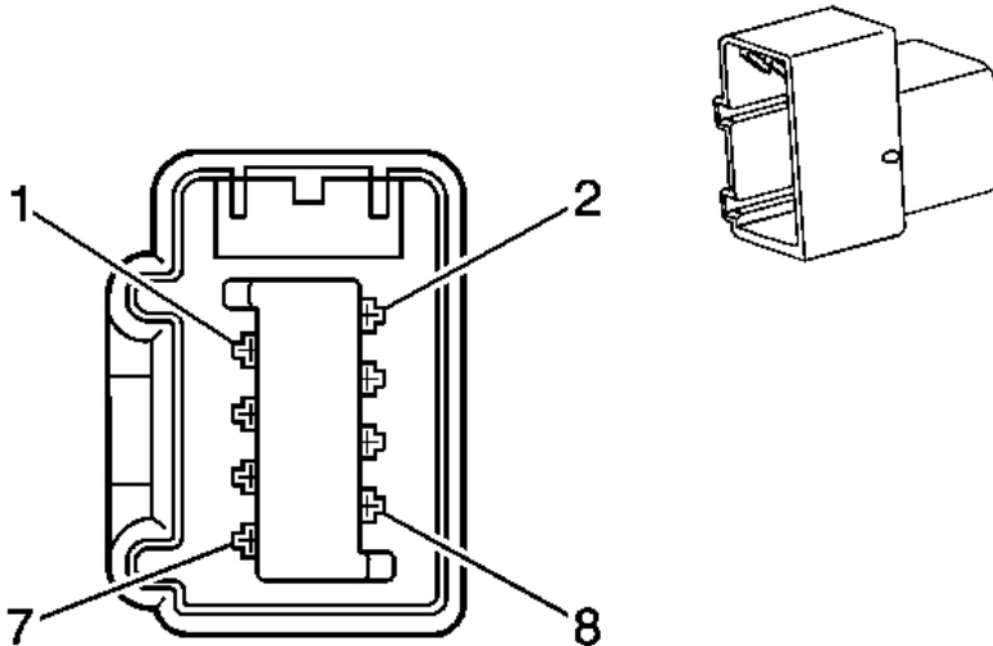


Fig. 25: Seat Cushion Ventilation Heat and Cool Module - Driver (KB6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Seat Cushion Ventilation Heat and Cool Module - Driver (KB6) Connector Parts Information

Connector Part Information

- OEM: E3578-003
- Service: See Catalog
- Description: 8-Way M (BK)

Terminal Part Information

- Terminal/Tray: TBD
- Core/Insulation Crimp: TBD
- Release Tool/Test Probe: TBD

Seat Cushion Ventilation Heat and Cool Module - Driver (KB6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	D-GN	6195	Driver Seat Cushion Heated/Cool Ventilation Module Heat Control

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2	D-GN	5198	Driver Seat Blower Voltage Reference
3	PU	6196	Driver Seat Cushion Heated/Cool Ventilation Module Cool Control
4	GY	5912	Low Reference
5	YE/BK	2079	Driver Seat Cushion Temperature Sensor Signal
6	-	-	Not Used
7	OG	7009	Driver Seat Cushion Blower Speed Control
8	YE	2080	Low Reference

Seat Cushion Ventilation Heat & Cool Module - Passenger (KB6)

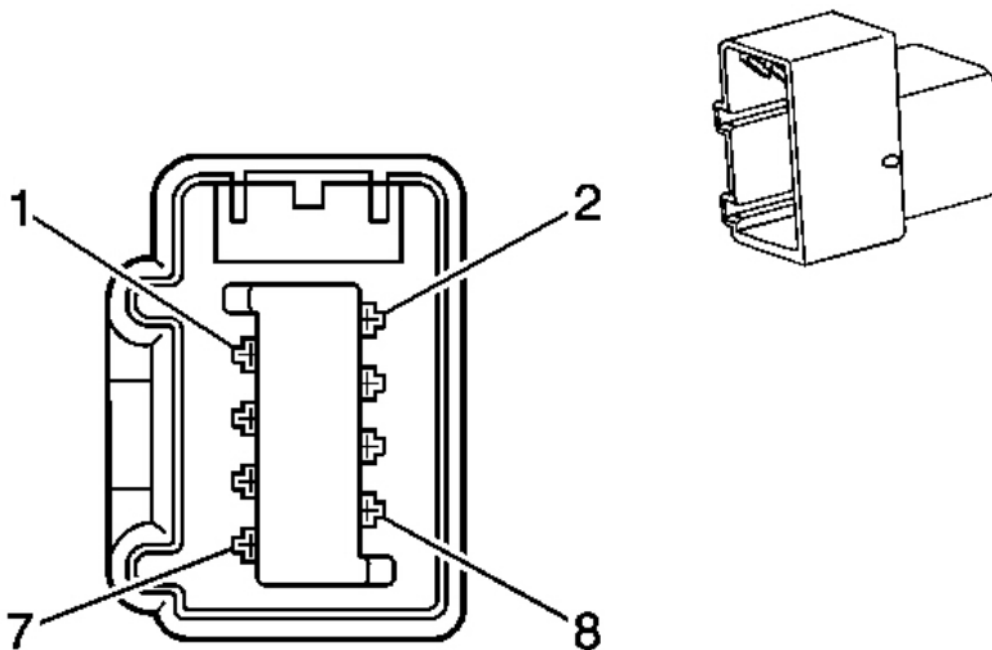


Fig. 26: Seat Cushion Ventilation Heat & Cool Module - Passenger (KB6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Seat Cushion Ventilation Heat & Cool Module - Passenger (KB6) Connector Parts Information

Connector Part Information

- OEM: E3578-003
- Service: See Catalog

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- Description: 8-Way M (BK)

Terminal Part Information

- Terminal/Tray: TBD
- Core/Insulation Crimp: TBD
- Release Tool/Test Probe: TBD

Seat Cushion Ventilation Heat & Cool Module - Passenger (KB6) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	PK/BK	6199	Passenger Seat Cushion Heated/Cool Ventilation Module Heat Control
2	WH	5914	Passenger Seat Blower Voltage Reference
3	WH/BK	6200	Passenger Seat Cushion Heated/Cool Ventilation Module Cool Control
4	L-GN	5916	Low Reference
5	GY	2434	Passenger Seat Cushion Temperature Sensor Signal
6	-	-	Not Used
7	D-BU	7012	Passenger Seat Cushion Blower Speed Control
8	PK	2435	Low Reference

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
<u>DTC B1913 or B1918</u>	Seat Heater Switch Circuit
<u>DTC B1925 or B2170</u>	Seat Heater Sensor Circuit Short
<u>DTC B1935 or B2180</u>	Seat Back Heater Circuit
<u>DTC B2345 (Front Seat)</u>	Seat Heater Disable Circuit
<u>DTC B2345 (Rear Seat)</u>	Seat Heater Disable Circuit
<u>DTC B2425 or B2430</u>	Seat Heater Cushion Circuit
<u>DTC B2435 or B2440</u>	Seat Back Heater Sensor Circuit Short
<u>DTC B2508 or B2509 (Front Seat)</u>	Seat Heater Relay Circuit Short
<u>DTC B2508 or B2509 (Rear Seat)</u>	Seat Heater Relay Circuit Short

DIAGNOSTIC STARTING POINT - SEATS

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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.

SCAN TOOL DATA LIST

Driver Position Module

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF			
Driver Seat HVC Mode	Seat 1 HVC Data	Off/Back & Cushion/Back Only/Cool	Off
Driver Seat HVC Level	Seat 1 HVC Data	High/Medium/Low	High
Passenger Seat HVC Mode	Seat 2 HVC Data	Off/Back & Cushion/Back Only/Cool	Off
Passenger Seat HVC Level	Seat 2 HVC Data	High/Medium/Low	High

Door Modules

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF			
Seat Back Heat Mode Ind. Cmd.	Outputs	Off/On	Off
Seat Back Heat Mode Sw.	Inputs	Inactive/Active	Inactive
Seat Heat High Ind. Cmd.	Outputs	Off/On	Off
Seat Heat Low Ind. Cmd.	Outputs	Off/On	Off
Seat Heat Medium Ind. Cmd.	Outputs	Off/On	Off
Seat Heat Mode Cmd.	Outputs	Off/On	Off
Seat Heat Mode Sw.	Inputs	Inactive/Active	Inactive

HVAC Control Module

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF			
Driver Heated Seat Sw.	Inputs	Active/Inactive	Inactive
Pass. Heated Seat Sw.	Inputs	Inactive/Active	Inactive

Rear Heated Seat Module

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
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Operating Conditions: Ignition ON/Engine OFF

Left Rear Seat HVC Mode	Seat 1 HVC Data	Off/Back & Cushion	Off
Left Rear Seat HVC Level	Seat 1 HVC Data	High/Medium/Low	High
Left Rear Seat Cushion Heat Status	Seat 1 HVC Data	Inactive/Active	Inactive
Seat Heat Supply Voltage	Seat 1 HVC Data	Inactive/Active	Inactive
Right Rear Seat HVC Mode	Seat 2 HVC Data	Off/Back & Cushion	Off
Right Rear Seat HVC Level	Seat 2 HVC Data	High/Medium/Low	High
Right Rear Seat Cushion Heat Status	Seat 2 HVC Data	Inactive/Active	Inactive
Seat Heat Supply Voltage	Seat 2 HVC Data	OFF/ON	Off

Rear HVAC/RSA

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF			
Left Rear Heated Seat Switch	Data Display	Active/Inactive	Inactive
Right Rear Heated Seat Switch	Data Display	Active/Inactive	Inactive

SCAN TOOL DATA DEFINITIONS

Driver Position Module

Driver or Passenger Seat HVC Mode

The scan tool displays the commanded state of the heated seat or the heated cooled seat.

Driver or Passenger Seat HVC Level

The scan tool displays the commanded state of the seat temperature setting during any of the heat or cool modes.

Door Modules

Seat Heat High Ind. Cmd.

The scan tool displays the indicator command received from the memory seat module.

Seat Heat Low Ind. Cmd.

The scan tool displays the indicator command received from the memory seat module.

Seat Heat Medium Ind. Cmd.

The scan tool displays the indicator command received from the memory seat module.

Seat Heat Mode Cmd.

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The scan tool displays the seat heat mode indicator command received from the memory seat module.

Seat Back Heat Mode Sw.

The scan tool displays the current state of the heated seat back switch input to the door module.

Seat Heat Mode Sw.

The scan tool displays the current state of the heated seat switch input to the door module.

HVAC Control Module

Driver Heated Seat SW.

The scan tool will display Active while any of the driver heated cooled seat switches are pressed.

Pas. Heated Seat Sw.

The scan tool will display Active while any of the Passenger heated cooled seat switches are pressed.

Rear Heated Seat Module

Left or Right Rear Seat HVC Mode

The scan tool displays Back & Cushion whenever the seat cushion heater is commanded on.

Left or Right Rear Seat HVC Level

The scan tool displays the commanded state of the seat temperature setting.

Left or Right Rear Seat Cushion Heat Status

The scan tool displays Active whenever the seat cushion heater is commanded on.

Seat Heat Supply Voltage

The scan tool displays Active whenever the seat cushion heater is commanded on.

Rear HVAC/RSA

Left Rear Heated Seat Switch

The scan tool will display Active while the left rear heated seat switch is pressed.

Right Rear Heated Seat Switch

The scan tool will display Active while the right rear heated seat switch is pressed.

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DTC B1913 OR B1918

Circuit Description

The heated seat switches are momentary contact switches and are inputs to the driver and passenger door switches. A ground circuit is connected to the switch assembly through the door switch, and when a heated seat switch is pressed and released a brief switch signal is supplied to the door switch. Whenever the door module receives an active heated seat switch input, the active switch signal is sent to the memory seat module as a GMLAN message. The memory seat module determines the heated seat mode based on the switch messages and sends a message to the door switch to display the heated seat indicators as necessary.

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B1913 00 Seat Heater Switch 1 Circuit High
- DTC B1918 00 Seat Heater Switch 2 Circuit High

Conditions for Running the DTC

The door module must be powered and cannot have B1327 - Battery Voltage Low or B1328 - Battery Voltage High set as an active DTC for this DTC to set.

Conditions for Setting the DTC

If the door switch detects that a heated seat switch input circuit is active for 30 continuous seconds, the switch will be considered shorted and the DTC will set.

Action Taken When the DTC Sets

After the initial heated seat activation, no other heated seat switch activations shall be recognized as a result of this switch circuit being active.

Conditions for Clearing the DTC

The DTC automatically clears when the switch circuit setting the DTC is no longer active.

Test Description

The number below refers to the step number on the diagnostic table.

DTC B1913 or B1918

Step	Action	Yes	No
Schematic Reference: <u>Heated/Cooled Seat Schematics</u> Connector End View Reference: <u>Heated/Cooled Seat Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?		Go to Diagnostic System Check -

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		Go to Step 2	<u>Vehicle</u>
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, observe the appropriate Seat Mode Sw. parameter in the appropriate door switch Input data list. Does the scan tool display OFF?	Go to Step 3	Go to Step 4
3	1. Activate the suspect heated seat switch. 2. With a scan tool, observe the appropriate Seat Mode Sw. parameter. Does the suspect Seat Mode Sw. parameter change state?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 4
4	1. Turn OFF the ignition. 2. Disconnect the heated seat switch connector. 3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, observe the appropriate heated seat Sw. parameter. Does the scan tool display OFF?	Go to Step 6	Go to Step 5
5	Inspect for poor connections at the harness connector of the door switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u>. Did you find and correct the condition?	Go to Step 9	Go to Step 7
6	Inspect for poor connections at the harness connector of the heated seat switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u>. Did you find and correct the condition?	Go to Step 9	Go to Step 8
7	Replace the door switch. Refer to <u>Control Module References</u> for replacement, setup, and programming. Did you complete the replacement?	Go to Step 9	-
8	Replace the heated seat switch. Refer to <u>Heated Seat Switch Replacement - Front (w/o KB6)</u>. Did you complete the replacement?	Go to Step 9	-
9	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC, as specified in the supporting text. Does the DTC reset?	Go to Step 2	System OK

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DTC B1925 OR B2170

DTC Descriptors

DTC B1925 02

Left Seat Heater Cushion Sensor Circuit Shorted to Ground

DTC B2170 02

Right Seat Heater Cushion Sensor Circuit Shorted to Ground

Diagnostic Fault Information

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

DTC B1925 or B2170

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Heated Seat Cushion Element Control	B2508 02 B2345 00	B2425 0C	B2508 01 B2345 00	B2425 0B
Left Heated Seat Cushion Element Supply Voltage	B2508 02	B2425 0C	B2508 01 B2345 00	B2425 0B
Left Heated Seat Cushion Temperature Low Reference	-	B2425 04 B2425 1F	-	-
Left Heated Seat Cushion Temperature Sensor Signal	B1925 02 B2425 1F	B2425 04 B2425 1F	B2425 04 B2425 1F	-
Right Heated Seat Cushion Element Control	B2508 02 B2345 00	B2430 0C	B2508 01 B2345 00	B2430 0B
Right Heated Seat Cushion Element Supply Voltage	B2508 02	B2430 0C	B2508 01 B2345 00	B2430 0B
Right Heated Seat Cushion Temperature Low Reference	-	B2430 04 B2430 1F	-	-
Right Heated Seat Cushion Temperature Sensor Signal	B2170 02 B2430 1F	B2430 04 B2430 1F	B2430 04 B2430 1F	-

Circuit/System Description

The heated seat temperature sensor that set this diagnostic trouble code (DTC) is located in the seat cushion just under the seat cover with the seat heating element. The temperature sensor is a 2 wire thermistor and resistance through the sensor varies with temperature. The signal circuit is referenced from 5 volts within the module and the temperature of the seat surface determines the signal circuit voltage. Once the seat reaches the set temperature, the module will then cycle the control circuits of the heating elements ON and OFF in order to maintain the desired seat temperature based on the feedback voltage from the sensors.

Conditions for Running the DTC

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The memory seat module or rear heated seat module must be powered.

Conditions for Setting the DTC

The temperature sensor voltage drops below 0.80 volt for more than 1 second.

Action Taken When the DTC Sets

The heated seat cushion function for the affected seat will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear 3 seconds after the reference voltage returns to normal operating range, and the ignition is cycled OFF then back to ACC or RUN.
- A history DTC will clear after 50 ignition cycles or with a scan tool using the clear DTCs function.

Reference Information

Schematic Reference

Heated/Cooled Seat Schematics

Connector End View Reference

Heated/Cooled Seat Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Testing

1. Ignition OFF, disconnect the MSM or rear heated seat module harness connector C5 for driver or front passenger seat or C4 for a rear passenger seat.
2. Test for a minimum of 850 ohms of resistance from the signal circuit to ground.
 - If less than 850 ohms, test the signal circuit for a short to ground. If the circuit tests normal, replace the seat cushion heater element.

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3. If all circuits test normal, replace the MSM or rear heated seat module.

Repair Procedures

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

- **Seat Cushion Heater Element Replacement - Front**
- **Rear Seat Cushion Heater Replacement**
- **Control Module References** for the MSM and rear heated seat module replacement, setup, and programming.

DTC B1935 OR B2180

DTC Descriptors

DTC B1935 04

Left Seat Back Heater Circuit Open

DTC B1935 0A

Left Seat Back Heater Circuit Rate of Change Below Threshold

DTC B1935 0B

Left Seat Back Heater Circuit Current Above Threshold

DTC B1935 0C

Left Seat Back Heater Circuit Current Below Threshold

DTC B1935 1F

Left Seat Back Heater Circuit Intermittent

DTC B2180 04

Right Seat Back Heater Circuit Open

DTC B2180 0A

Right Seat Back Heater Circuit Rate of Change Below Threshold

DTC B2180 0B

Right Seat Back Heater Circuit Current Above Threshold

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DTC B2180 0C

Right Seat Back Heater Circuit Current Below Threshold

DTC B2180 1F

Right Seat Back Heater Circuit Intermittent

Diagnostic Fault Information

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

DTC B1935 or B2180

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Heated Seat Back Element Control	B2508 02 B2345 00	B1935 0C	B2508 01 B2345 00	B1935 0B
Left Heated Seat Back Element Supply Voltage	B2508 02	B1935 0C	B2508 01 B2345 00	B1935 0B
Left Heated Seat Back Temperature Low Reference	-	B1935 04 B1935 1F	-	-
Left Heated Seat Back Temperature Sensor Signal	B2435 02	B1935 04 B1935 1F	B1935 04 B1935 1F	-
Right Heated Seat Back Element Control	B2508 02 B2345 00	B2180 0C	B2508 01 B2345 00	B2180 0B
Right Heated Seat Back Element Supply Voltage	B2508 02	B2180 0C	B2508 01 B2345 00	B2180 0B
Right Heated Seat Back Temperature Low Reference	-	B2180 04 B2180 1F	-	-
Right Heated Seat Back Temperature Sensor Signal	B2440 02	B2180 04 B2180 1F	B2180 04 B2180 1F	-

Circuit/System Description

When the heated seat function is active, the Memory Seat Module (MSM) supplies battery voltage through the element supply voltage circuit to the seat heater elements. The module controls the seat temperature by providing a PWM ground through the heated seat element control circuit to the seat heater elements. The module then monitors the current flow through the heating element and the temperature sensor rate of change to verify correct operation.

Conditions for Running the DTC

The memory seat module must be powered.

Conditions for Setting the DTC

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B1935/B2180 04

The module does not detect a temperature change within 210 seconds.

B1935/B2180 0A

The module detects that the set point temperature has not been reached within 8.5 minutes.

B1935/B2180 0B

By measuring output current, the module calculates that the heating element resistance is below the minimum resistance.

B1935/B2180 0C

By measuring output current, the module calculates that the heating element resistance is above the maximum resistance.

B1935/B2180 1F

The temperature sensor voltage is erratic or changes suddenly.

Action Taken When the DTC Sets

The heated seat back function for the affected seat will be disabled.

Conditions for Clearing the DTC

- The current DTC clears when the malfunction is no longer present and the power mode changes to OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information

Schematic Reference

Heated/Cooled Seat Schematics

Connector End View Reference

Heated/Cooled Seat Connector End Views

Electrical Information Reference

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

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- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Ignition OFF, disconnect the MSM connector C1.
2. Verify less than 15 ohms of resistance through the seat back heater element from the voltage supply circuit terminal to the low side drive control circuit terminal in the harness connector.
 - If the resistance is greater than 15 ohms test the supply and control circuits for an open/high resistance. If the circuits test normal replace the seat back heater element.
3. Disconnect the MSM connectors C2 and C5.
4. Verify the resistance through the seat back heat sensor is 850-300K ohms from the signal circuit terminal to the low reference circuit terminal in the harness connectors.
 - If greater than 300K ohms, test the signal circuit and low reference circuit for an open/high resistance. If the circuits test normal, replace the seat back heater element.
 - If less than 850 ohms, replace the seat back heater element.
5. Connect the MSM connectors C1, C2, and C5.
6. Disconnect the seat back heater element connector.
7. Ignition ON, verify that the heat sensor signal circuit voltage from the MSM is not greater than 5 volts.
 - If the signal circuit is greater than 5 volts test for a short to voltage. If the circuit tests normal replace the MSM.
8. If the circuits test normal replace the seat back heater element.

Repair Procedures

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

- **Seat Back Heater Element Replacement - Front**
- **Control Module References** for the MSM replacement, setup, and programming

DTC B2345 (FRONT SEAT)

DTC Descriptor

DTC B2345 00

Seat Heater Disable Circuit

DTC B2345 13

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Seat Heater Disable Circuit High Temperature

DTC B2345 42

Seat Heater Disable Circuit Calibration Data Set Not Programmed

DTC B2345 4B

Seat Heater Disable Circuit Calibration Not Learned

Diagnostic Fault Information

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

DTC B2345 (Front Seat)

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Front Heated Seat Back Element Control	B2345 00 B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Left Front Heated Seat Cushion Element Control	B2345 00 B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Left Front Heated Seat Back Element Supply Voltage	B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Left Front Heated Seat Cushion Element Supply Voltage	B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Right Front Heated Seat Back Element Control	B2345 00 B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Right Front Heated Seat Cushion Element Control	B2345 00 B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Right Front Heated Seat Back Element Supply Voltage	B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Right Front Heated Seat Cushion Element Supply Voltage	B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B

Circuit/System Description

The front seat heating elements are controlled by a common high current relay internal to the Memory Seat Module (MSM) and on the low side by individual element control circuits. Before the MSM will allow heated seat operation, it checks to see if the heating element supply voltage circuits and control circuits are shorted to ground or battery voltage. Once the module verifies that it is not closing into a shorted heating element, it allows heated seat operation. After which it continues to monitor for a shorted circuit.

Conditions for Running the DTC

The memory seat module must be powered.

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Conditions for Setting the DTC

B2345 00

After a heated seat is activated, the MSM detects a shorted circuit on the seat heating element supply voltage circuit or control circuit.

B2345 13

Any of the temperature sensor inputs remains below 1.5 volts for a seat back or 0.95 volts for a seat cushion more than 1 second.

B2345 42

The current sensing calibration data is out of range.

B2345 4B

The current sensing calibration data is not programmed.

Action Taken When the DTC Sets

The heated seat functions for both front seats will be disabled.

Conditions for Clearing the DTC

- The current DTC clears when the malfunction is no longer present and the power mode changes to OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information

Schematic Reference

Heated/Cooled Seat Schematics

Connector End View Reference

Heated/Cooled Seat Connector End Views

Electrical Information Reference

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

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Scan Tool Reference

- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Testing

B2345 00

1. Ignition OFF, disconnect the MSM connectors C1 and C4.
2. Test for infinite resistance between the left seat heating element supply voltage circuit terminal 14 and ground.
 - If less than infinite, test the supply voltage circuit and the seat cushion and seat back heating element control circuits for a short to ground.
3. Ignition ON, verify that a test lamp does not illuminate between the supply voltage circuit terminal 14 and ground.
 - If the test lamp illuminates, test the supply voltage circuit and the seat cushion and seat back heating element control circuits for a short to voltage.
4. Test for infinite resistance between the right seat heating element supply voltage circuit terminal 6 and ground.
 - If less than infinite, test the supply voltage circuit and the seat cushion and seat back heating element control circuits for a short to ground.
5. Ignition ON, verify that a test lamp does not illuminate between the supply voltage circuit terminal 6 and ground.
 - If the test lamp illuminates, test the supply voltage circuit and the seat cushion and seat back heating element control circuits for a short to voltage.
6. If all circuits test normal, replace the MSM.

B2345 13

1. Disconnect the MSM connectors C2 and C5.
2. Verify the resistance through the faulted seat heat sensor is 850-300K ohms from the signal circuit terminal to the low reference circuit terminal in the harness connectors.
 - If less than 850 ohms, replace the seat heater element.
3. If the circuits test normal replace the MSM.

B2345 42 or B2345 4B

If this DTC is retrieved as a current DTC, replace the MSM.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

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- **Seat Back Heater Element Replacement - Front**
- **Seat Cushion Heater Element Replacement - Front**
- **Control Module References** for the MSM replacement, setup, and programming

DTC B2345 (REAR SEAT)

DTC Descriptor

DTC B2345 00

Seat Heater Disable Circuit

DTC B2345 13

Seat Heater Disable Circuit High Temperature

DTC B2345 42

Seat Heater Disable Circuit Calibration Data Set Not Programmed

DTC B2345 4B

Seat Heater Disable Circuit Calibration Not Learned

Diagnostic Fault Information

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

DTC B2345 (Rear Seat)

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Rear Heated Seat Cushion Element Control	B2345 00 B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Left Rear Heated Seat Cushion Element Supply Voltage	B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Right Rear Heated Seat Cushion Element Control	B2345 00 B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Right Rear Heated Seat Cushion Element Supply Voltage	B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B

Circuit/System Description

The rear seat cushion heating elements are controlled by a common high current relay internal to the rear heated seat module and on the low side by individual element control circuits. Before the heated seat module will allow heated seat operation, it checks to see if the heating element supply voltage circuits and control circuits are

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shorted to ground or battery voltage. Once the module verifies that it is not closing into a shorted heating element, it allows heated seat operation. After which it continues to monitor for a shorted circuit.

Conditions for Running the DTC

The memory seat module must be powered.

Conditions for Setting the DTC

B2345 00

After a heated seat is activated, the rear heated seat module detects a shorted circuit on the seat heating element supply voltage circuit or control circuit.

B2345 13

Any of the temperature sensor inputs remains below 1.45 volts for more than 1 second.

B2345 42

The current sensing calibration data is out of range.

B2345 4B

The current sensing calibration data is not programmed.

Action Taken When the DTC Sets

The heated seat function for both rear passenger seats will be disabled.

Conditions for Clearing the DTC

- The current DTC clears when the malfunction is no longer present and the power mode changes to OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information

Schematic Reference

Heated/Cooled Seat Schematics

Connector End View Reference

Heated/Cooled Seat Connector End Views

Electrical Information Reference

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2007 ACCESSORIES & EQUIPMENT Seat Heating and Cooling - Avalanche, Escalade, Suburban, Tahoe & Yukon

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

Scan Tool Reference

- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Testing

B2345 00

1. Ignition OFF, disconnect the C1 harness connector at the rear heated seat module.
2. Test for infinite resistance between the left seat heating element supply voltage circuit terminal 3 and ground.
 - If less than infinite, test the supply voltage circuit and the seat cushion element control circuit for a short to ground.
3. Ignition ON, verify that a test lamp does not illuminate between the supply voltage circuit terminal 3 and ground.
 - If the test lamp illuminates, test the supply voltage circuit and the seat cushion element control circuit for a short to voltage.
4. Test for infinite resistance between the right seat heating element supply voltage circuit terminal 6 and ground.
 - If less than infinite, test the supply voltage circuit and the seat cushion element control circuit for a short to ground.
5. Ignition ON, verify that a test lamp does not illuminate between the supply voltage circuit terminal 6 and ground.
 - If the test lamp illuminates, test the supply voltage circuit and the seat cushion element control circuit for a short to voltage.
6. If all circuits test normal, replace the rear heated seat module.

B2345 13

1. Disconnect the rear heated seat module connectors C2 and C4.
2. Verify the resistance through the faulted seat heat sensor is 850-300K ohms from the signal circuit terminal to the low reference circuit terminal in the harness connectors.
 - If less than 850 ohms, replace the seat heater element.
3. If the circuits test normal replace the rear heated seat module.

B2345 42 or B2345 4B

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If this DTC is retrieved as a current DTC, replace the rear heated seat module.

Repair Procedures

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

- **Rear Seat Cushion Heater Replacement**
- **Control Module References** for the rear heated seat module replacement, setup, and programming

DTC B2425 OR B2430

DTC Descriptors

DTC B2425 04

Left Seat Cushion Heater Circuit Open

DTC B2425 0A

Left Seat Cushion Heater Circuit Rate of Change Below Threshold

DTC B2425 0B

Left Seat Cushion Heater Circuit Current Above Threshold

DTC B2425 0C

Left Seat Cushion Heater Circuit Current Below Threshold

DTC B2425 1F

Left Seat Cushion Heater Circuit Intermittent

DTC B2430 04

Right Seat Cushion Heater Circuit Open

DTC B2430 0A

Right Seat Cushion Heater Circuit Rate of Change Below Threshold

DTC B2430 0B

Right Seat Cushion Heater Circuit Current Above Threshold

DTC B2430 0C

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Right Seat Cushion Heater Circuit Current Below Threshold

DTC B2430 1F

Right Seat Cushion Heater Circuit Intermittent

Diagnostic Fault Information

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

DTC B2425 or B2430

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Heated Seat Cushion Element Control	B2508 02 B2345 00	B2425 0C	B2508 01 B2345 00	B2425 0B
Left Heated Seat Cushion Element Supply Voltage	B2508 02	B2425 0C	B2508 01 B2345 00	B2425 0B
Left Heated Seat Cushion Temperature Low Reference	-	B2425 04 B2425 1F	-	-
Left Heated Seat Cushion Temperature Sensor Signal	B1925 02 B2425 1F	B2425 04 B2425 1F	B2425 04 B2425 1F	-
Right Heated Seat Cushion Element Control	B2508 02 B2345 00	B2430 0C	B2508 01 B2345 00	B2430 0B
Right Heated Seat Cushion Element Supply Voltage	B2508 02	B2430 0C	B2508 01 B2345 00	B2430 0B
Right Heated Seat Cushion Temperature Low Reference	-	B2430 04 B2430 1F	-	-
Right Heated Seat Cushion Temperature Sensor Signal	B2170 02 B2430 1F	B2430 04 B2430 1F	B2430 04 B2430 1F	-

Circuit/System Description

When the heated seat function is active, the Memory Seat Module (MSM) or rear heated seat module supplies battery voltage through the element supply voltage circuit to the seat heater elements. The module controls the seat temperature by providing a pulse width modulation (PWM) ground through the heated seat element control circuit to the seat heater elements. The module then monitors the current flow through the heating element and the temperature sensor rate of change to verify correct operation.

Conditions for Running the DTC

The MSM or rear heated seat module must be powered.

Conditions for Setting the DTC

B2425/B2430 04

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The module does not detect a temperature change within 210 seconds.

B2425/B2430 0A

The module detects that the set point temperature has not been reached within 8.5 minutes.

B2425/B2430 0B

By measuring output current, the module calculates that the heating element resistance is below the minimum resistance.

B2425/B2430 0C

By measuring output current, the module calculates that the heating element resistance is above the maximum resistance.

B2425/B2430 1F

The temperature sensor voltage is erratic or changes suddenly.

Action Taken When the DTC Sets

The heated seat cushion function for the affected seat will be disabled.

Conditions for Clearing the DTC

- The current DTC clears when the malfunction is no longer present, and the power mode changes to OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information

Schematic Reference

Heated/Cooled Seat Schematics

Connector End View Reference

Heated/Cooled Seat Connector End Views

Electrical Information Reference

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

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Scan Tool Reference

- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Ignition OFF, disconnect the MSM or rear head seat module connector C1, or C1 and C4 for front passenger.
2. Verify less than 15 ohms of resistance through the seat cushion heater element from the voltage supply circuit terminal to the low side drive control circuit terminal in the harness connector.
 - If the resistance is greater than 15 ohms test the supply and control circuits for an open/high resistance. If the circuits test normal replace the seat cushion heater element.
3. Disconnect the MSM connectors C2 and C5, or the rear heated seat module connectors C2 and C4.
4. Verify the resistance through the seat cushion heat sensor is 850-300K ohms from the signal circuit terminal to the low reference circuit terminal in the harness connectors.
 - If greater than 300K ohms, test the signal circuit and low reference circuit for an open/high resistance. If the circuits test normal, replace the seat cushion heater element.
 - If less than 850 ohms, replace the seat cushion heater element.
5. Connect the MSM or rear heated seat module connectors.
6. Disconnect the seat cushion heater element connector.
7. Ignition ON, verify that the heat sensor signal circuit voltage from the MSM or rear heated seat module is not greater than 5 volts.
 - If the signal circuit is greater than 5 volts test for a short to voltage. If the circuit tests normal replace the MSM or rear heated seat module.
8. If the circuits test normal replace the seat cushion heater element.

Repair Procedures

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

- **Seat Cushion Heater Element Replacement - Front**
- **Rear Seat Cushion Heater Replacement**
- **Control Module References** for the MSM or rear heated seat module replacement, setup, and programming

DTC B2435 OR B2440

DTC Descriptors

DTC B2435 02

Left Seat Back Heater Sensor Circuit Shorted to Ground

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DTC B2440 02

Right Seat Back Heater Sensor Circuit Shorted to Ground

Diagnostic Fault Information

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

DTC B2435 or B2440

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Heated Seat Back Element Control	B2508 02 B2345 00	B1935 0C	B2508 01 B2345 00	B1935 0B
Left Heated Seat Back Element Supply Voltage	B2508 02	B1935 0C	B2508 01 B2345 00	B1935 0B
Left Heated Seat Back Temperature Low Reference	-	B1935 04 B1935 1F	-	-
Left Heated Seat Back Temperature Sensor Signal	B2435 02	B1935 04 B1935 1F	B1935 04 B1935 1F	-
Right Heated Seat Back Element Control	B2508 02 B2345 00	B2180 0C	B2508 01 B2345 00	B2180 0B
Right Heated Seat Back Element Supply Voltage	B2508 02	B2180 0C	B2508 01 B2345 00	B2180 0B
Right Heated Seat Back Temperature Low Reference	-	B2180 04 B2180 1F	-	-
Right Heated Seat Back Temperature Sensor Signal	B2440 02	B2180 04 B2180 1F	B2180 04 B2180 1F	-

Circuit/System Description

The heated seat temperature sensor that set this diagnostic trouble code (DTC) is located in the seat back just under the seat cover with the seat heating element. The temperature sensor is a 2 wire thermistor and resistance through the sensor varies with temperature. The signal circuit is referenced from 5 volts within the module and the temperature of the seat surface determines the signal circuit voltage. Once the seat reaches the set temperature, the module will then cycle the control circuits of the heating elements ON and OFF in order to maintain the desired seat temperature based on the feedback voltage from the sensors.

Conditions for Running the DTC

The memory seat module (MSM) must be powered.

Conditions for Setting the DTC

The temperature sensor voltage drops below 0.8 volt for more than 1 second.

Action Taken When the DTC Sets

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The heated seat back function for the affected seat will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear 3 seconds after the reference voltage returns to normal operating range, and the ignition is cycled OFF then back to ACC or RUN.
- A history DTC will clear after 50 ignition cycles or with a scan tool using the clear DTCs function.

Reference Information

Schematic Reference

Heated/Cooled Seat Schematics

Connector End View Reference

Heated/Cooled Seat Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Testing

1. Ignition OFF, disconnect the MSM harness connector C5.
2. Test for a minimum of 850 ohms of resistance from the signal circuit to ground.
 - If less than 850 ohms, test the signal circuit for a short to ground. If the circuit tests normal, replace the seat back heater element.
3. If all circuits test normal, replace the MSM.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Seat Back Heater Element Replacement - Front
- Control Module References for the MSM replacement, setup, and programming

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DTC B2508 OR B2509 (FRONT SEAT)

DTC Descriptors

DTC B2508 01

Seat Heater Relay Circuit Shorted to Ground

DTC B2508 02

Seat Heater Relay Circuit Shorted to Battery or Open

Diagnostic Fault Information

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

DTC B2508 or B2509 (Front Seat)

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Front Heated Seat Back Element Control	B2345 00 B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Left Front Heated Seat Cushion Element Control	B2345 00 B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Left Front Heated Seat Back Element Supply Voltage	B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Left Front Heated Seat Cushion Element Supply Voltage	B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Right Front Heated Seat Back Element Control	B2345 00 B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Right Front Heated Seat Cushion Element Control	B2345 00 B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Right Front Heated Seat Back Element Supply Voltage	B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Right Front Heated Seat Cushion Element Supply Voltage	B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B

Circuit/System Description

The front seat heating elements are controlled by a common high current relay internal to the Memory Seat Module (MSM) and on the low side by individual element control circuits. Before the MSM will allow heated seat operation, it checks to see if the heating element supply voltage circuits and control circuits are shorted to ground or battery voltage. Once the module verifies that it is not closing into a shorted heating element, it allows heated seat operation. After which it continues to monitor for a shorted circuit.

Conditions for Running the DTC

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The memory seat module must be powered.

Conditions for Setting the DTC

B2508 02

Before the heated seats are activated, the MSM detects a short to ground on the seat heating element supply voltage circuit or control circuit.

B2508 01

Before the heated seats are activated, the MSM detects a short to battery voltage on the seat heating element supply voltage circuit or control circuit.

Action Taken When the DTC Sets

The heated seat function for both the driver and passenger seats will be disabled.

Conditions for Clearing the DTC

- The current DTC clears when the malfunction is no longer present and the power mode changes to OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information

Schematic Reference

Heated/Cooled Seat Schematics

Connector End View Reference

Heated/Cooled Seat Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- Scan Tool Data List
- Scan Tool Data Definitions

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Circuit/System Testing

1. Ignition OFF, disconnect the MSM connectors C1 and C4.
2. Test for infinite resistance between the left seat heating element supply voltage circuit terminal 14 and ground.
 - If less than infinite, test the supply voltage circuit and the seat cushion and seat back heating element control circuits for a short to ground.
3. Ignition ON, verify that a test lamp does not illuminate between the supply voltage circuit terminal 14 and ground.
 - If the test lamp illuminates, test the supply voltage circuit and the seat cushion and seat back heating element control circuits for a short to voltage.
4. Test for infinite resistance between the right seat heating element supply voltage circuit terminal 6 and ground.
 - If less than infinite, test the supply voltage circuit and the seat cushion and seat back heating element control circuits for a short to ground.
5. Ignition ON, verify that a test lamp does not illuminate between the supply voltage circuit terminal 6 and ground.
 - If the test lamp illuminates, test the supply voltage circuit and the seat cushion and seat back heating element control circuits for a short to voltage.
6. If all circuits test normal, replace the MSM.

Repair Procedures

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

- **Seat Back Heater Element Replacement - Front**
- **Seat Cushion Heater Element Replacement - Front**
- **Control Module References** for the MSM replacement, setup, and programming

DTC B2508 OR B2509 (REAR SEAT)

DTC Descriptors

DTC B2508 01

Seat Heater Relay Circuit Shorted to Ground

DTC B2508 02

Seat Heater Relay Circuit Shorted to Battery or Open

Diagnostic Fault Information

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

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DTC B2508 or B2509 (Rear Seat)

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Rear Heated Seat Cushion Element Control	B2345 00 B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Left Rear Heated Seat Cushion Element Supply Voltage	B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Right Rear Heated Seat Cushion Element Control	B2345 00 B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Right Rear Heated Seat Cushion Element Supply Voltage	B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B

Circuit/System Description

The rear heated seat heating elements are controlled by a common high current relay internal to the rear heated seat module and on the low side by individual element control circuits. Before the heated seat module will allow heated seat operation, it checks to see if the heating element supply voltage circuits and control circuits are shorted to ground or battery voltage.

Conditions for Running the DTC

The rear heated seat module must be powered.

Conditions for Setting the DTC

B2508 02

Before the heated seats are activated, the heated seat module detects a short to ground on the seat heating element supply voltage circuit or control circuit.

B2508 01

Before the heated seats are activated, the heated seat module detects a short to battery voltage on the seat heating element supply voltage circuit or control circuit.

Action Taken When the DTC Sets

The heated seat function for both of the rear passenger seats will be disabled.

Conditions for Clearing the DTC

- The current DTC clears when the malfunction is no longer present and the power mode changes to OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information

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2007 ACCESSORIES & EQUIPMENT Seat Heating and Cooling - Avalanche, Escalade, Suburban, Tahoe & Yukon

Schematic Reference

Heated/Cooled Seat Schematics

Connector End View Reference

Heated/Cooled Seat Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Testing

1. Ignition OFF, disconnect the C1 harness connector at the heated seat module.
2. Test for infinite resistance between the left seat heating element supply voltage circuit terminal 3 and ground.
 - If less than infinite resistance, test the supply voltage circuit and the seat cushion heating element control circuit for a short to ground.
3. Ignition ON, verify that a test lamp does not illuminate between the supply voltage circuit terminal 3 and ground.
 - If the test lamp illuminates, test the supply voltage circuit and the seat cushion heating element control circuit for a short to voltage.
4. Test for infinite resistance between the right seat heating element supply voltage circuit terminal 6 and ground.
 - If less than infinite resistance, test the supply voltage circuit and the seat cushion heating element control circuit for a short to ground.
5. Ignition ON, verify that a test lamp does not illuminate between the supply voltage circuit terminal 6 and ground.
 - If the test lamp illuminates, test the supply voltage circuit and the seat cushion heating element control circuit for a short to voltage.
6. If all circuits test normal, replace the heated seat module.

Repair Procedures

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

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- **Rear Seat Cushion Heater Replacement**
- **Control Module References** for the rear heated seat module replacement, setup, and programming

SYMPTOMS - SEAT HEATING AND COOLING

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

1. 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 modules can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to the following system descriptions:
 - **Heated Seats Description and Operation (Front)****Heated Seats Description and Operation (Rear)**
 - **Heated/Cooled Seats Description and Operation**

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the 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 a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- **Heated Seat Inoperative (Chevy and GMC)** or **Heated Seat Inoperative (Cadillac)**
- **Heated Seat Inoperative - Rear**
- **Heated/Cooled Seats Inoperative**

HEATED SEAT INOPERATIVE (CHEVY AND GMC)

Diagnostic Fault Information

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

Circuit/System Description

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The heated seat system operation is controlled through the switch inputs to the driver and passenger door modules. When a heated seat switch is pressed a GMLAN message is sent to the Memory Seat Module (MSM) indicating the switch is active. The MSM monitors the heated seat switch inputs and determines the appropriate operating mode. When a heated seat function is activated the MSM will send a GMLAN message to the door module to illuminate the appropriate indicators. The memory seat module controls the voltage supply and the ground circuits to the seat heater elements. When a heated seat function is commanded active, the seat module will switch battery voltage to the heater element supply circuits, and ground is provided through pulse width modulation (PWM) low side drive control circuits. During heated seat operation both the seat back and cushion heater elements are supplied battery voltage. The seat module grounds the appropriate control circuits for back only or back and cushion heating modes, and opens or closes the active control circuits as necessary in order to maintain the desired seat temperature. The seat module relies on 4 independent inputs from thermistors located in the seat back and seat cushion of the driver and passenger seats to control heated seat temperatures. The thermistors are 2-wire sensors supplied with a 5-volt referenced signal circuit and a low reference circuit from the seat module. Resistance through the thermistors varies with temperature causing the heated seat sensor signal circuit voltage levels to decrease as the seat temperatures rise.

Reference Information

Schematic Reference

Heated/Cooled Seat Schematics

Connector End View Reference

Heated/Cooled Seat Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Testing

1. Ignition ON, verify that the driver and passenger door switch heated seat switch parameters display Active while the heated seat switches are pressed.
 - If either of the switch parameters are continuously Active or Inactive while the switch is pressed, perform the heated seat switch circuit test.
2. Verify that the MSM driver and passenger seat HVC mode and level parameters are displayed correctly as the heated seat switches are activated through all of the operating modes.

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- If the MSM parameters are not displayed correctly replace the MSM.
- 3. If the circuits test normal replace the driver or passenger door module.

Component Testing

1. Disconnect the heated seat switch connector at the door module.
2. Connect a fused jumper wire from the low reference circuit terminal 4 to ground.
3. Verify that a test lamp does not illuminate when connected from battery voltage to the switch signal circuit terminals 6 and 7.
 - If the test lamp illuminates while the switches are in an inactive state, replace the heated seat switch.
4. Verify that a test lamp illuminates when connected from battery voltage to the switch signal circuit terminals 6 and 7 while pressing the heated seat switches.
 - If the test lamp does not illuminate while the switches are in an active state, replace the heated seat switch.
5. Verify that the heated seat switch indicators illuminate with a test lamp connected from battery voltage to the indicator control circuit terminals 1, 2, 9, 10, and 11.
 - If the indicators do not illuminate replace the heated seat switch.

Repair Procedures

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

- **Heated Seat Switch Replacement - Front (w/o KB6)**
- **Control Module References** for MSM and Driver or Passenger Door switch replacement, programming, and setup.

HEATED SEAT INOPERATIVE (CADILLAC)

Diagnostic Fault Information

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

Circuit/System Description

The heated seat system operation is controlled through the switch inputs of the HVAC control module. When a heated seat switch is pressed a GMLAN message is sent to the Memory Seat Module (MSM) indicating the switch is active. The MSM monitors the heated seat switch inputs and determines the appropriate operating mode. When a heated seat function is activated the MSM will send a GMLAN message to the HVAC control module to illuminate the appropriate indicators. The memory seat module controls the voltage supply and the ground circuits to the seat heater elements. When a heated seat function is commanded active, the seat module will switch battery voltage to the heater element supply circuits, and ground is provided through pulse width modulation (PWM) low side drive control circuits. During heated seat operation both the seat back and cushion heater elements are supplied battery voltage. The seat module grounds the appropriate control circuits for back only or back and cushion heating modes, and opens or closes the active control circuits as necessary in order to

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maintain the desired seat temperature. The seat module relies on 4 independent inputs from thermistors located in the seat back and seat cushion of the driver and passenger seats to control heated seat temperatures. The thermistors are 2-wire sensors supplied with a 5-volt referenced signal circuit and a low reference circuit from the seat module. Resistance through the thermistors varies with temperature causing the heated seat sensor signal circuit voltage levels to decrease as the seat back temperatures rise.

Reference Information

Schematic Reference

Heated/Cooled Seat Schematics

Connector End View Reference

Heated/Cooled Seat Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Testing

1. Ignition ON, verify that the HVAC module driver and passenger heated seat switch parameters display Active while any of the heated seat switches are pressed.
 - If either of the switch parameters are continuously Active or Inactive while any of the headed seat switches are pressed, replace the HVAC control module.
2. Verify that the MSM driver and passenger seat HVC mode and level parameters are displayed correctly as the heated seat switches are activated through all of the operating modes.
 - If the MSM parameters are not displayed correctly replace the MSM.
3. If the circuits test normal replace the HVAC control module.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

Refer to Control Module References for memory seat module or HVAC control module replacement, programming, and setup.

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HEATED SEAT INOPERATIVE - REAR

Diagnostic Fault Information

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

Circuit/System Description

The rear heated seats are a high and low mode seat cushion heater system. The heater elements are controlled by the rear heated seat module mounted to the under side of the left rear seat cushion pan. The rear heated seat switches are inputs to the rear seat audio panel and when a heated seat switch is pressed the active switch signal is sent to the rear heated seat module through the low speed LAN circuit. The rear heated seat module determines the heated seat mode based on the switch messages and sends a message to the rear seat audio panel to display the rear heated seat indicators as necessary.

Reference Information

Schematic Reference

Heated/Cooled Seat Connector End Views

Connector End View Reference

Heated/Cooled Seat Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

1. Engine running, use a scan tool to observe the appropriate Heated Seat Switch parameter. Verify that the heated seat switch parameter changes from Active to Inactive when the switch is pressed and released.
 - If the parameter does not display the correct switch status replace the rear HVAC/RSA module.
2. Display the Rear Heated Seat Module Data list and verify that the heated temperature level changes from Off, to High, to Low as the heated seat switch is cycled through these states.
 - If the heated seat mode parameter does not change states replace the rear heated seat module.

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3. Verify that the rear heated seat modes are being displayed correctly by the rear HVAC/RSA module.
 - If the rear heated seat mode are not displayed correctly, replace the rear HVAC/RSA module.
4. If all the tests are normal replace the rear heated seat module.

Repair Procedures

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

Control Module References for rear heated seat module and rear HVAC/RSA module replacement, setup, and programming

HEATED/COOLED SEATS INOPERATIVE

Diagnostic Fault Information

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

Circuit/System Description

The heated cooled seat system operation is controlled through the switch inputs of the HVAC control module. When a heated or cooled seat switch is pressed a GNLAN message is sent to the Memory Seat Module (MSM) indicating the switch is active. The MSM monitors the heated cooled seat switch inputs and determines the appropriate operating mode. When a heated or cooled seat function is activated the MSM will send a GMLAN message to the HVAC control module to illuminate the appropriate indicators and a PWM message to the Climate Control Seat Module (CCSM) to activate the appropriate heated cooled seat function. The CCSM controls heat/cool seat ventilation blowers located under the seat cushion and behind the seat back. The ventilation blowers are self contained electronic air conditioners consisting of a blower motor with an inlet air filter, thermal electric device (TED), temperature sensor, and waste air duct. The air flow from the blower is divided into 2 streams and directed across both sides of the TED, one side into vent passages through the seat foam and the other out the waste air duct. While the system is operating in either the heat or cool modes both heated and cooled air is generated as it passes across the TED. When voltage is applied to a TED, one side releases energy as heat, while the opposite side absorbs energy and gets cold. The supply voltage to the TEDs is controlled by the CCSM and the polarity determines which side gets hot or cool. When the polarity of the current flow to the TEDs is switched, the hot and cool sides of the TED reverse. The CCSM monitors the temperature of the air flow into the seat foam and continuously adjusts the blower speed and TED temperature by regulating the current flow through each component. The CCSMs rely on inputs from temperature sensors located in the ventilation blowers near the TEDs to control seat temperatures. The thermistors are 2 wire sensors supplied with a 5-volt referenced signal circuit and a low reference circuit from the CCSM. Resistance through the thermistors varies with temperature causing the heated seat sensor signal circuit voltage levels to decrease as the TED temperatures rise.

Diagnostic Aids

The following conditions must be met in order to perform valid tests when diagnosing the climate control seat (CCS) system:

- The ignition must be cycled OFF then ON between each test in order to reset the CCSM.

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- The engine must be running in order to supply the CCSM with the amount of current needed to operate the heated/cool seat system.

Reference Information

Schematic Reference

Heated/Cooled Seat Schematics

Connector End View Reference

Heated/Cooled Seat Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- Scan Tool Data List
- Scan Tool Data Definitions

Scan Tool Reference

Scan Tool Data List

Circuit/System Verification

1. Engine running, verify that the heated cooled seat indicators function normally as the driver and passenger seat heat and cool functions are attempted to be operated.
 - If the heated cooled seat indicators do not function normally perform the Heated Cooled Seat Indicator Circuit Test.
2. Verify that the driver and passenger seat heat and cool modes function normally.
 - If all of the driver and passenger seat heat and cool functions are inoperative, perform the Driver and Passenger Heated/Cool Seats Circuit Test.
 - If any of the heated cooled seat functions are inoperative for one of the front seats perform the Driver or Passenger Heated/Cool Seat Circuit Test

Circuit/System Testing

Heated Cooled Seat Indicator Circuit Test

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1. Ignition ON, verify that the HVAC module driver and passenger heated seat switch parameters display Active while any of the heated cooled seat switches are pressed.
 - o If either of the switch parameters are continuously Active or Inactive while any of the headed cooled seat switches are pressed, replace the HVAC control module.
2. Verify that the MSM driver and passenger seat HVC mode and level parameters are displayed correctly as the heated cooled seat switches are activated through all of the operating modes.
 - o If the MSM parameters are not displayed correctly replace the MSM.
3. If the circuits test normal replace the HVAC control module

Driver and Passenger Heated/Cool Seats Circuit Test

1. Ignition OFF, disconnect the C1 harness connector at the CCSM.
2. Ignition OFF, test for less than 5 ohms of resistance between the ground circuit terminal M and ground.
 - o If greater than 5 ohms, test the ground circuit for an open/high resistance.
3. Verify that a test lamp illuminates between the B+ circuit terminal E and ground.
 - o If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
4. Ignition OFF, disconnect the C2 harness connector at the CCSM.
5. Ignition ON, verify that a test lamp illuminates between the ignition circuit terminal 1 and ground.
 - o If the test lamp does not illuminate, test the ignition circuit for a short to ground or an open/high resistance.
6. If all circuits test normal, replace the CCS module.

Driver Heated/Cool Seat Circuit Test

1. Ignition OFF, disconnect the C1, C2, C3 harness connectors at the CCSM.
2. Connect a test lamp between the heated/cooled seat mode signal circuit terminal 14 (C3) and battery voltage.
3. Press the HEAT or COOL switch through the high, medium, and low positions to OFF. The test lamp should illuminate until the OFF position is reached.
 - o If the test lamp does not illuminate, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the MSM.
 - o If the test lamp is ON with the switch in the OFF position, test the signal circuit for a short to ground. If the circuit tests normal, replace the MSM.

IMPORTANT: If the resistance is measured with the seat still warm or cool, the resistance values will vary. At 68°F, (20°C) the nominal resistance value is 1200 ohms ± 5 percent. For hotter or colder ambient temperatures, refer to the Temperature vs Resistance table below. The delta resistance values between the seat cushion and seat back temperature sensors should not be greater than 2000 ohms.

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4. Test for 300 ohms to 18K ohms of resistance between the following temperature sensor signal and low reference circuits.
 - Connector C2 seat cushion temperature sensor signal circuit terminal 7 and low reference circuit terminal 8.
 - Connector C2 seat back temperature sensor signal circuit terminal 9 and low reference circuit terminal 10.
 - If the resistance is greater than the specified value, test the sensor signal circuit and low reference circuit for a short to voltage or an open/high resistance. If the circuits test normal, test or replace the appropriate heat/cool seat ventilation blower.
 - If the resistance measures less than the specified value, test or replace the appropriate heat/cool seat ventilation blower.

IMPORTANT: The test leads must be connected in the correct polarity, otherwise lower out of range values will appear. Use the Positive Lead for the COOL control circuit and the Negative Lead for the HEAT control circuit. If the resistance is measured with the seat still warm or cool, the resistance values will vary even if the system was powered up for just a few seconds. The TED must be allowed to stabilize to room temperature prior to a measurement. The following conditions will change the resistance to out of range values:

- The test leads are incorrectly connected.
- Air blowing across the TED.
- Measuring the resistance at other than room temperature of 70°F (21°C).
- Holding the TED portion of the heat/cool seat ventilation blower in your hand.

In hotter or colder climates where room temperature conditions of 70°F (21°C) may be unattainable, resistance values may read above the specified range. Use a heat gun or a blower to warm or cool the TED while measuring the resistance. The resistance values should slowly lower toward the specified range.

5. Test for 0.9-10.0 ohms of resistance between the following heat control and cool control circuits.
 - Connector C1: Seat cushion heat control circuit terminal G and cool control circuit terminal H.
 - Connector C1: Seat back heat control circuit terminal J and cool control circuit terminal K.
 - If greater than 10 ohms, test the control circuits for an open/high resistance. If the circuits test normal, test or replace the appropriate heat/cool seat ventilation blower.
 - If less than 0.9 ohm, test or replace the appropriate heat/cool seat ventilation blower.
6. Test for infinite resistance between the following circuits and ground.
 - Connector C1:

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- Seat cushion heat control circuit terminal G
- Seat cushion cool control circuit terminal H
- Seat back heat control circuit terminal J
- Seat back cool control circuit terminal K
- Connector C2:
 - Seat cushion temperature sensor signal circuit terminal 7
 - Seat back temperature sensor signal circuit terminal 9
- Connector C3:
 - Seat cushion blower motor speed control circuit terminal 11
 - Seat back blower motor speed control circuit terminal 12
 - Blower motor supply voltage circuit terminal 16
- If less than infinite, test the appropriate circuit for a short to ground.
- 7. Connect the C1, C2, C3 harness connectors to the CCSM.
- 8. Disconnect the harness connector at the seat cushion heat/cool seat ventilation blower.
- 9. Ignition OFF, test for less than 5 ohms of resistance between the blower motor low reference circuit terminal G and ground.
 - If greater than 5 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the CCSM.
- 10. Ignition ON, test for 4.8-5.2 volts between the temperature sensor signal circuit terminal C and ground.
 - If greater than 5.2 volts, test the signal circuit for a short to voltage. If the circuit tests normal, replace the CCSM.
 - If less than 4.8 volts, replace the CCSM.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCSM.

11. Ignition ON, connect a test lamp between the following control circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 2-4 seconds after the switch is pressed. On the heat control circuit, the test lamp may exhibit a 4 second delay before it starts to illuminate.

Press the HEAT switch for heat control and the COOL switch for cool control.

- Terminal A seat cushion heat control circuit
- Terminal B seat cushion cool control circuit
- If the test lamp does not illuminate, replace the CCSM.
- If the test lamp is always ON, test the appropriate control circuit for a short to voltage. If the circuit tests normal, replace the CCSM.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCSM.

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12. Connect a test lamp between the following circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 5 seconds after pressing the HEAT switch.
 - Terminal H seat cushion blower motor supply voltage
 - Terminal D seat cushion blower motor speed control
 - If the test lamp does not illuminate, test the appropriate circuit for an open/high resistance. If the circuit tests normal, replace the CCSM.
 - If the test lamp is always ON, test the appropriate circuit for a short to voltage. If the circuit tests normal, replace the CCSM.
13. Connect the harness connector to the seat cushion heat/cool seat ventilation blower.
14. Disconnect the harness connector at the seat back heat/cool seat ventilation blower.
15. Ignition OFF, test for less than 5 ohms of resistance between the blower motor low reference circuit terminal 4 and ground.
 - If greater than 5 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the CCSM.
16. Ignition ON, test for 4.8-5.2 volts between the temperature sensor signal circuit terminal C and ground.
 - If greater than 5.2 volts, test the signal circuit for a short to voltage. If the circuit tests normal, replace the CCSM.
 - If less than 4.8 volts, replace the CCSM.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCSM.

17. Ignition ON, connect a test lamp between the following control circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 4 seconds after the switch is pressed. On the heat control circuit, the test lamp may exhibit a 4 second delay before it starts to illuminate.

Press the HEAT switch for heat control and the COOL switch for cool control.

- Terminal A seat back heat control circuit
- Terminal B seat back cool control circuit
- If the test lamp does not illuminate, replace the CCSM.
- If the test lamp is always ON, test the appropriate control circuit for a short to voltage. If the circuit tests normal, replace the CCSM.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCSM.

18. Connect a test lamp between the following circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 5 seconds after pressing the HEAT switch.
 - Terminal H seat back blower motor supply voltage circuit
 - Terminal D seat cushion blower motor speed control
 - If the test lamp does not illuminate, test the appropriate circuit for an open/high resistance. If the

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circuit tests normal, replace the CCSM.

- If the test lamp is always ON, test the appropriate circuit for a short to voltage. If the circuit tests normal, replace the CCSM.

19. If all circuits test normal, test or replace the appropriate heat/cool seat ventilation blower.

Passenger Heated/Cool Seat Circuit Test

1. Ignition OFF, disconnect the C1, C2, C3 harness connectors at the CCSM.
2. Connect a test lamp between the heated/cooled seat mode signal circuit terminal 6 (C3) and battery voltage.
3. Press the HEAT or COOL switch through the high, medium, and low positions to OFF. The test lamp should illuminate until the OFF position is reached.
 - If the test lamp does not illuminate, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the MSM.
 - If the test lamp is ON with the switch in the OFF position, test the signal circuit for a short to ground. If the circuit tests normal, replace the MSM.

IMPORTANT: If the resistance is measured with the seat still warm or cool, the resistance values will vary. At 68°F (20°C), the nominal resistance value is 1200 ohms $\pm$ 5 percent. For hotter or colder ambient temperatures, refer to the Temperature vs Resistance table below. The delta resistance values between the seat cushion and seat back temperature sensors should not be greater than 2000 ohms.

4. Test for 300 ohms to 18K ohms of resistance between the following temperature sensor signal and low reference circuits.
 - Connector C2 seat cushion temperature sensor signal circuit terminal 7 and low reference circuit terminal 3.
 - Connector C2 seat back temperature sensor signal circuit terminal 9 and low reference circuit terminal 5.
 - If the resistance is greater than the specified value, test the sensor signal circuit and low reference circuit for a short to voltage or an open/high resistance. If the circuits test normal, test or replace the appropriate heat/cool seat ventilation blower.
 - If the resistance measures less than the specified value, test or replace the appropriate heat/cool seat ventilation blower.

IMPORTANT: The test leads must be connected in the correct polarity, otherwise lower out of range values will appear. Use the Positive Lead for the COOL control circuit and the Negative Lead for the HEAT control circuit. If the resistance is measured with the seat still warm or cool, the resistance values will vary even if the system was powered up for just a few seconds. The TED must be allowed to stabilize to room temperature prior to a measurement. The following conditions will change the resistance to out of range values:

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- **The test leads are incorrectly connected.**
- **Air blowing across the TED.**
- **Measuring the resistance at other than room temperature of 70°F (21°C).**
- **Holding the TED portion of the heat/cool seat ventilation blower in your hand.**

In hotter or colder climates where room temperature conditions of 70°F (21°C) may be unattainable, resistance values may read above the specified range. Use a heat gun or a blower to warm or cool the TED while measuring the resistance. The resistance values should slowly lower toward the specified range.

5. Test for 0.9-10.0ohms of resistance between the following heat control and cool control circuits.
 - Connector C1: Seat cushion heat control circuit terminal A and cool control circuit terminal B.
 - Connector C1: Seat back heat control circuit terminal C and cool control circuit terminal D.
 - If greater than 10 ohms, test the control circuits for an open/high resistance. If the circuits test normal, test or replace the appropriate heat/cool seat ventilation blower.
 - If less than 0.9 ohm, test or replace the appropriate heat/cool seat ventilation blower.
6. Test for infinite resistance between the following circuits and ground.
 - Connector C1:
 - Seat cushion heat control circuit terminal A
 - Seat cushion cool control circuit terminal B
 - Seat back heat control circuit terminal C
 - Seat back cool control circuit terminal D
 - Connector C2:
 - Seat cushion temperature sensor signal circuit terminal 2
 - Seat back temperature sensor signal circuit terminal 4
 - Connector C3:
 - Seat cushion blower motor speed control circuit terminal 3
 - Seat back blower motor speed control circuit terminal 4
 - Blower motor supply voltage circuit terminal 8
 - If less than infinite, test the appropriate circuit for a short to ground.
7. Connect the C1, C2, C3 harness connectors to the CCSM.
8. Disconnect the harness connector at the seat cushion heat/cool seat ventilation blower.
9. Ignition OFF, test for less than 5 ohms of resistance between the blower motor low reference circuit terminal G and ground.
 - If greater than 5 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the CCSM.

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10. Ignition ON, test for 4.8-5.2 volts between the temperature sensor signal circuit terminal C and ground.
 - If greater than 5.2 volts, test the signal circuit for a short to voltage. If the circuit tests normal, replace the CCSM.
 - If less than 4.8 volts, replace the CCSM.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCSM.

11. Ignition ON, connect a test lamp between the following control circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 2-4 seconds after the switch is pressed. On the heat control circuit, the test lamp may exhibit a 4 second delay before it starts to illuminate.

Press the HEAT switch for heat control and the COOL switch for cool control.

- Terminal A seat cushion heat control circuit
- Terminal B seat cushion cool control circuit
- If the test lamp does not illuminate, replace the CCSM.
- If the test lamp is always ON, test the appropriate control circuit for a short to voltage. If the circuit tests normal, replace the CCSM.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCSM.

12. Connect a test lamp between the following circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 5 seconds after pressing the HEAT switch.
 - Terminal H seat cushion blower motor supply voltage
 - Terminal D seat cushion blower motor speed control
 - If the test lamp does not illuminate, test the appropriate circuit for an open/high resistance. If the circuit tests normal, replace the CCSM.
 - If the test lamp is always ON, test the appropriate circuit for a short to voltage. If the circuit tests normal, replace the CCSM.
13. Connect the harness connector to the seat cushion heat/cool seat ventilation blower.
14. Disconnect the harness connector at the seat back heat/cool seat ventilation blower.
15. Ignition OFF, test for less than 5 ohms of resistance between the blower motor low reference circuit terminal H and ground.
 - If greater than 5 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the CCSM.
16. Ignition ON, test for 4.8-5.2 volts between the temperature sensor signal circuit terminal C and ground.
 - If greater than 5.2 volts, test the signal circuit for a short to voltage. If the circuit tests normal, replace the CCSM.
 - If less than 4.8 volts, replace the CCSM.

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IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCSM.

17. Ignition ON, connect a test lamp between the following control circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 4 seconds after the switch is pressed. On the heat control circuit, the test lamp may exhibit a 4 second delay before it starts to illuminate.

Press the HEAT switch for heat control and the COOL switch for cool control.

- Terminal A seat back heat control circuit
- Terminal B seat back cool control circuit
- If the test lamp does not illuminate, replace the CCSM.
- If the test lamp is always ON, test the appropriate control circuit for a short to voltage. If the circuit tests normal, replace the CCSM.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCSM.

18. Connect a test lamp between the following circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 5 seconds after pressing the HEAT switch.
- Terminal H seat back blower motor supply voltage circuit
 - Terminal D seat back blower motor speed control
 - If the test lamp does not illuminate, test the appropriate circuit for an open/high resistance. If the circuit tests normal, replace the CCSM.
 - If the test lamp is always ON, test the appropriate circuit for a short to voltage. If the circuit tests normal, replace the CCSM.
19. If all circuits test normal, test or replace the appropriate heat/cool seat ventilation blower.

Heat/Cool Ventilation Blower Thermistor

°C	°F	OHMS
Temperature vs Resistance Values (Approximate)		
60°	140°	319.9
50°	122°	433.1
40°	104°	596.6
30°	86°	837.5
20°	68°	1200
10°	50°	1757
0°	32°	2633
-10°	14°	4047
-20°	-4°	6401
-30°	-22°	10,450
-40°	-40°	17,670

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Repair Procedures

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

- **Seat Back Ventilation Heat and Cool Blower Replacement (Cadillac)**
- **Seat Cushion Ventilation Heat and Cool Blower Replacement (Cadillac)**
- **Control Module References** for the memory seat module or climate control seat module replacement, setup, and programming

REPAIR INSTRUCTIONS

HEATED SEAT SWITCH REPLACEMENT - FRONT (W/O KB6)

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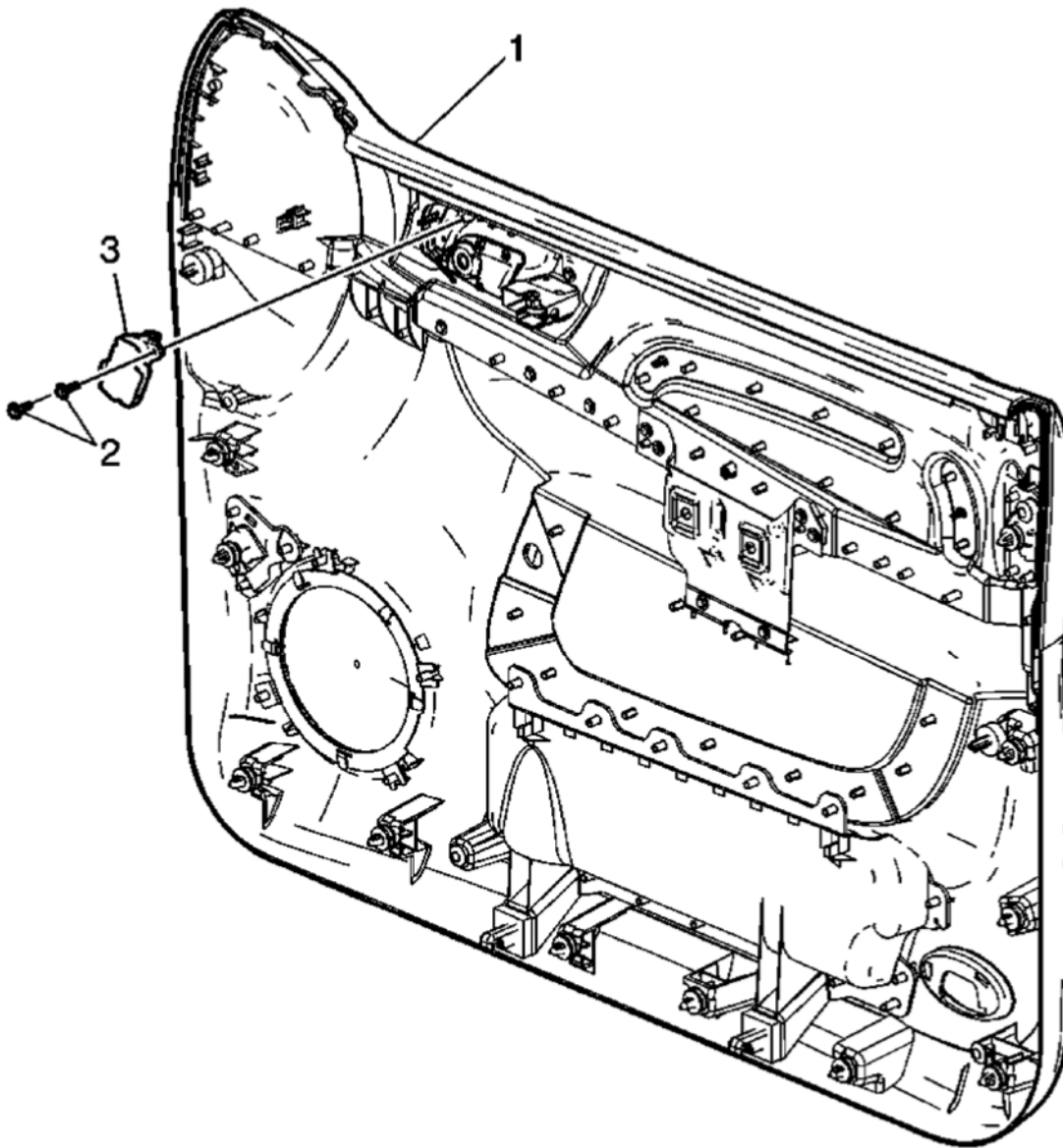


Fig. 27: View Of Seat Heater Switch Assembly, Screws & Trim Panel
Courtesy of GENERAL MOTORS CORP.

Heated Seat Switch Replacement - Front (w/o KB6)

Callout	Component Name
1	Front Side Door Trim Panel Refer to Front Side Door Trim Panel Replacement .
2	Seat Heater Switch Screw (Qty: 2) NOTE: Refer to Fastener Notice .

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	Tighten: 2 N.m (18 lb in)
3	Seat Heater Switch Assembly Tip: Disconnect the electrical connector.

SEAT BACK HEATER ELEMENT REPLACEMENT - FRONT

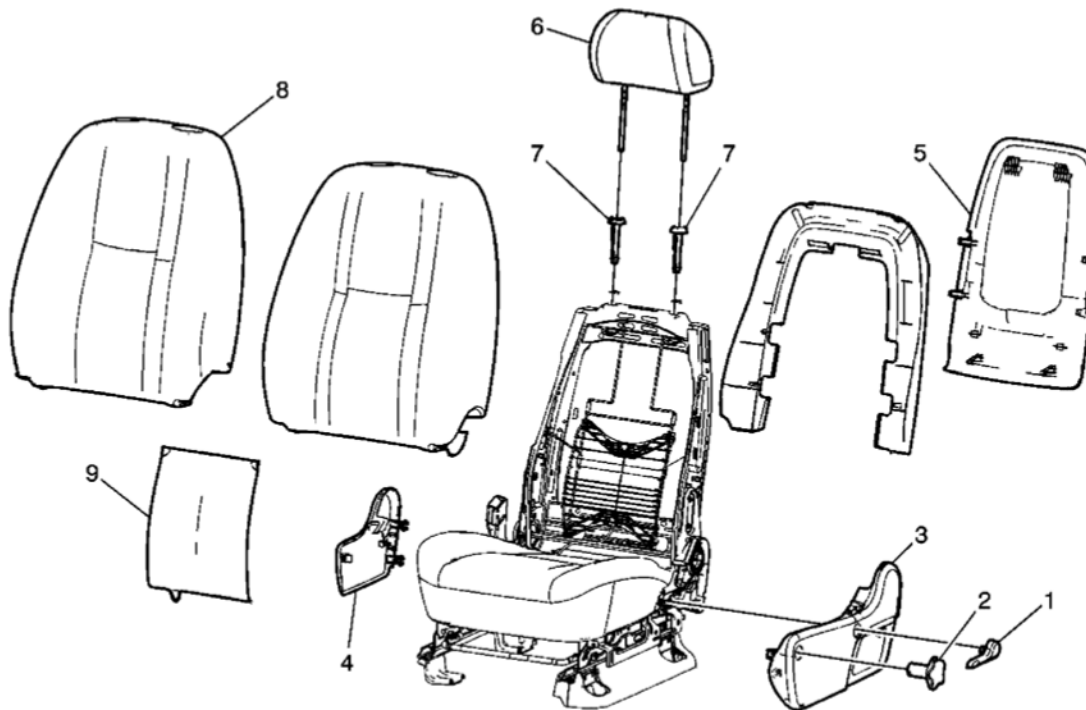


Fig. 28: View Of Front Seat Assembly & Components
Courtesy of GENERAL MOTORS CORP.

Seat Back Heater Element Replacement - Front

Callout	Component Name
Preliminary Procedure: Remove the front seat. Refer to <u>Front Seat Replacement - Bucket</u> .	
1	Front Seat Recliner Lever Tip: Using a flat-bladed tool, push the retainer clip downward and pull outward to release the lever.
2	Front Seat Manual Lumbar Knob Tip: Using a flat-bladed tool, push the retainer clip downward and pull outward to release the knob.
3	Front Seat Adjuster Outer Finish Cover Refer to <u>Seat Cushion Outer Trim Panel Replacement - Front Seat (Manual)</u> or <u>Seat Cushion Outer Trim Panel Replacement - Front Seat (Power)</u> .
4	Front Seat Adjuster Inner Finish Cover

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	Refer to <u>Seat Cushion Inner Trim Panel Replacement - Front</u> .
5	Front Seat Back Cushion Finish Panel Tip: Using a nylon flat-bladed tool push the tabs in on the side of the panel to release from the seat back to remove.
6	Front Seat Head Restraint Assembly Tip: 1. Depress the button on the inboard head restraint guide to raise the head restraint to the full up position. 2. Insert a small diameter tool into the hole on the inboard side of the outboard head restraint guide and pull upward to remove.
7	Front Seat Head Restraint Guide (Qty: 2) Tip: Squeeze the bottom of the guide together and push up to remove from the seat back.
8	Seat Back Cushion Cover and Pad Refer to <u>Front Seat Back Cover and Cushion Pad Replacement</u> .
9	Seat Back Cushion Heater Element

SEAT CUSHION HEATER ELEMENT REPLACEMENT - FRONT

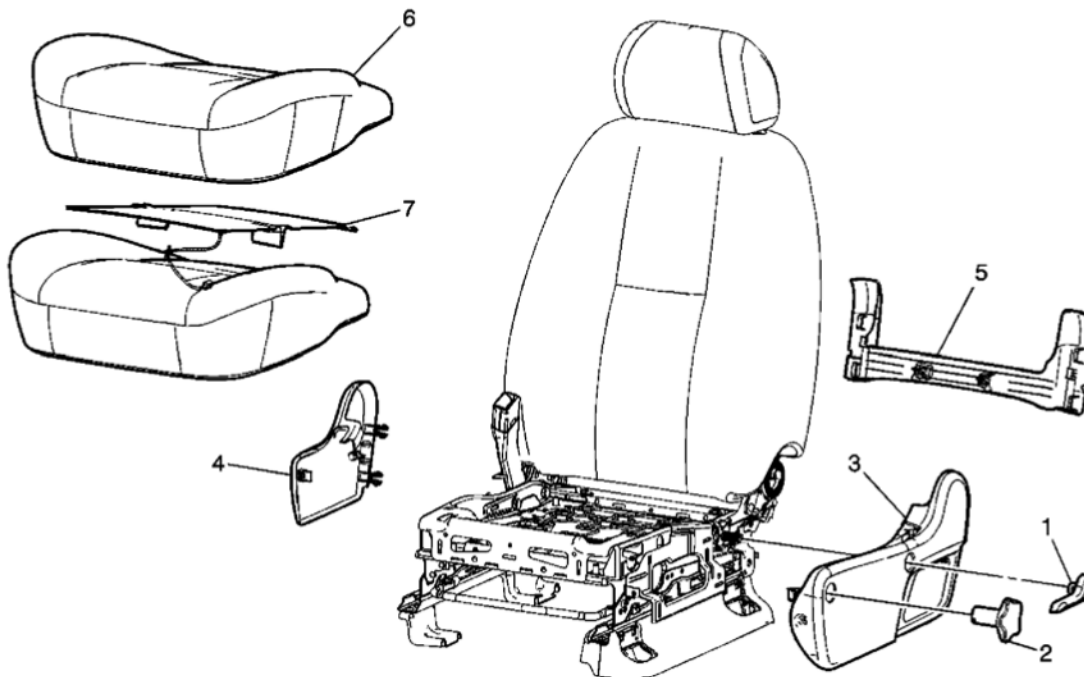


Fig. 29: View Of Front Seat Cushion Components
Courtesy of GENERAL MOTORS CORP.

Seat Cushion Heater Element Replacement - Front

Callout	Component Name

2007 Cadillac Escalade

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Preliminary Procedure:

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

1	Front Seat Recliner Lever Tip: Using a flat-bladed tool, push the retainer clip downward and pull outward to release the knob.
2	Front Seat Manual Lumbar Knob Tip: Using a flat-bladed tool, push the retainer clip downward and pull outward to release the knob.
3	Front Seat Adjuster Outer Finish Cover Refer to <u>Seat Cushion Outer Trim Panel Replacement - Front Seat (Manual)</u> or <u>Seat Cushion Outer Trim Panel Replacement - Front Seat (Power)</u> .
4	Front Seat Adjuster Inner Finish Cover Refer to <u>Seat Cushion Inner Trim Panel Replacement - Front</u> .
5	Front Seat Riser Finish Cover Tip: Pull rearward to disengage the cover from the seat riser.
6	Front Seat Cushion Cover and Pad Tip: 1. Disengage the j-channel retainers from the seat cushion frame. 2. Remove the seat cushion cover and pad from the seat cushion frame as an assembly.
7	Front Seat Cushion Heater Element Tip: Disconnect the heater element and peel away from the cushion to remove.

HEATED SEAT CONTROL MODULE REPLACEMENT - REAR

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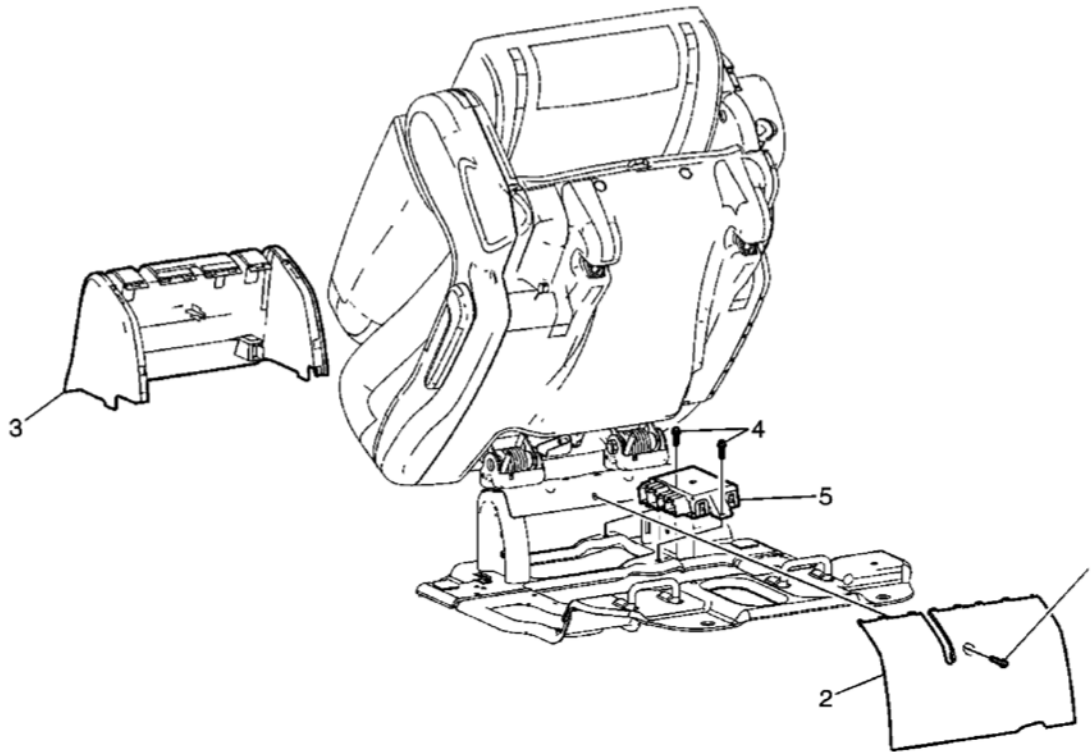


Fig. 30: View Of Rear Seat Heater Module & Components
Courtesy of GENERAL MOTORS CORP.

Heated Seat Control Module Replacement - Rear

Callout	Component Name
1	Rear Seat Riser Finish Cover Screw NOTE: Refer to <u>Fastener Notice</u> . Tighten: 2 N.m (18 lb in)
2	Rear Seat Riser Finish Cover
3	Rear Seat Riser Finish Cover
4	Rear Seat Heater Module Screw (Qty: 2) Tighten: 3 N.m (25 lb in)
5	Rear Seat Heater Module Tip: Disconnect the electrical connector.

REAR SEAT CUSHION HEATER REPLACEMENT

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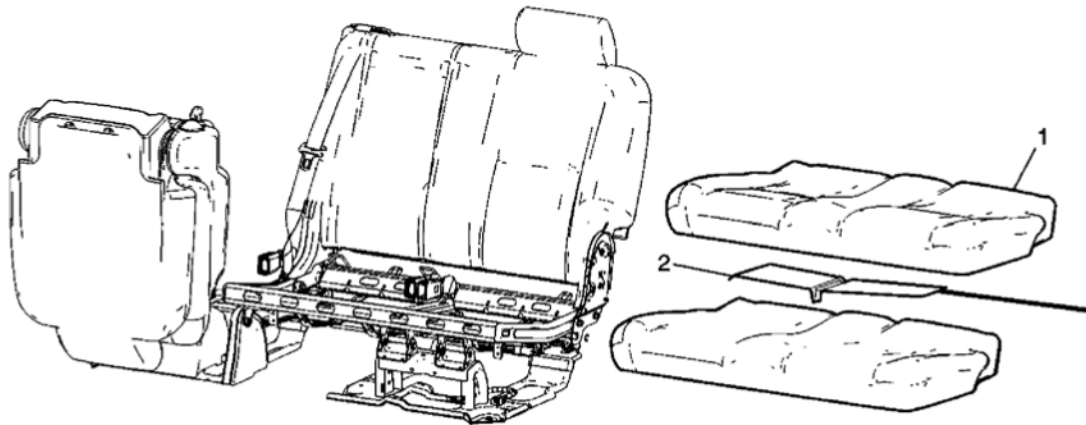


Fig. 31: View Of Rear Seat Cushion Heater Assembly & Cushion Cover
Courtesy of GENERAL MOTORS CORP.

Rear Seat Cushion Heater Replacement

Callout	Component Name
Preliminary Procedure 1. Remove the rear seat. Refer to <u>Rear Seat Replacement (Avalanche/Escalade EXT)</u> or <u>Rear Seat Replacement (Tahoe/Yukon/Escalade with Bucket)</u> or <u>Rear Seat Replacement (Tahoe/Yukon/Escalade with Split Bench)</u> . 2. Remove the recliner handle. Refer to <u>Seat Back Recliner Handle Replacement - Rear (Tahoe/Yukon/Escalade with Bucket)</u> . 3. Remove the outer finish cover. Refer to <u>Seat Cushion Outer Trim Panel Replacement - Rear Seat (Tahoe/Yukon/Escalade with Bucket)</u> or <u>Seat Cushion Outer Trim Panel Replacement - Rear Seat (Tahoe/Yukon/Escalade with Split Bench)</u> . 4. Remove the inner finish cover. Refer to <u>Seat Cushion Inner Panel Replacement - Rear (Tahoe/Yukon/Escalade with Bucket)</u> or <u>Seat Cushion Inner Panel Replacement - Rear (Tahoe/Yukon/Escalade with Split Bench)</u> . 5. Remove the cushion lower trim cover. Refer to <u>Seat Cushion Trim Panel Replacement - Rear No.1 (Avalanche/Escalade EXT)</u> or <u>Seat Cushion Trim Panel Replacement - Rear No.1 (Tahoe/Yukon/Escalade with Bucket)</u> or <u>Seat Cushion Trim Panel Replacement - Rear No.1 (Tahoe/Yukon/Escalade with Split Bench)</u> .	
1	Rear Seat Cushion Cover Tip: 1. Disconnect the seat cushion cover j-channel from the seat cushion frame. 2. Disconnect the electrical connector. 3. Pull the seat cushion cover away from the seat cushion pad to disengage the retaining channel.
2	Rear Seat Cushion Heater Assembly

HEATED AND COOLED SEAT SWITCH REPLACEMENT (KB6)

The heated seat switch is not a serviceable unit. The heated seat switch is part of the HVAC control module and must be replaced as an assembly. Refer to **HVAC Control Module Replacement** .

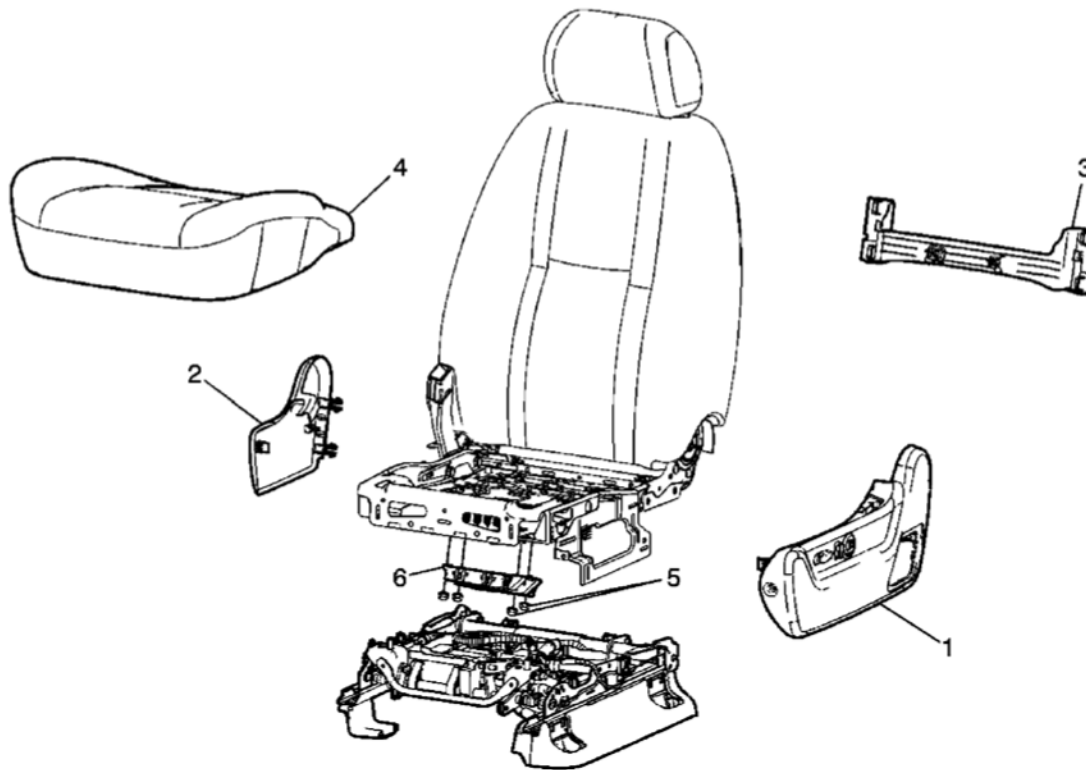
MODULE REPLACEMENT - SEAT CLIMATE CONTROL - FRONT SEAT (EXCEPT CADILLAC)

Fig. 32: View Of Memory Seat Control Module & Components
 Courtesy of GENERAL MOTORS CORP.

Module Replacement - Seat Climate Control - Front Seat (Except Cadillac)

Callout	Component Name
Preliminary Procedure: Remove the front passenger seat. Refer to <u>Front Seat Replacement - Bucket</u> .	
1	Passenger Seat Adjuster Outer Finish Cover Refer to <u>Seat Cushion Outer Trim Panel Replacement - Front Seat (Manual)</u> or <u>Seat Cushion Outer Trim Panel Replacement - Front Seat (Power)</u> .
2	Passenger Seat Adjuster Inner Finish Cover Refer to <u>Seat Cushion Inner Trim Panel Replacement - Front</u> .
3	Passenger Seat Riser Finish Cover Tip: Pull rearward to disengage the cover from the seat riser.
4	Passenger Seat Cushion Cover and Pad

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	Refer to <u>Seat Cushion Trim Cover and Pad Replacement</u> .
5	Passenger Seat Adjuster Assembly Refer to <u>Front Seat Adjuster Replacement (Power)</u> .
6	Front Seat Climate Control Module Bolt (Qty: 2) NOTE: Refer to <u>Fastener Notice</u> . Tighten: 9 N.m (80 lb in)
7	Front Seat Climate Control Module Tip: Disconnect the electrical connector.

SEAT BACK VENTILATION HEAT AND COOL BLOWER REPLACEMENT (CADILLAC)

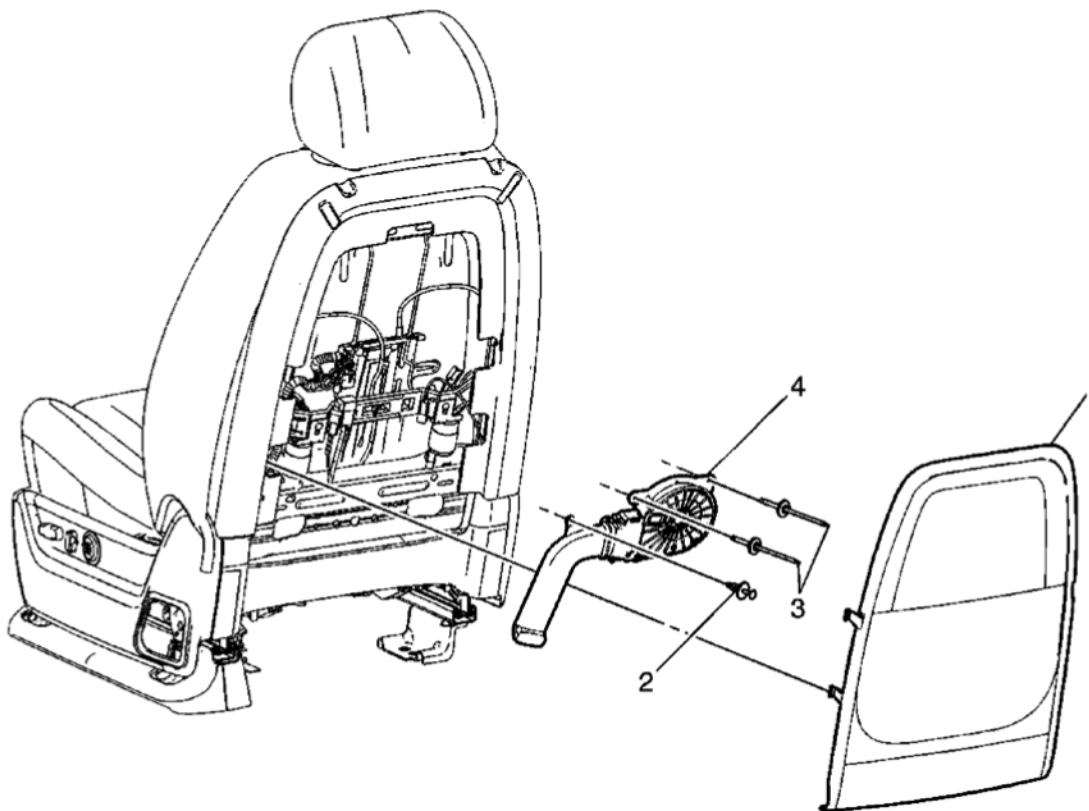


Fig. 33: View Of Front Seat Back Blower Assembly & Components

Courtesy of GENERAL MOTORS CORP.

Seat Back Ventilation Heat and Cool Blower Replacement (Cadillac)

Callout	Component Name
1	Front Seat Back Cushion Finish Panel Tip: Using a nylon flat-bladed tool push the tabs in on the side of the panel to release from

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	the seat back to remove.
2	Front Seat Back Blower Push in Retainer
3	Front Seat Back Blower Rivet (Qty: 2) Tip: Drill out the old rivets and install new rivets when replacing the blower assembly.
4	Front Seat Back Blower Assembly Tip: Disconnect the electrical connector.

SEAT CUSHION VENTILATION HEAT AND COOL BLOWER REPLACEMENT (CADILLAC)

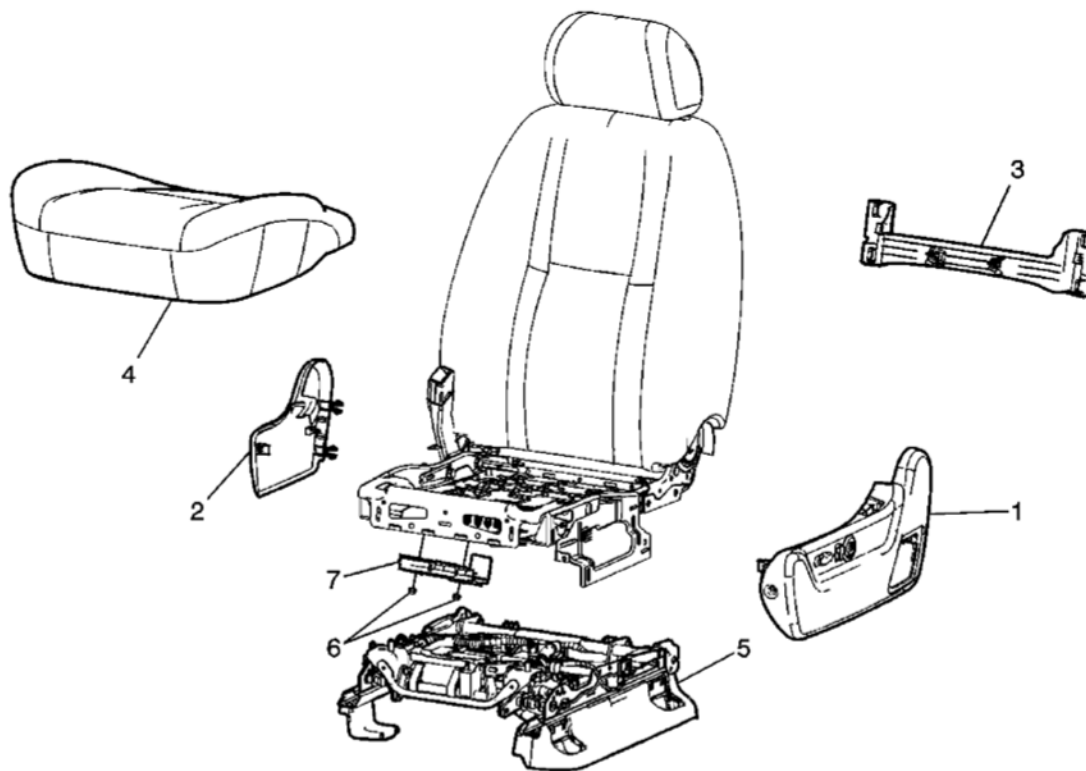


Fig. 34: View Of Front Seat Adjuster Assembly & Components
Courtesy of GENERAL MOTORS CORP.

Seat Cushion Ventilation Heat and Cool Blower Replacement (Cadillac)

Callout	Component Name
Preliminary Procedure: Remove the front seat. Refer to <u>Front Seat Replacement - Bucket</u> .	
1	Front Seat Adjuster Outer Finish Cover Refer to <u>Seat Cushion Outer Trim Panel Replacement - Front Seat (Manual)</u> or <u>Seat Cushion Outer Trim Panel Replacement - Front Seat (Power)</u> .
2	Front Seat Adjuster Inner Finish Cover Refer to <u>Seat Cushion Inner Trim Panel Replacement - Front</u> .
	Front Seat Riser Finish Cover

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3	Tip: Pull rearward to disengage the cover from the seat riser.
4	Seat Cushion Cover and Pad Refer to <u>Seat Cushion Trim Cover and Pad Replacement</u> .
5	Front Seat Adjuster Assembly Refer to <u>Front Seat Adjuster Replacement (Power)</u> .
6	Seat Cushion Blower Nuts (Qty: 3) NOTE: Refer to <u>Fastener Notice</u> . Tighten: 3 N.m (25 lb in)
7	Seat Cushion Blower Tip: Disconnect the electrical connector.

MODULE REPLACEMENT - VENTILATION HEAT AND COOL - DRIVER SEAT CUSHION (ESCALADE W/KB6)

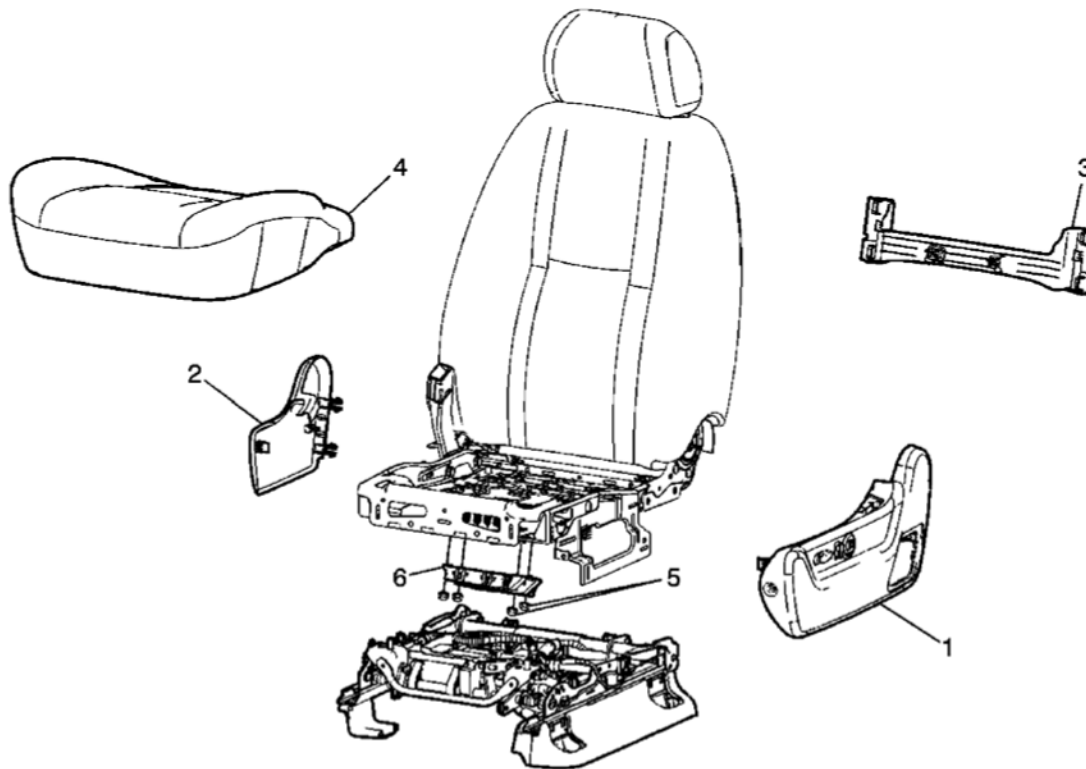


Fig. 35: View Of Memory Seat Control Module & Components
Courtesy of GENERAL MOTORS CORP.

Module Replacement - Ventilation Heat and Cool - Driver Seat Cushion (Escalade w/KB6)

Callout	Component Name
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2007 ACCESSORIES & EQUIPMENT Seat Heating and Cooling - Avalanche, Escalade, Suburban, Tahoe & Yukon

Preliminary Procedure:

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

1	Passenger Seat Adjuster Outer Finish Cover Refer to <u>Seat Cushion Outer Trim Panel Replacement - Front Seat (Manual)</u> or <u>Seat Cushion Outer Trim Panel Replacement - Front Seat (Power)</u> .
2	Passenger Seat Adjuster Inner Finish Cover Refer to <u>Seat Cushion Inner Trim Panel Replacement - Front</u> .
3	Passenger Seat Riser Finish Cover Tip: Pull rearward to disengage the cover from the seat riser.
4	Passenger Seat Cushion Cover and Pad Refer to <u>Seat Cushion Trim Cover and Pad Replacement</u> .
5	Heated Seat Module Nut (Qty: 4) NOTE: Refer to <u>Fastener Notice</u> . Tighten: 9 N.m (80 lb in)
6	Heated Seat Module Tip: Disconnect the electrical connector.

MODULE REPLACEMENT - VENTILATION HEAT AND COOL - PASSENGER SEAT CUSHION (ESCALADE W/KB6)

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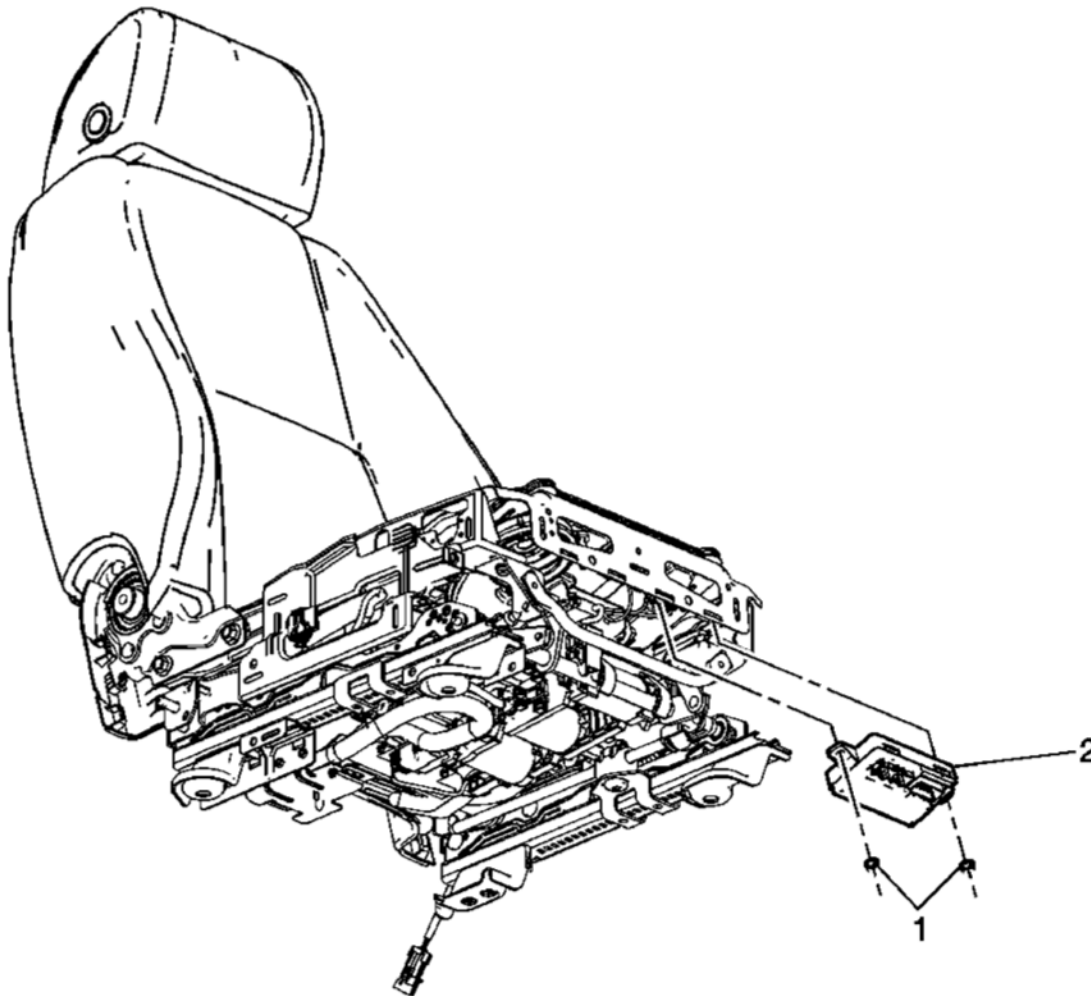


Fig. 36: View Of Passenger Heated Seat Module & Nuts
Courtesy of GENERAL MOTORS CORP.

Module Replacement - Ventilation Heat and Cool - Passenger Seat Cushion (Escalade w/KB6)

Callout	Component Name
Preliminary Procedure	
1. Remove the front passenger seat. Refer to <u>Front Seat Replacement - Bucket</u> .	
2. Remove the passenger seat cushion cover and pad. Refer to <u>Seat Cushion Trim Cover and Pad Replacement</u> .	
1	Passenger Heated Seat Module Nut (Qty: 2) NOTE: Refer to <u>Fastener Notice</u> . Tighten: 9 N.m (80 lb in)

DESCRIPTION AND OPERATION

HEATED SEATS DESCRIPTION AND OPERATION (FRONT)

Description

The driver and passenger heated seats have 2 heat zone operating modes with 3 heat level modes and will operate only while the engine is running. The heat zones are determined by which of the 2 heated seat buttons are pressed, while the heat level is determined by the number of times they are pressed. Pressing the seat cushion button 1 time will activate the seat back and cushion heater elements in the high mode. Each time the seat cushion button is pressed the seat back and cushion heat level is reduced from high to medium, low, and off. Pressing the heated seat back button 1 time will activate only the seat back heater element in the high mode. Each time the seat back button is pressed the seat back heat level is reduced from high to medium, low, and off. During heated seat operation the heat zone operating mode may be changed without affecting the current heat level mode.

Cadillac Switches

The heated seat switches are an integrated to the HVAC control head and when a heated seat switch is pressed the active switch signal is sent to the memory seat module as a GMLAN message. The memory seat module determines the heated seat mode based on the switch messages and sends a message to the HVAC control head to display the heated seat indicators as necessary.

Chevrolet and GMC Switches

The heated seat switches are momentary contact switches and are inputs to the driver and passenger door switches. A ground circuit is connected to the switch assembly through the door switch, and when a heated seat switch is pressed and released a brief switch signal is supplied to the door switch. Whenever the door module receives an active heated seat switch input, the active switch signal is sent to the memory seat module as a GMLAN message. The memory seat module determines the heated seat mode based on the switch messages and sends a message to the door switch to display the heated seat indicators as necessary.

Heated Seat Operation

The memory seat module controls the voltage supply and the ground circuits to the seat heater elements. When a heated seat function is commanded active, the seat module will switch battery voltage to the heater element supply circuits, and ground is provided through pulse width modulation (PWM) low side drive control circuits. During heated seat operation both the seat back and cushion heater elements are supplied battery voltage. The seat module grounds the appropriate control circuits for back only or back and cushion heating modes, and opens or closes the active control circuits as necessary in order to maintain the desired seat temperature. The seat module relies on 4 independent inputs from thermistors located in the seat back and seat cushion of the driver and passenger seats to control heated seat temperatures. The thermistors are 2-wire sensors supplied with a 5-volt referenced signal circuit and a low reference circuit from the seat module. Resistance through the thermistors varies with temperature causing the heated seat sensor signal circuit voltage levels to decrease as the

seat back temperatures rise. The seat modules allow heated seat operation only while the engine is running which is determined by a GMLAN serial data circuit message.

HEATED SEATS DESCRIPTION AND OPERATION (REAR)

The rear passenger heated seats have cushion heat only with 2 heat level modes and will operate only while the engine is running. The left or right cushion is selected by pressing one of the 2 heated seat buttons, while the heat level is determined by the number of times they are pressed. Pressing the seat heat button 1 time will activate the cushion heater elements in the high mode. Each time the seat cushion button is pressed the seat cushion heat level is reduced from high to low, and off.

The heated seat switches are momentary contact switches and are inputs to the rear seat audio module. A ground circuit is connected to the switch assembly through the rear seat audio module. Whenever the rear seat audio module receives an active heated seat switch input, the next heated seat operating mode is determined by whatever the current mode may be. The seat heater elements are controlled by the rear heated seat module using inputs from the rear seat audio through GMLAN serial data circuit messages. The rear heated seat module controls the voltage supply and the ground circuits to the seat heater elements. When a heated seat function is commanded active, the seat module will switch battery voltage to the heater element supply circuits, and ground is provided through low side drive control circuits. During heated seat operation the seat cushion heater elements are supplied battery voltage. The seat module grounds the appropriate control circuits for left or right cushion heating modes, and opens or closes the active control circuits as necessary in order to maintain the desired seat temperature. The seat module relies on 2 independent inputs from thermistors located in the seat cushion of the left and right seats to control heated seat temperatures. The thermistors are 2-wire sensors supplied with a 5-volt referenced signal circuit and a low reference circuit from the seat module. Resistance through the thermistors varies with temperature causing the heated seat sensor signal circuit voltage levels to decrease as the seat back temperatures rise. The seat module allows heated seat operation only while the engine is running which is determined by a GMLAN serial data circuit message.

HEATED/COOLED SEATS DESCRIPTION AND OPERATION

The driver and front passenger heated cooled seat system consist of the following components:

- HVAC Control Module
- Memory Seat Module
- Climate Control Seat Module
- Driver and passenger seat back heat/cool ventilation blowers
- Driver and passenger seat cushion heat/cool ventilation blowers

HVAC Control Module

The heated cooled seat system operation is controlled through the switch inputs of the HVAC control module. The heated cooled seat switches provide 3 inputs that are relayed to the Memory Seat Module (MSM) through GMLAN messages. Whenever one of the switches is pressed a message is sent to the MSM indicating switch is active. During heated cooled seat operation the HVAC control module displays the switch symbol of the active operating mode and the temperature level bars on the climate control display. The mode symbol and temperature bars that are displayed is determined by a GMLAN message from the MSM.

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Memory Seat Module

The memory seat module monitors the heated/cooled seat switches through GMLAN message inputs and determines the heated/cooled seat operating modes and temperature levels. When heated or cooled seat switch active signals are received through GMLAN messages, and vehicle conditions are appropriate to allow heated or cooled seat operation, the memory seat module (MSM) will calculate the switch activations and determine the heated or cooled seat operating modes. When the MSM activates a heated/cooled seat function an indicator control GMLAN message is sent to the HVAC control module. The MSM controls the operating mode of the Climate Control Seat Module (CCSM) through 2 pulse width modulation (PWM) signal circuits. The left and right heated/cooled seat mode signal circuits are referenced from battery voltage by the CCSM and pulsed low by the MSM. Each heated/cooled seat is capable of operating in 3 modes with 3 temperature levels so the MSM uses 9 PWM frequencies for each signal circuit to command the heated/cooled seat modes to the CCSM.

Climate Control Seat Module

The Climate Control Seat Module (CCSM) is located under the passenger seat and controls 4 individual driver and passenger seat heat/cool ventilation blowers. When the CCSM receives a heated/cooled seat command through the left or right heated/cooled seat mode signal circuit, the appropriate seat heat/cool ventilation blowers will be operated by the CCSM.

Seat Heat/Cool Ventilation Blowers

The ventilation blowers are self-contained electronic air conditioners consisting of a blower motor with an inlet air filter, thermal electric device (TED), temperature sensor, and waste air duct. The air flow from the blower is divided into 2 streams and directed across both sides of the TED, one side into vent passages through the seat foam and the other out the waste air duct. While the system is operating in either the heat or cool modes both heated and cooled air is generated as it passes across the TED. When voltage is applied to a TED, one side releases energy as heat, while the opposite side absorbs energy and gets cold. Heat or cool modes are determined by the polarity of the supply voltage to the TEDs. The climate control seat modules (CCSM)s rely on inputs from temperature sensors located in the ventilation blowers near the TEDs to control seat temperatures. The thermistors are 2 wire sensors supplied with a 5-volt referenced signal circuit and a low reference circuit from the CCSM. Resistance through the thermistors varies with temperature causing the heated seat sensor signal circuit voltage levels to decrease as the TED temperatures rise. The CCSM monitors the temperature of the air flow into the seat foam and continuously adjusts the blower speed and TED temperature by regulating the current flow through each component.