

2007 Saturn Outlook XE

2007 ACCESSORIES & EQUIPMENT Power Seats - Outlook

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Power Seats - Outlook

SPECIFICATIONS

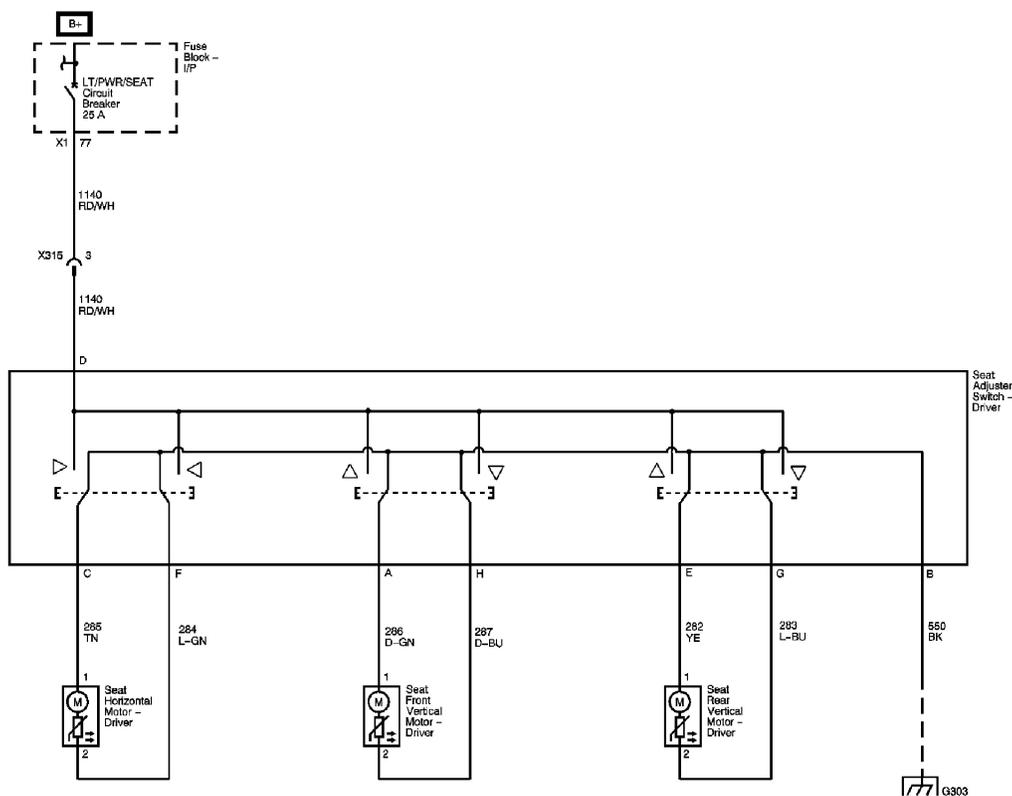
FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Front Seat Lumbar Assembly Bolt	9 N.m	80 lb in
Driver Seat Adjuster Memory Module Screw	2 N.m	18 lb in
Driver Seat Adjuster Memory Module Switch Screw	3 N.m	27 lb in

SCHEMATIC AND ROUTING DIAGRAMS

DRIVER SEAT SCHEMATICS



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Fig. 1: AG1 Schematic
Courtesy of GENERAL MOTORS CORP.

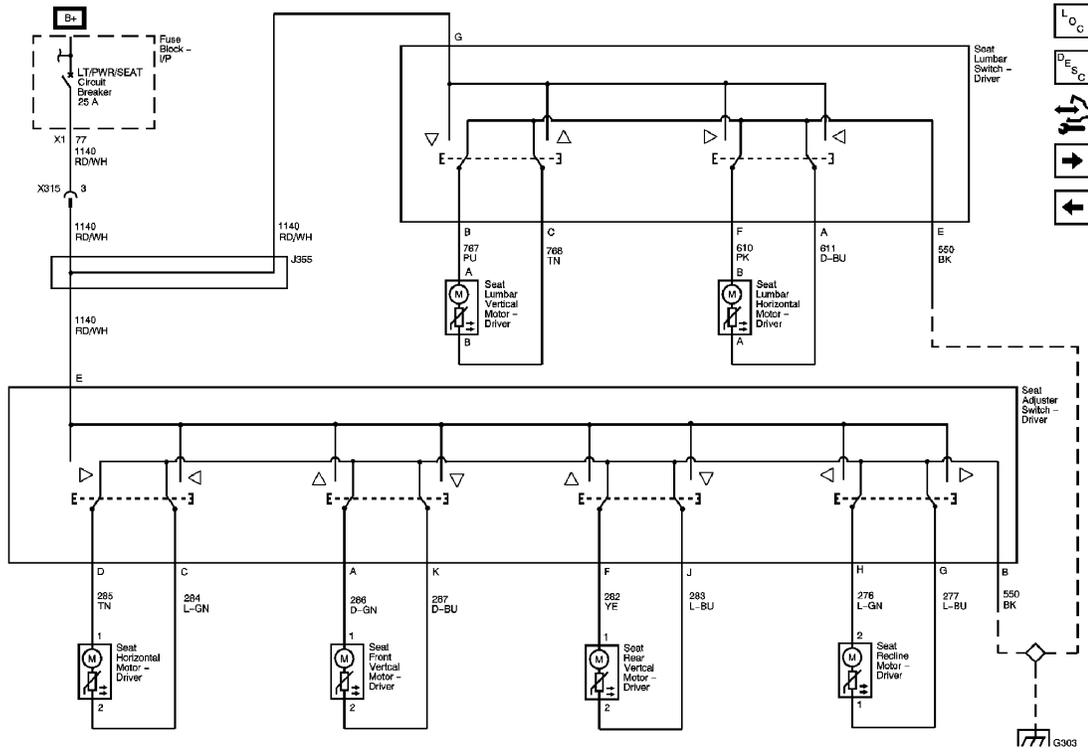


Fig. 2: AH5 Schematic
Courtesy of GENERAL MOTORS CORP.

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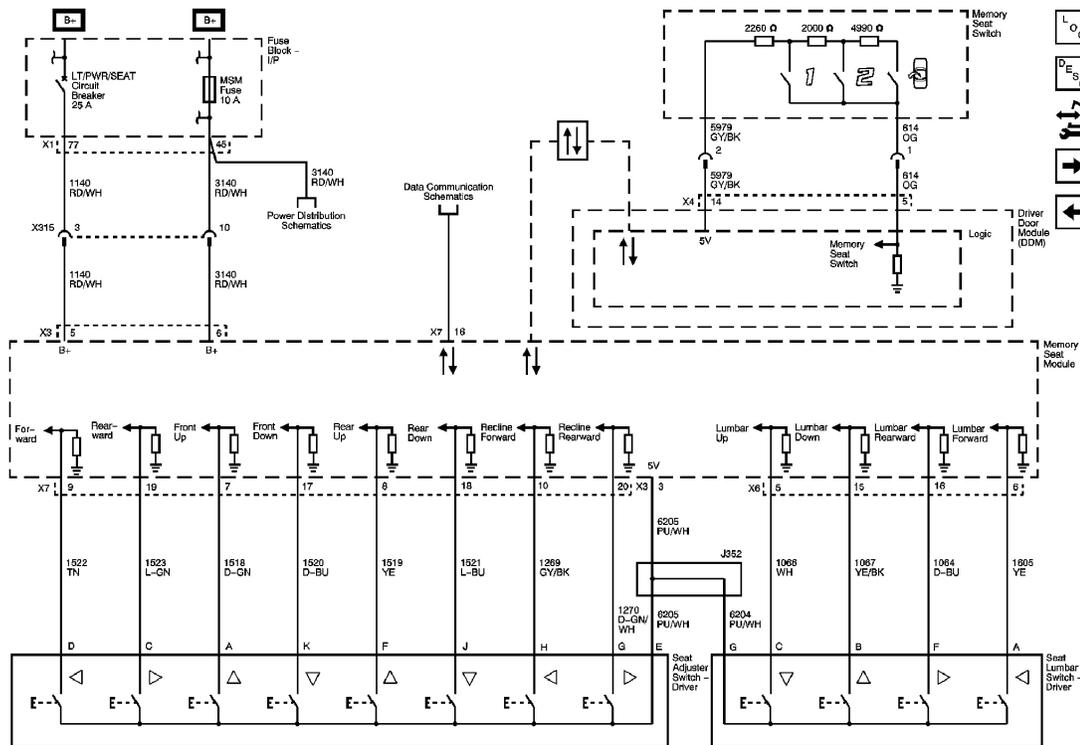


Fig. 3: AG3 Module Power & Data Communication, Driver Switches Schematic
 Courtesy of GENERAL MOTORS CORP.

Fig. 5: AG3 Module Ground, Recline, Horizontal & Vertical Motors Schematic
 Courtesy of GENERAL MOTORS CORP.

PASSENGER SEAT SCHEMATICS

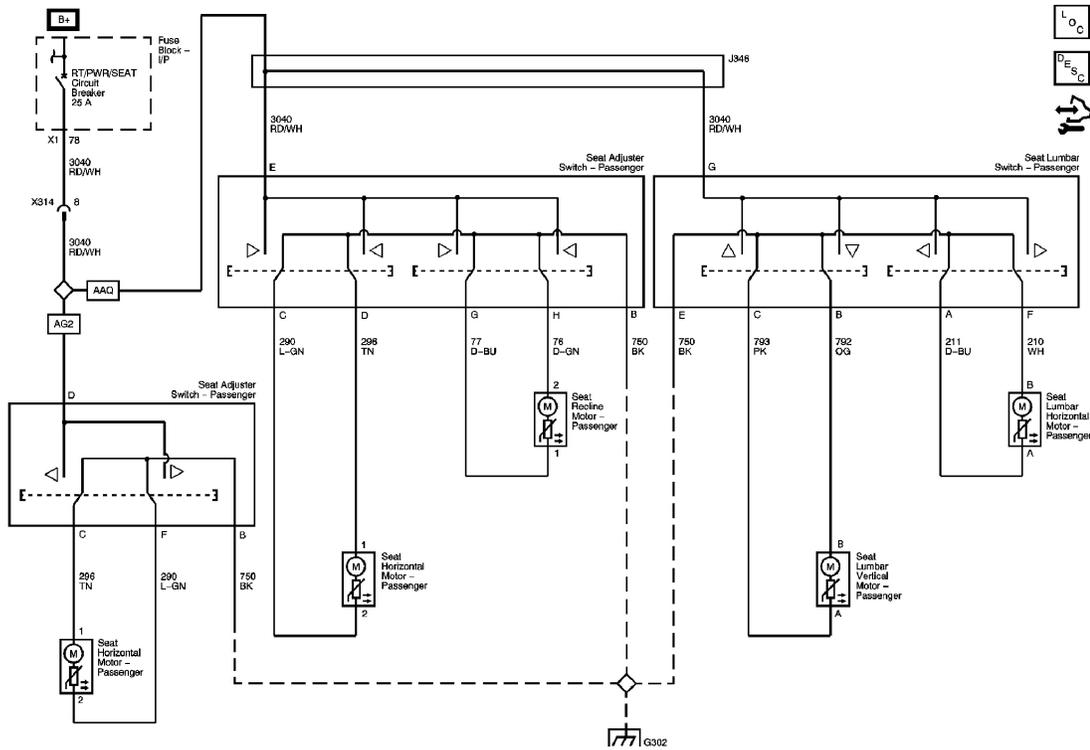


Fig. 6: Passenger Seat Schematic
 Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

POWER SEAT COMPONENT VIEWS

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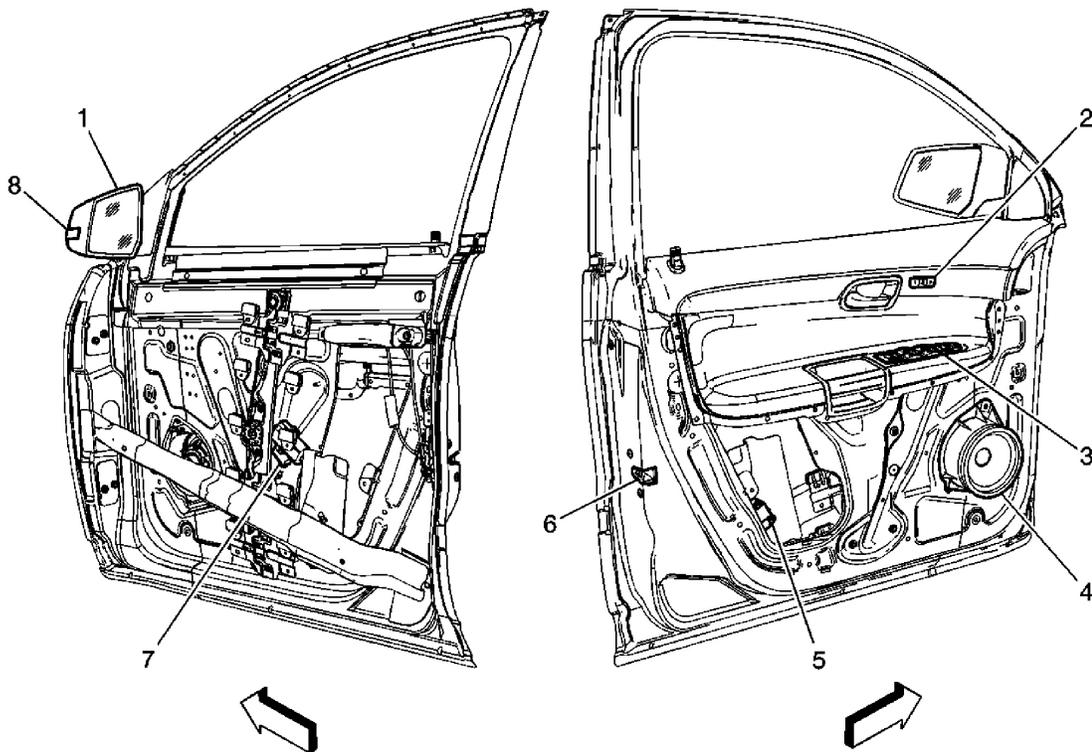


Fig. 7: Identifying Driver Door Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 7

Callout	Component Name
1	Outside Rearview Mirror - Driver
2	Memory Seat Switch (AG3)
3	Driver Door Module (DDM) (AXC/AXE)
4	Speaker - LF Door
5	Inflatable Restraint Side Impact Sensing Module (SISM) - Left
6	Door Latch Assembly - Driver
7	Window Motor - Driver
8	Turn Signal Lamp (Part of Outside Rearview)

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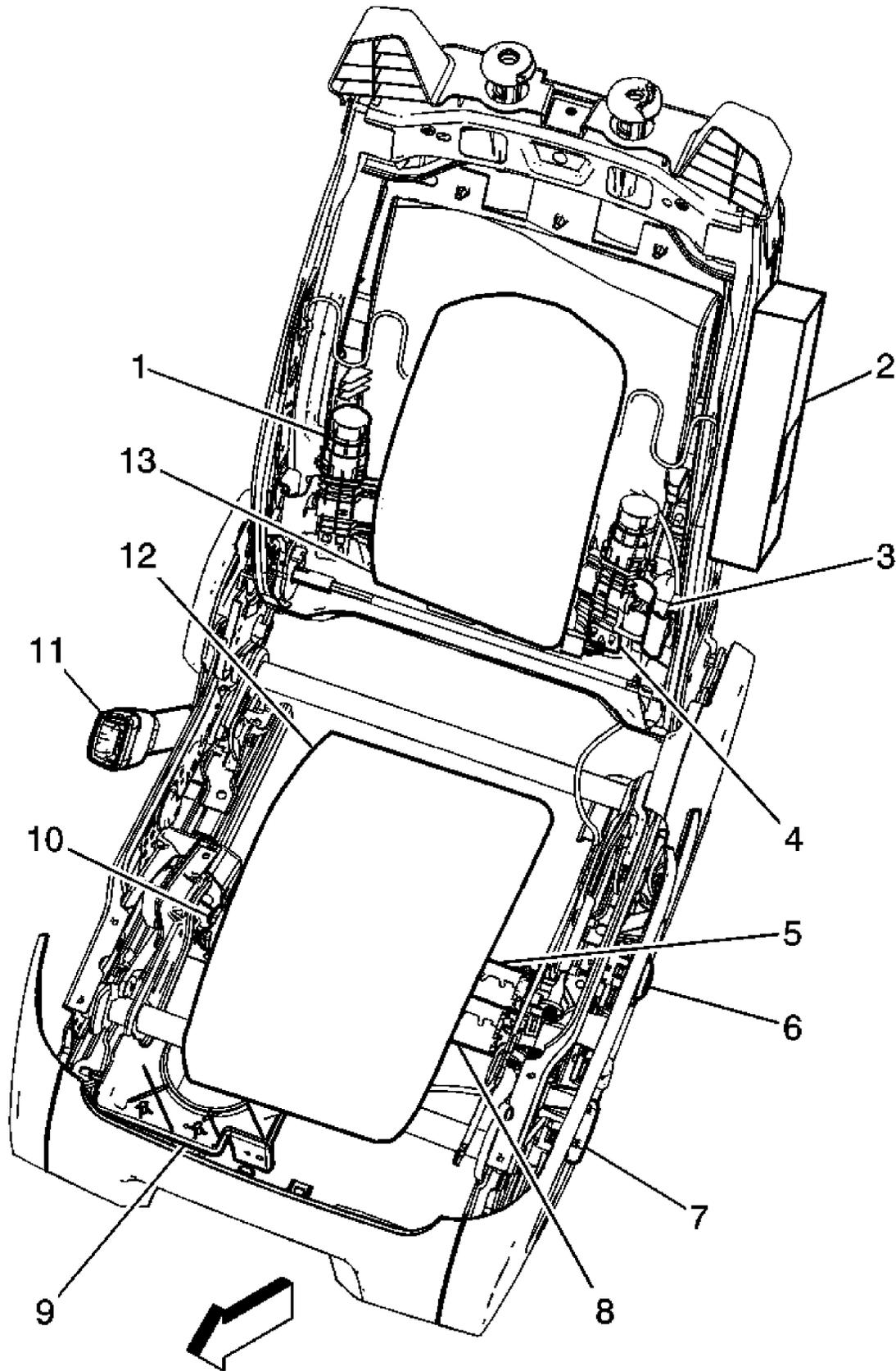


Fig. 8: View Of Driver Seat Components (Except A45)
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 8

Callout	Component Name
1	Seat Lumbar Vertical Motor - Driver
2	Inflatable Restraint Side Impact Module - Left
3	Seat Recline Motor - Driver
4	Seat Lumbar Horizontal Motor - Driver
5	Seat Horizontal Motor - Driver
6	Seat Lumbar Switch - Driver
7	Seat Adjuster Switch - Driver
8	Seat Rear Vertical Motor - Driver
9	Heated Seat Control Module - Driver (KA1)
10	Seat Front Vertical Motor - Driver
11	Seat Belt Switch - Driver
12	Heated Seat Element - Driver Cushion (KA1)
13	Heated Seat Element - Driver Back (KA1)

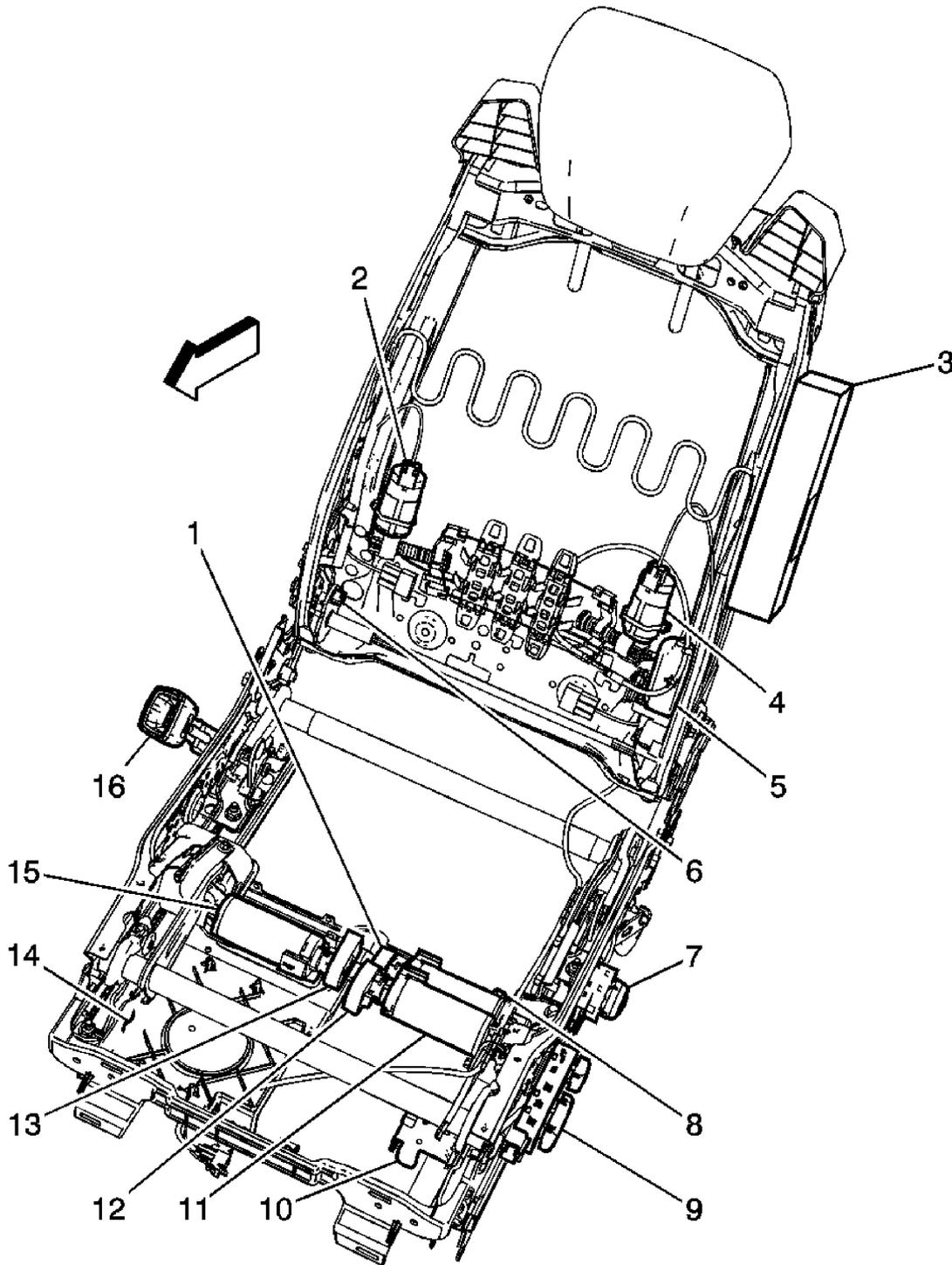


Fig. 9: Identifying Driver Seat Components (AG3)
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 9

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Callout	Component Name
1	Seat Horizontal Position Sensor
2	Seat Lumbar Vertical Motor - Driver (AG3/AH5)
3	Inflatable Restraint Side Impact Module - Left
4	Seat Lumbar Horizontal Motor - Driver (AG3/AH5)
5	Seat Recline Motor - Driver (AG3/AH5)
6	Seat Recline Position Sensor - Driver
7	Seat Lumbar Switch - Driver (AG3/AH5)
8	Seat Horizontal Motor - Driver (AG1/AG3/AH5)
9	Seat Adjuster Switch - Driver (AG1/AG3/AH5)
10	Inflatable Restraint Seat Position Sensor (SPS) - Driver (W49)
11	Seat Rear Vertical Motor - Driver
12	Seat Rear Vertical Position Sensor
13	Seat Front Vertical Position Sensor
14	Memory Seat Module
15	Seat Front Vertical Motor - Driver
16	Seat Belt Switch - Driver

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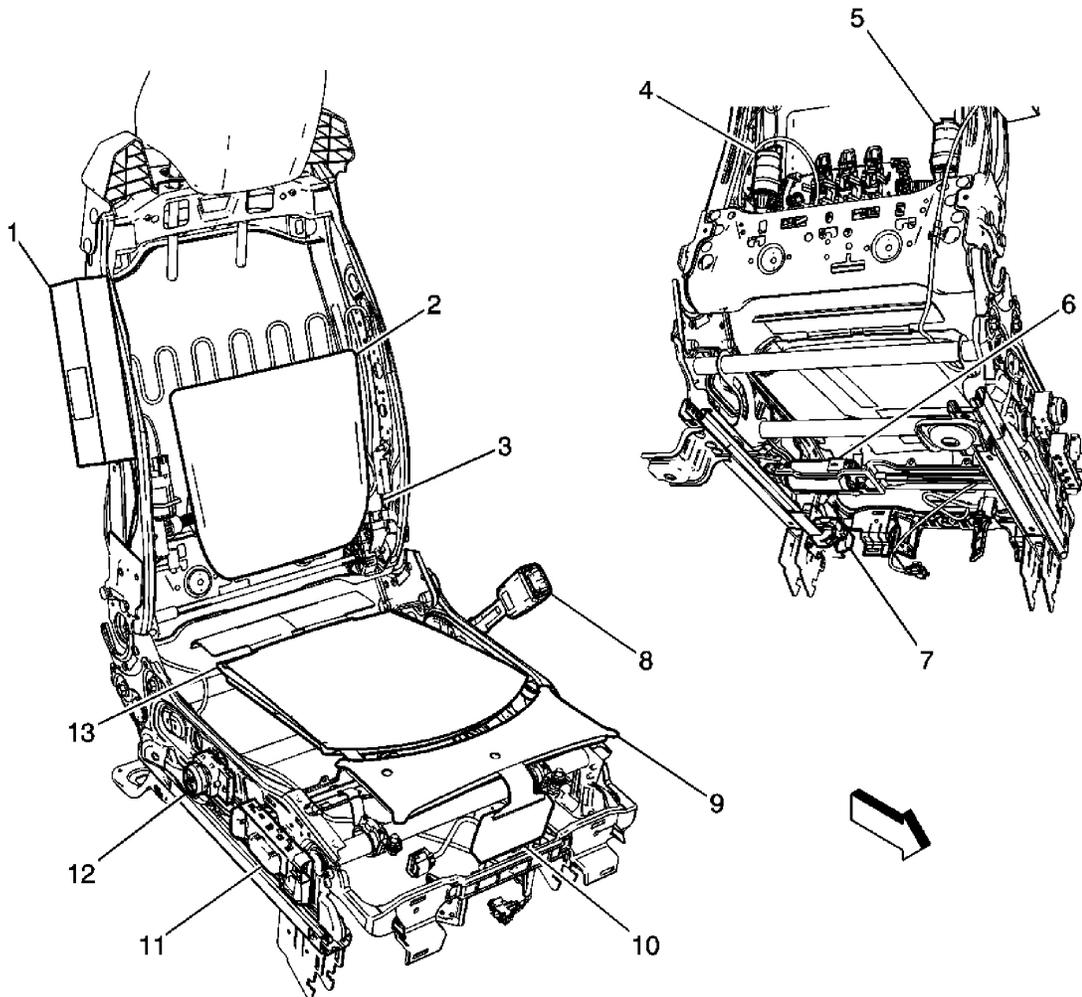


Fig. 10: Identifying Passenger Seat Components
 Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 10

Callout	Component Name
1	Inflatable Restraint Side Impact Module - Right
2	Heated Seat Element - Passenger Back (KA1)
3	Seat Recline Motor - Passenger (AAQ)
4	Seat Lumbar Horizontal Motot - Passenger (AAQ)
5	Seat Lumbar Vertical Motor - Passenger (AAQ)
6	Seat Horizontal Motor - Passenger
7	Inflatable Restraint Seat Position Sensor (SPS) - Passenger (W49)
8	Seat Belt Switch - Passenger

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9	Inflatable Restraint Front Passenger Presence System (PPS) Sensor
10	Passenger Presence System (PPS) Module (Part of PPS Sensor)
11	Seat Adjuster Switch - Passenger
12	Seat Lumbar Switch - Passenger
13	Heated Seat Element - Passenger Back

POWER SEAT CONNECTOR END VIEWS

Memory Seat Module X1 (AG3)

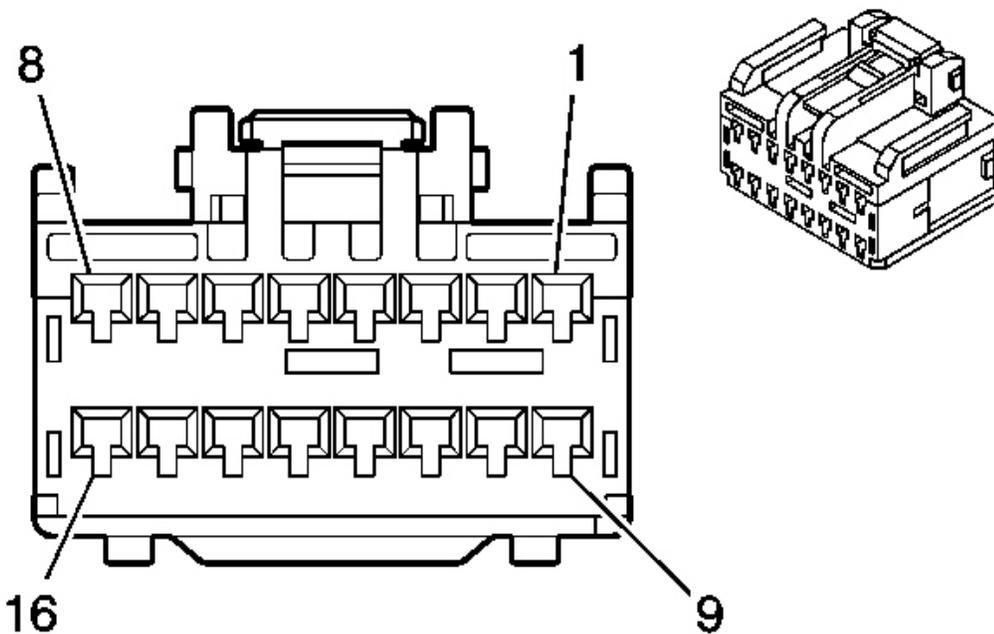


Fig. 11: Memory Seat Module X1 (AG3) Connector End View
Courtesy of GENERAL MOTORS CORP.

Memory Seat Module X1 (AG3) Connector Parts Information

Connector Part Information

- OEM: 6098-4611
- Service: See Catalog

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- Description: 16-Way F 1.5 Series, Unsealed (BK)

Terminal Part Information

- Terminal/Tray: 8240-0128/22
- Core/Insulation Crimp: C/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Memory Seat Module X1 (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.8 PU	2424	Driver Heated Seat Back Element Control (KA1+A45)
2-3	-	-	Not Used
4	0.8 L-BU	2433	Passenger Heated Seat Back Element Control (KA1+A45)
5	-	-	Not Used
6	0.8 BN	2432	Driver Heated Seat Back Element Supply Voltage (KA1+A45)
7	1 TN	2110	Steering Column Telescope Motor Control - Reverse (N38)
8	1 OG	2098	Steering Column Telescope Motor Forward (N38)
9	1 TN	285	Driver Seat Horizontal Motor Forward Control (AG3)
10	1 L-GN	284	Driver Seat Horizontal Motor Rearward Control (AG3)
11	0.8 L-GN	2078	Heated Seat Cushion Element Control (KA1+A45)
12	1 D-GN	286	Driver Seat Front Vertical Motor Up Control (AG3)
13	1 D-BU	287	Driver Seat Front Vertical Motor Down Control (AG3)
14	0.8 D-BU	2479	Passenger Heated Seat Element Supply Voltage (KA1+A45)
15	1 YE	282	Driver Seat Rear Vertical Motor Up Control (AG3)
16	1 L-BU	283	Driver Seat Rear Vertical Motor Down Control (AG3)

Memory Seat Module X2 (AG3)

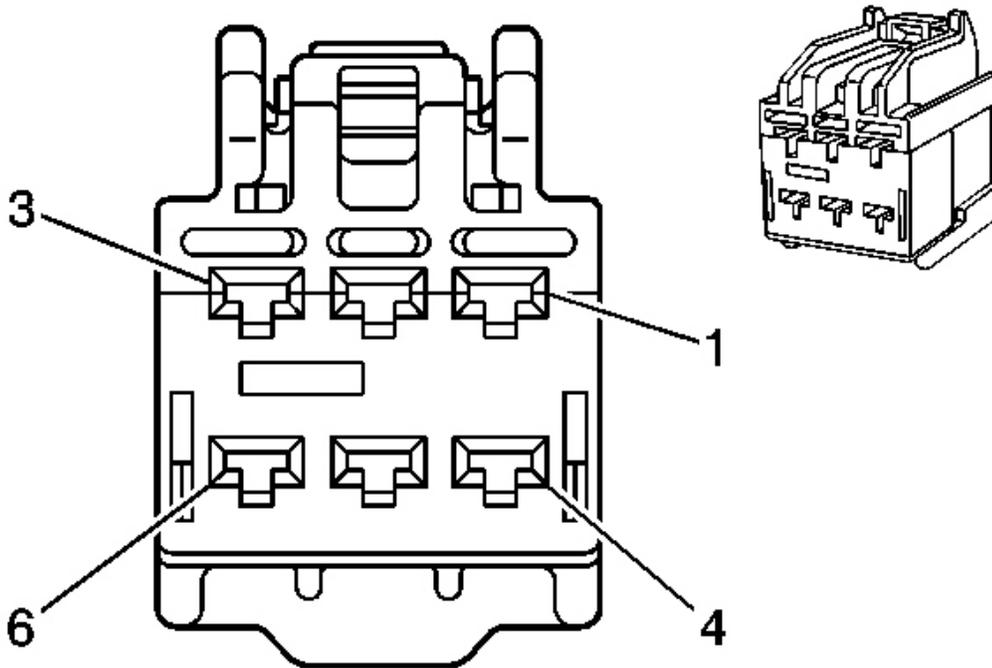


Fig. 12: Memory Seat Module X2 (AG3) Connector End View
Courtesy of GENERAL MOTORS CORP.

Memory Seat Module X2 (AG3) Connector Parts Information

Connector Part Information

- OEM: 6098-4607
- Service: 88988497
- Description: 6-Way F 2.8mm PBT (BK)

Terminal Part Information

- Terminal/Tray: 8100-4443/22
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-35 (VT)

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Memory Seat Module X2 (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 GY	6206	Low Reference (AG3)
2	0.35 PK	2426	Driver Heated Seat Back Temperature Sensor Low Reference (KA1+A45)
3	0.35 YE	2080	Driver Heated Seat Cushion Temperature Sensor Low Reference (KA1+A45)
4	-	-	Not Used
5	0.35 TN	2482	Passenger Heated Seat Back Temperature Sensor Low Reference (KA1+A45)
6	0.35 L-BU	5476	Passenger Heated Seat Back Low Reference (KA1+A45)

Memory Seat Module X3 (AG3)

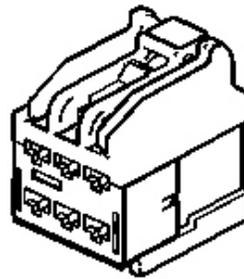
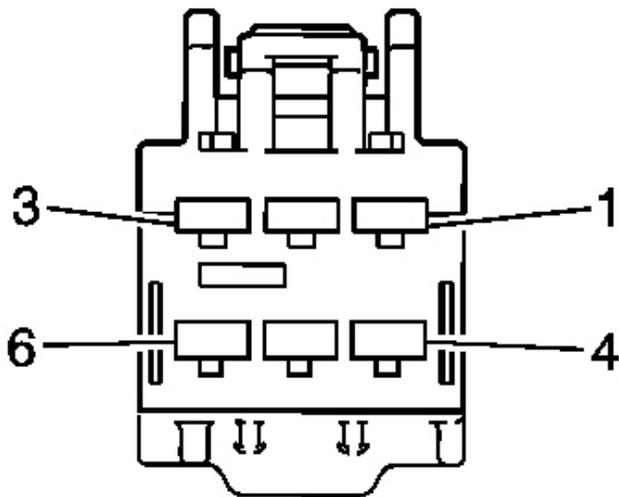


Fig. 13: Memory Seat Module X3 (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Memory Seat Module X3 (AG3) Connector Parts Information

Connector Part Information

- OEM: 6098-4606
- Service: See Catalog
- Description: 6-Way F 2.8 Series (BN)

Terminal Part Information

- Pins: 3, 6
- Terminal/Tray: 8100-4443/22
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-35 (VT)
- Pins: 1, 2, 4, 5
- Terminal/Tray: 8100-4445/22
- Core/Insulation Crimp: Pins 1, 2, 4 - 4/4
- Core/Insulation Crimp: Pins 5 - F/D
- Release Tool/Test Probe: 15315247/J-35616-35 (VT)

Memory Seat Module X3 (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	2 BK	550	Ground (A45)
2	2 RD/WH	4040	Battery Positive Voltage (N38)
3	0.35 PU/WH	6205	Driver Position Switch High Reference (AG3)
4	2 BK	550	Ground (A45)
5	3 RD/WH	1140	Battery Positive Voltage (A45)
6	0.35 RD/WH	3140	Battery Positive Voltage (A45)

Memory Seat Module X4 (AG3)

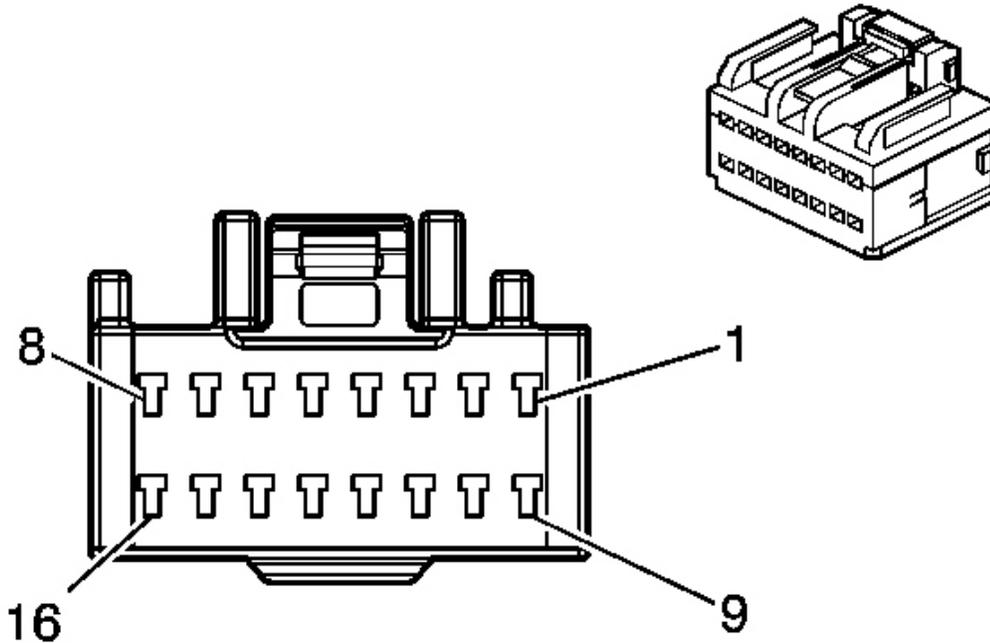


Fig. 14: Memory Seat Module X4 (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Memory Seat Module X4 (AG3) Connector Parts Information

Connector Part Information

- OEM: 6098-4610
- Service: See Catalog
- Description: 16-Way F 1.5 Series, Unsealed (GN)

Terminal Part Information

- Terminal/Tray: 8240-0128/22
- Core/Insulation Crimp: C/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Memory Seat Module X4 (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

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1	1 PU	767	Driver Seat Lumbar Motor Down Control (AG3)
2	1 TN	768	Driver Seat Lumbar Motor Up Control (AG3)
3-6	-	-	Not Used
7	1 BN	2112	Steering Column Tilt Motor Control - Down (N38)
8	1 PK	2111	Steering Column Tilt Motor Control - Up (N38)
9-11	-	-	Not Used
12	1 D-BU	611	Driver Seat Lumbar Motor Forward Control (AG3)
13	1 PK	610	Driver Seat Lumbar Motor Rearward Control (AG3)
14	0.8 PK	2480	Passenger Heated Seat Cushion Element Control (KA1+A45)
15	1 L-GN	276	Driver Seat Recline Motor Forward Control (AG3)
16	1 L-BU	277	Driver Seat Recline Motor Rearward Control (AG3)

Memory Seat Module X5 (AG3)

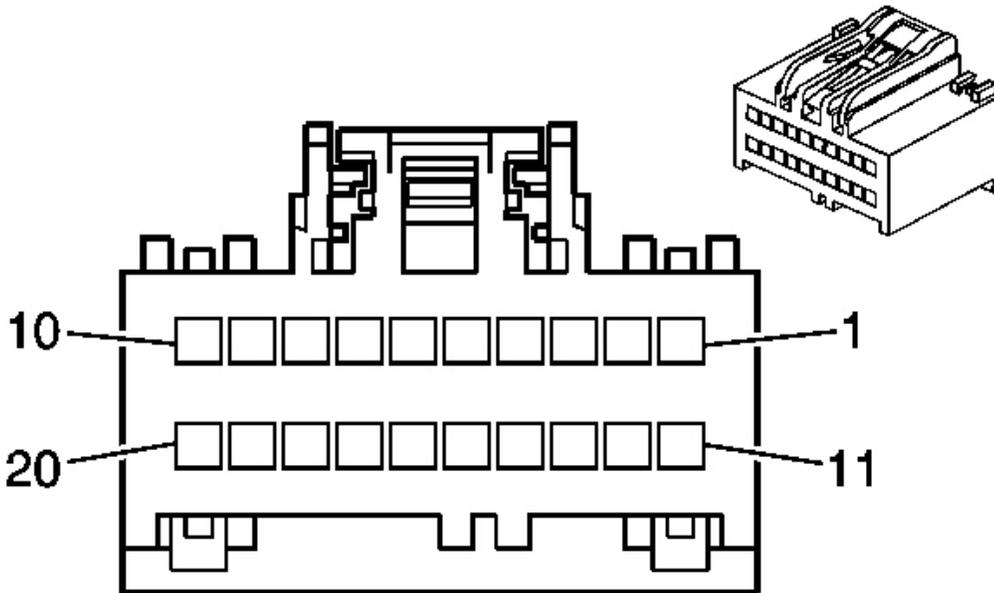


Fig. 15: Memory Seat Module X5 (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Memory Seat Module X5 (AG3) Connector Parts Information

Connector Part Information

- OEM: 31410-1200
- Service: See Catalog
- Description: 20-Way F 0.64 Series (BK)

Terminal Part Information

- Terminal/Tray: 7116-4618-02/14
- Core/Insulation Crimp: P/P
- Release Tool/Test Probe: J-38125-215/J-35616-64B (L-BU)

Memory Seat Module X5 (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 YE/BK	2079	Heated Seat Cushion Temperature

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			Sensor Signal (KA1+A45)
2	0.35 GY	2434	Passenger Heated Seat Cushion Temperature Sensor Signal (KA1+A45)
3	0.35 TN	2436	Heated Seat Back Temperature Sensor Signal (KA1+A45)
4	0.35 D-BU	2425	Driver Heated Seat Back Temperature Sensor Signal (KA1+A45)
5-8	-	-	Not Used
9	0.35 OG	2153	Steering Column Telescope Sensor Signal (N38)
10	-	-	Not Used
11	0.35 TN	6207	5-Volt Reference (AG3)
12-13	-	-	Not Used
14	0.35 BN/WH	557	Front Vertical Seat Motor Position Sensor Signal (AG3)
15	0.35 TN	568	Rear Vertical Seat Motor Position Sensor Signal (AG3)
16	0.35 D-GN	569	Horizontal Seat Motor Position Sensor Signal (AG3)
17	0.35 WH/BK	570	Driver Seat Recline Motor Position Sensor Signal (AG3)
18	0.35 TN	1062	Driver Seat Lumbar Vertical Position Sensor Signal (AG3)
19	0.35 YE	1063	Driver Seat Lumbar Horizontal Position Sensor Signal (AG3)
20	0.35 OG	2154	Steering Column Tilt Sensor Signal (N38)

Memory Seat Module X6 (AG3)

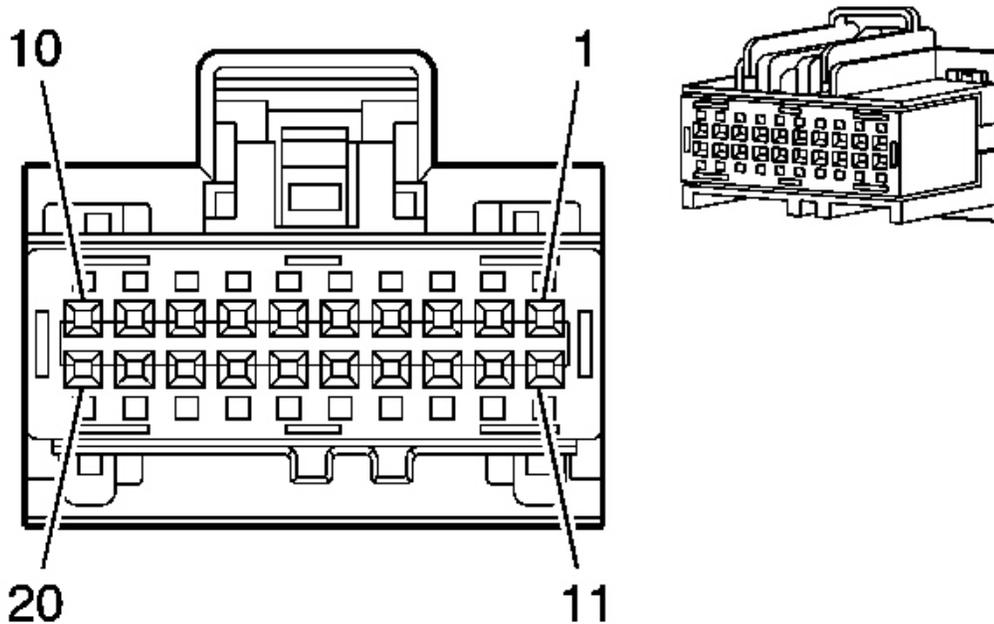


Fig. 16: Memory Seat Module X6 (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Memory Seat Module X6 (AG3) Connector Parts Information

Connector Part Information

- OEM: 31410-1201
- Service: See Catalog
- Description: 20-Way F USCAR 0.64 Series (GY)

Terminal Part Information

- Terminal/Tray: 7116-4618-02/14
- Core/Insulation Crimp: P/P
- Release Tool/Test Probe: J-38125-215/J-35616-64B (L-BU)

Memory Seat Module X6 (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1-4	-	-	Not Used

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5	0.35 WH	1066	Driver Seat Lumbar Up Switch Signal (AG3)
6	0.35 YE	1065	Driver Seat Lumbar Forward Switch Signal (AG3)
7	-	-	Not Used
8	0.35 GY	2096	Steering Column Tilt and Telescope Up Switch Signal (N38)
9	0.35 PK	2094	Steering Column Tilt and Telescope Forward Switch Signal (N38)
10-14	-	-	Not Used
15	0.35 YE/BK	1067	Driver Seat Lumbar Down Switch Signal (AG3)
16	0.35 D-BU	1064	Driver Seat Lumbar Rearward Switch Signal (AG3)
17	-	-	Not Used
18	0.35 YE	2097	Steering Column Tilt and Telescope Down Switch Signal (N38)
19	0.35 OG	2095	Steering Column Tilt and Telescope Reverse Switch Signal (N38)
20	-	-	Not Used

Memory Seat Module X7 (AG3)

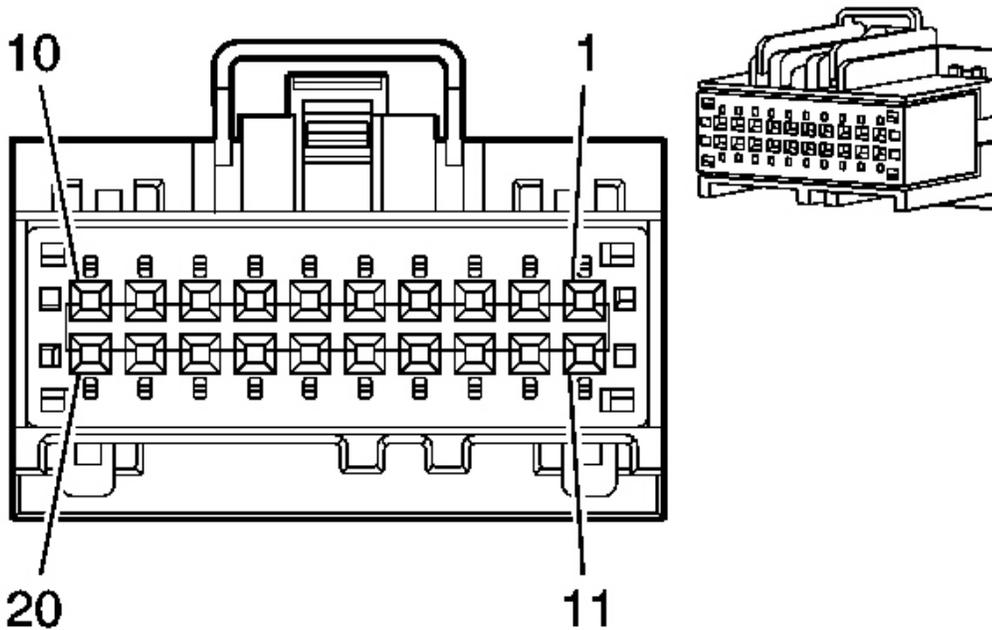


Fig. 17: Memory Seat Module X7 (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Memory Seat Module X7 (AG3) Connector Parts Information

Connector Part Information

- OEM: 31410-1202
- Service: See Catalog
- Description: 20-Way F 0.64 Series (BK)

Terminal Part Information

- Terminal/Tray: 7116-4618-02/14
- Core/Insulation Crimp: P/P
- Release Tool/Test Probe: J-38125-215/J-35616-64B (L-BU)

Memory Seat Module X7 (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1-6	-	-	Not Used

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7	0.35 D-GN	1518	Power Seat Front Vertical Up Switch Signal (AG3)
8	0.35 YE	1519	Power Seat Rear Vertical Up Switch Signal (AG3)
9	0.35 TN	1522	Power Seat Horizontal Forward Switch Signal (AG3)
10	0.35 GY/BK	1269	Power Seat Recline Forward Switch Signal (AG3)
11-15	-	-	Not Used
16	0.35 D-GN	5060	Low Speed GMLAN Serial Data (A45)
17	0.35 D-BU	1520	Power Seat Front Vertical Down Switch Signal (AG3)
18	0.35 L-BU	1521	Power Seat Rear Vertical Down Switch Signal (AG3)
19	0.35 L-GN	1523	Power Seat Horizontal Rearward Switch Signal (AG3)
20	0.35 D-GN/WH	1270	Power Seat Recline Rearward Switch Signal (AG3)

Memory Seat Switch (WDA+AG3)

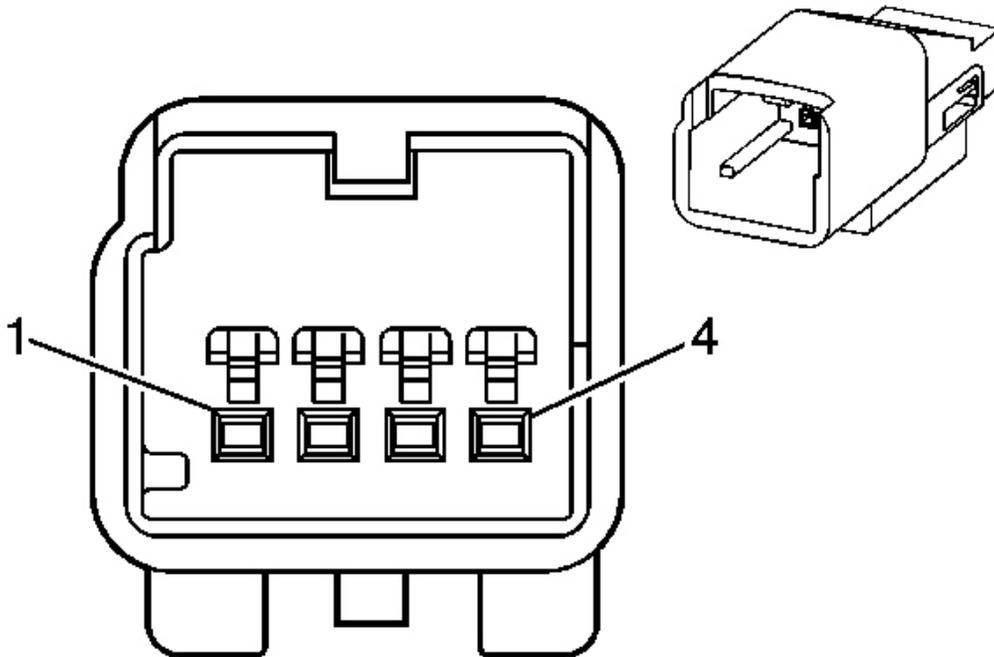


Fig. 18: Memory Seat Switch (WDA+AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Memory Seat Switch (WDA+AG3) Connector Parts Information

Connector Part Information

- OEM: 7282-6560-40
- Service: See Catalog
- Description: 4-Way M 064 YESC Series (L-GY)

Terminal Part Information

- Terminal/Tray: 7114-4720-02/14
- Core/Insulation Crimp: J/J
- Release Tool/Test Probe: 15315247/J-35616-65B (L-BU)

Memory Seat Switch (WDA+AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

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1	0.35 OG	614	Memory Set Switch Signal
2	0.35 GY/BK	5979	Memory Seat Switch Exit Signal
3	0.35 D-BU/WH	5978	Memory Switch Low Reference
4	0.35 BN/WH	6064	Memory Switch Dimming Control

Memory Seat Switch (Z88+AG3)

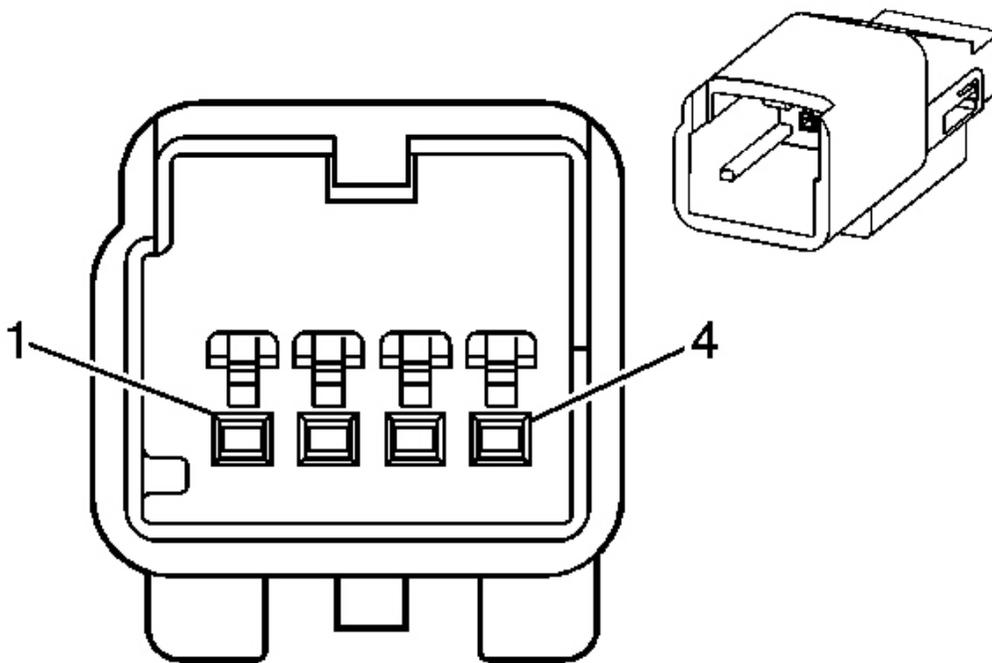


Fig. 19: Memory Seat Switch (Z88+AG3) Connector End View
Courtesy of GENERAL MOTORS CORP.

Memory Seat Switch (Z88+AG3) Connector Parts Information

Connector Part Information

- OEM: 7282-6560-40
- Service: See Catalog
- Description: 4-Way M 064 YESC Series (L-GY)

Terminal Part Information

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- Terminal/Tray: 7114-4720-02/14
- Core/Insulation Crimp: J/J
- Release Tool/Test Probe: 15315247/J-35616-65B (L-BU)

Memory Seat Switch (Z88+AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 OG	614	Memory Set Switch Signal
2	0.35 GY/BK	5979	Memory Seat Switch Exit Signal
3	0.35 D-BU/WH	5978	Memory Switch Low Reference
4	0.35 BN/WH	6064	Memory Switch Dimming Control

Seat Adjuster Switch - Driver (AG1)

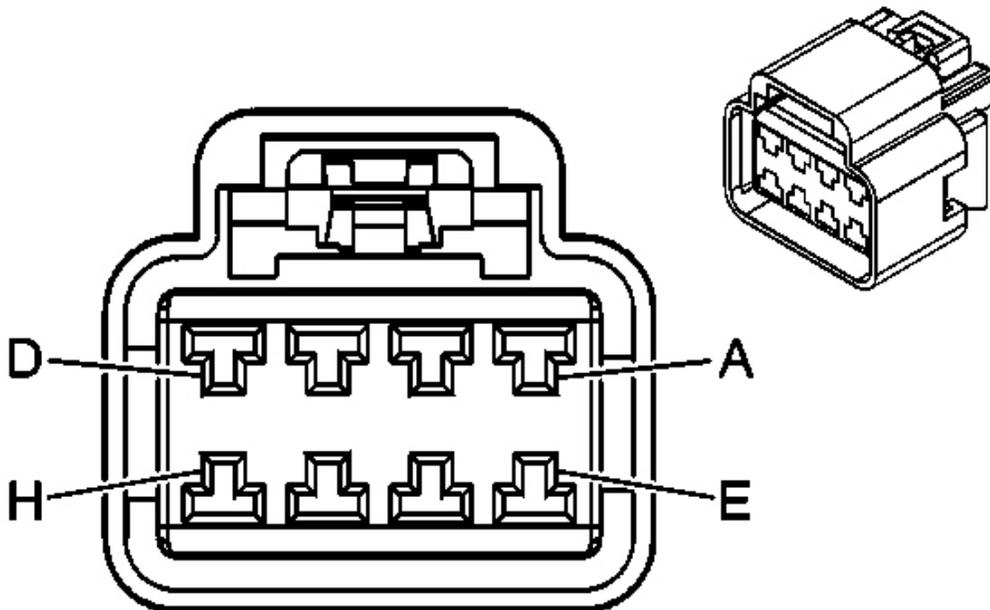


Fig. 20: Seat Adjuster Switch - Driver (AG1) Connector End View
Courtesy of GENERAL MOTORS CORP.

Seat Adjuster Switch - Driver (AG1) Connector Parts Information

Connector Part Information

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- OEM: 15326924
- Service: 15306174
- Description: 8-Way F GT 280 Series (BK)

Terminal Part Information

- Terminal/Tray: 15304713/19
- Core/Insulation Crimp: Pins A-C, E-H - 4/4
- Core/Insulation Crimp: Pins B, D - F/D
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Seat Adjuster Switch - Driver (AG1) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	2 D-GN	286	Driver Seat Front Vertical Motor Up Control
B	3 BK	550	Ground (AG1-KA1)
	2 BK	550	Ground (AG1+KA1)
C	2 TN	285	Driver Seat Horizontal Motor Forward Control
D	3 RD/WH	1140	Battery Positive Voltage
E	2 YE	282	Driver Seat Rear Vertical Motor Up Control
F	2 L-GN	284	Driver Seat Horizontal Motor Rearward Control
G	2 L-BU	283	Driver Seat Rear Vertical Motor Down Control
H	2 D-BU	287	Driver Seat Front Vertical Motor Down Control

Seat Adjuster Switch - Driver (AG3)

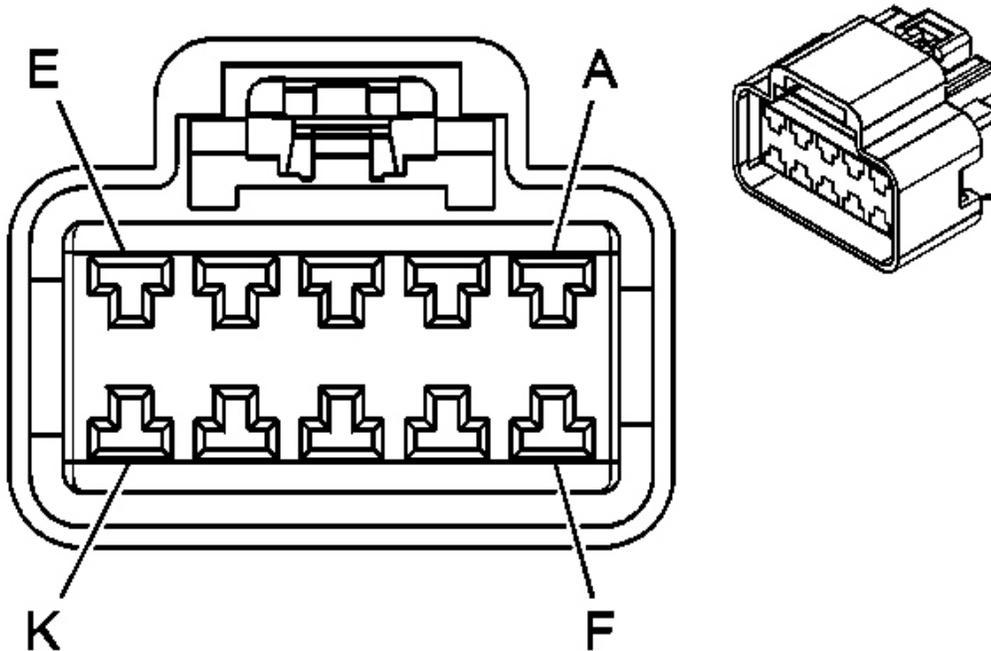


Fig. 21: Seat Adjuster Switch - Driver (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Adjuster Switch - Driver (AG3) Connector Parts Information

Connector Part Information

- OEM: 15326931
- Service: 15306309
- Description: 10-Way F GT 280 Series (BK)

Terminal Part Information

- Terminal/Tray: 15304711/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Seat Adjuster Switch - Driver (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

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A	0.35 D-GN	1518	Power Seat Front Vertical Up Switch Signal
B	-	-	Not Used
C	0.35 L-GN	1523	Power Seat Horizontal Rearward Switch Signal
D	0.35 TN	1522	Power Seat Horizontal Forward Switch Signal
E	0.35 PU/WH	6205	Driver Position Switch High Reference
F	0.35 YE	1519	Power Seat Rear Vertical Up Switch Signal
G	0.35 D-GN/WH	1270	Power Seat Recline Rearward Switch Signal
H	0.35 GY/BK	1269	Power Seat Recline Forward Switch Signal
J	0.35 L-BU	1521	Power Seat Rear Vertical Down Switch Signal
K	0.35 D-BU	1520	Power Seat Front Vertical Down Switch Signal

Seat Adjuster Switch - Driver (AH5)

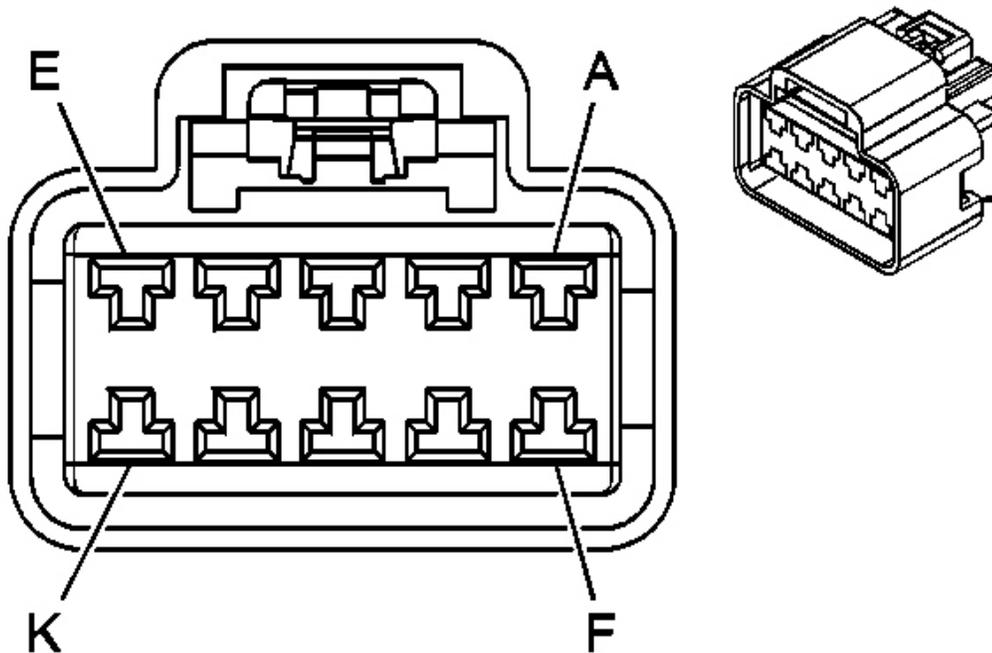


Fig. 22: Seat Adjuster Switch - Driver (AH5) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Adjuster Switch - Driver (AH5) Connector Parts Information

Connector Part Information

- OEM: 15326931
- Service: 15306309
- Description: 10-Way F GT 280 Series (BK)

Terminal Part Information

- Pins: G, H
- Terminal/Tray: 15304711/8
- Core/Insulation Crimp: 2/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)
- Pins: A-F, J, K

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- Terminal/Tray: 15304713/19
- Core/Insulation Crimp: Pins A-D, F, J, K - 4/4
- Core/Insulation Crimp: Pins E - F/D
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Seat Adjuster Switch - Driver (AH5) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	2 D-GN	286	Driver Seat Front Vertical Motor Up Control
B	2 BK	550	Ground
C	2 L-GN	284	Driver Seat Horizontal Motor Rearward Control
D	2 TN	285	Driver Seat Horizontal Motor Forward Control
E	3 RD/WH	1140	Battery Positive Voltage
F	2 YE	282	Driver Seat Rear Vertical Motor Up Control
G	1 L-BU	277	Driver Seat Recline Motor Rearward Control
H	1 L-GN	276	Driver Seat Recline Motor Forward Control
J	2 L-BU	283	Driver Seat Rear Vertical Motor Down Control
K	2 D-BU	287	Driver Seat Front Vertical Motor Down Control

Seat Adjuster Switch - Passenger (AAQ)

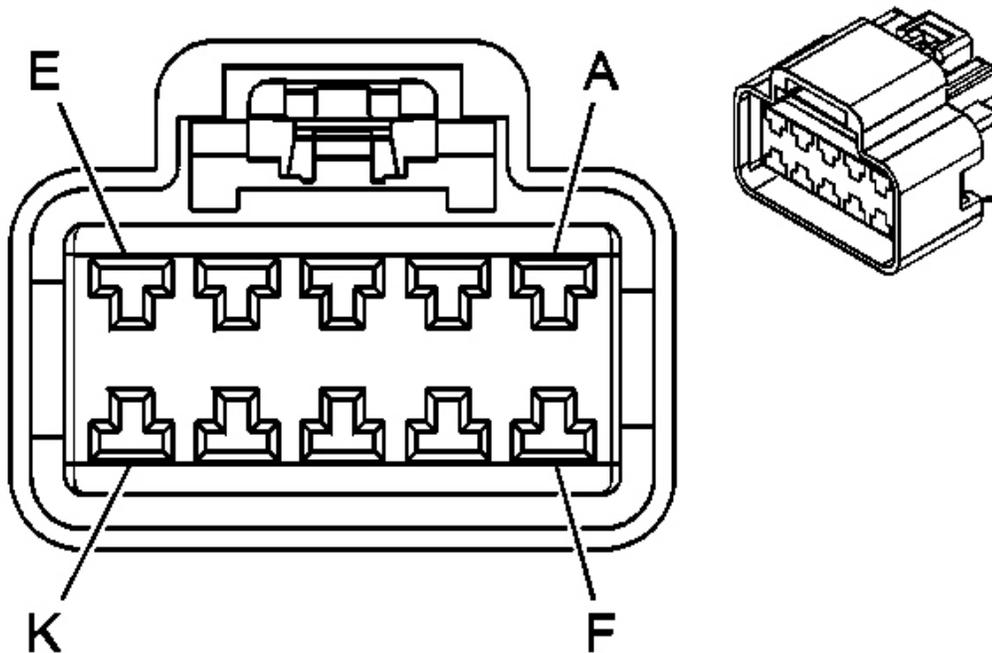


Fig. 23: Seat Adjuster Switch - Passenger (AAQ) Connector End View
Courtesy of GENERAL MOTORS CORP.

Seat Adjuster Switch - Passenger (AAQ) Connector Parts Information

Connector Part Information

- OEM: 15326931
- Service: 15306309
- Description: 10-Way F GT 280 Series (BK)

Terminal Part Information

- Pins: G, H
- Terminal/Tray: 15304711/8
- Core/Insulation Crimp: 2/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)
- Pins: B-E

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- Terminal/Tray: 15304713/19
- Core/Insulation Crimp: Pins B, E - F/D
- Core/Insulation Crimp: Pins C, D - 4/4
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Seat Adjuster Switch - Passenger (AAQ) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	-	-	Not Used
B	3 BK	750	Ground
C	2 L-GN	290	Passenger Seat Horizontal Motor Rearward Control
D	2 TN	296	Passenger Seat Horizontal Motor Forward Control
E	3 RD/WH	3040	Battery Positive Voltage
G	1 D-BU	77	Passenger Seat Recline Motor Rearward
H	1 D-GN	76	Passenger Seat Recline Motor Forward
J-K	-	-	Not Used

Seat Adjuster Switch - Passenger (AG2)

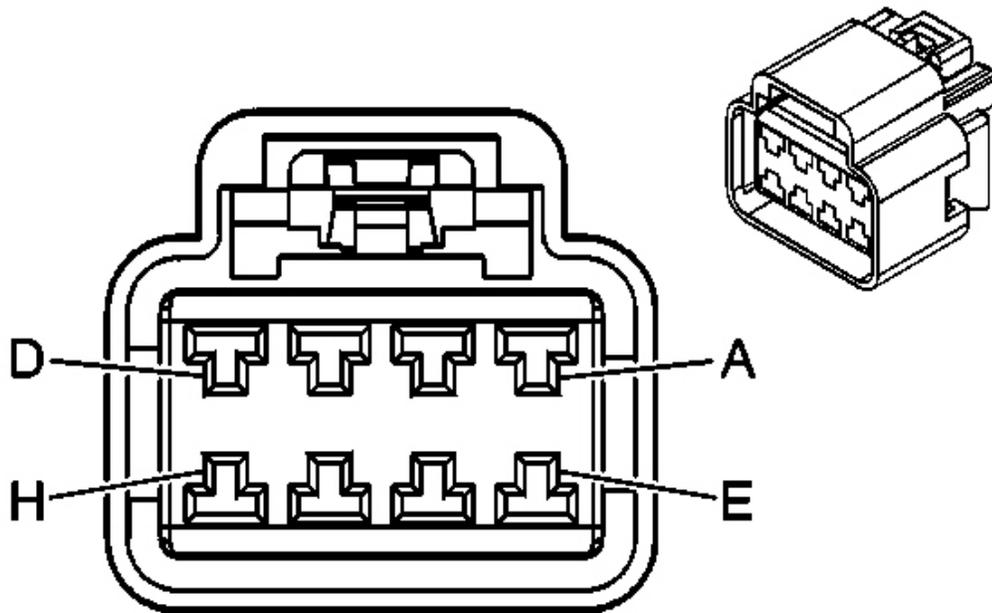


Fig. 24: Seat Adjuster Switch - Passenger (AG2) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Adjuster Switch - Passenger (AG2) Connector Parts Information

Connector Part Information

- OEM: 15326924
- Service: 15306174
- Description: 8-Way F GT 280 Series (BK)

Terminal Part Information

- Pins: B-D, F
- Terminal/Tray: 15304713/19
- Core/Insulation Crimp: Pins B, D - F/D
- Core/Insulation Crimp: Pins C, F - 4/4
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Seat Adjuster Switch - Passenger (AG2) Connector Terminal Identification

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Pin	Wire	Circuit No.	Function
A	-	-	Not Used
B	3 BK	750	Ground
C	2 TN	296	Passenger Seat Horizontal Motor Forward Control
D	3 RD/WH	3040	Battery Positive Voltage
E	-	-	Not Used
F	2 L-GN	290	Passenger Seat Horizontal Motor Rearward Control
G-H	-	-	Not Used

Seat Front Vertical Motor - Driver (AG1/AH5)

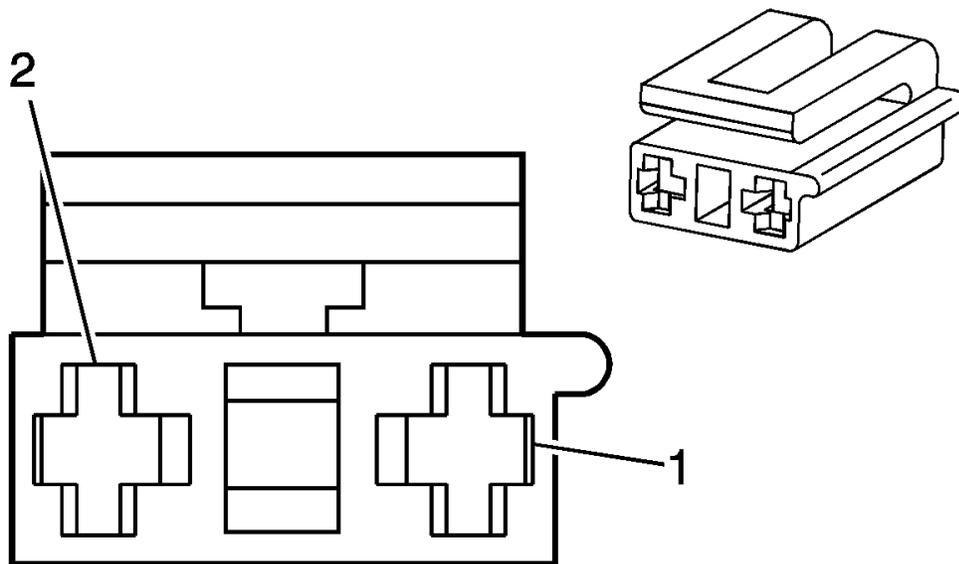


Fig. 25: Seat Front Vertical Motor - Driver (AG1/AH5) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Front Vertical Motor - Driver (AG1/AH5) Connector Parts Information

Connector Part Information

- OEM: 623346-1
- Service: See Catalog
- Description: 2-Way F (GY)

Terminal Part Information

- Terminal/Tray: 4-965999-1/25
- Core/Insulation Crimp: 4/A
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

Seat Front Vertical Motor - Driver (AG1/AH5) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	2 D-GN	286	Driver Seat Front Vertical Motor Up Control
2	2 D-BU	287	Driver Seat Front Vertical Motor Down Control

Seat Front Vertical Motor - Driver (AG3)

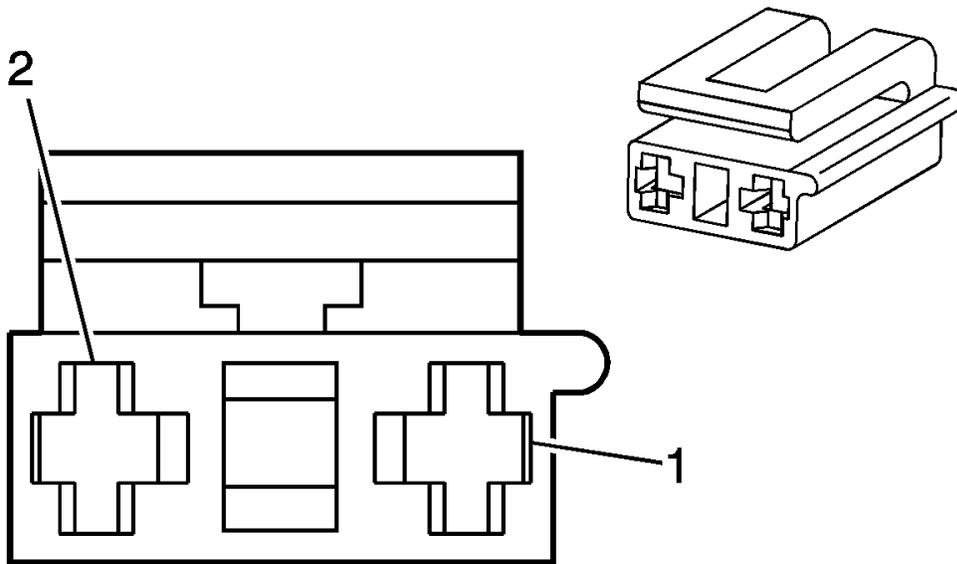


Fig. 26: Seat Front Vertical Motor - Driver (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Front Vertical Motor - Driver (AG3) Connector Parts Information

Connector Part Information

- OEM: 623346-1
- Service: See Catalog

- Description: 2-Way F (GY)

Terminal Part Information

- Terminal/Tray: 4-965999-1/25
- Core/Insulation Crimp: C/A
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

Seat Front Vertical Motor - Driver (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	1 D-GN	286	Driver Seat Front Vertical Motor Up Control
2	1 D-BU	287	Driver Seat Front Vertical Motor Down Control

Seat Front Vertical Position Sensor (AG3)

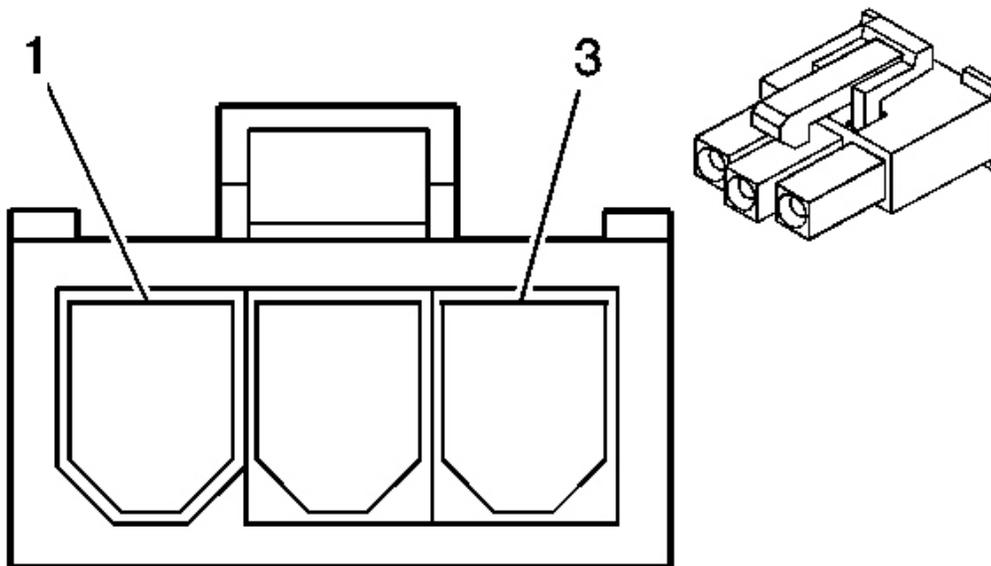


Fig. 27: Seat Front Vertical Position Sensor (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Front Vertical Position Sensor (AG3) Connector Parts Information

Connector Part Information

- OEM: 39-01-4030
- Service: See Catalog
- Description: 3-Way F Mini-Fit Series (NA)

Terminal Part Information

- Terminal/Tray: 39-00-0059/28
- Core/Insulation Crimp: K/K
- Release Tool/Test Probe: J-38125-560/J-35616-12 (BU)

Seat Front Vertical Position Sensor (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 TN	6207	5-Volt Reference
2	0.35 BN/WH	557	Front Vertical Seat Motor Position Sensor Signal
3	0.35 GY	6206	Low Reference

Seat Horizontal Motor - Driver (AG1/AH5)

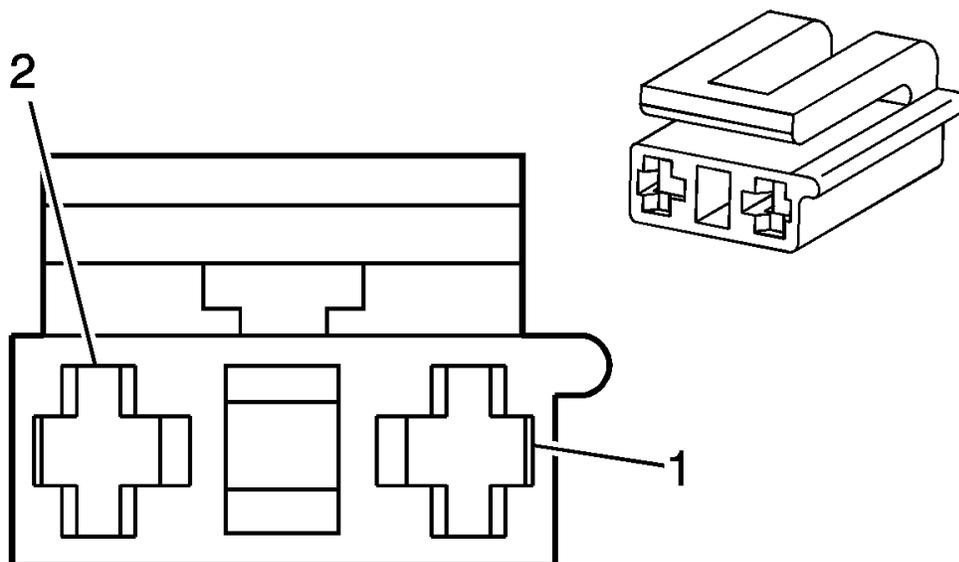


Fig. 28: Seat Horizontal Motor - Driver (AG1/AH5) Connector End View

Courtesy of GENERAL MOTORS CORP.

Seat Horizontal Motor - Driver (AG1/AH5) Connector Parts Information

Connector Part Information

- OEM: 623346-1
- Service: See Catalog
- Description: 2-Way F (GY)

Terminal Part Information

- Terminal/Tray: 4-965999-1/25
- Core/Insulation Crimp: 4/A
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

Seat Horizontal Motor - Driver (AG1/AH5) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	2 TN	285	Driver Seat Horizontal Motor Forward Control
2	2 L-GN	284	Driver Seat Horizontal Motor Rearward Control

Seat Horizontal Motor - Driver (AG3)

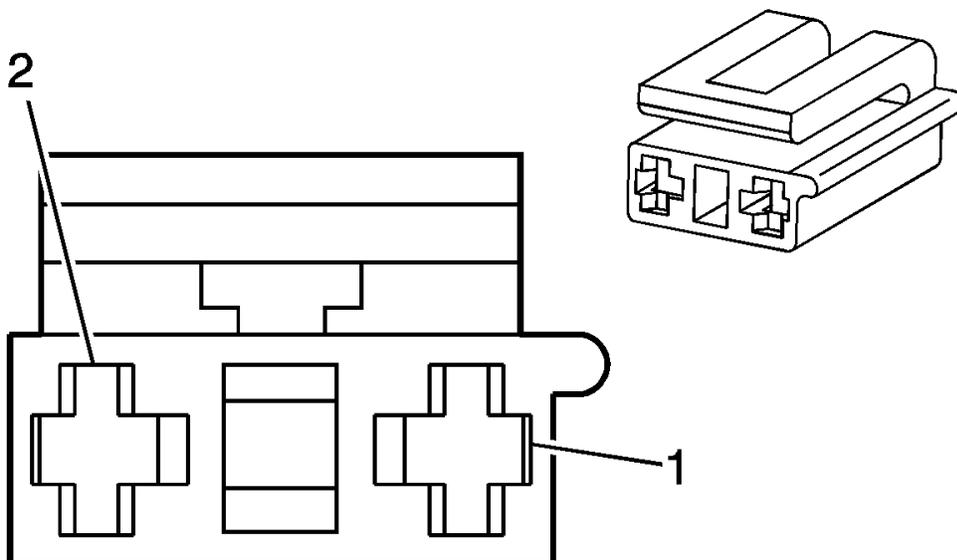


Fig. 29: Seat Horizontal Motor - Driver (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Horizontal Motor - Driver (AG3) Connector Parts Information

Connector Part Information

- OEM: 623346-1
- Service: See Catalog
- Description: 2-Way F (GY)

Terminal Part Information

- Terminal/Tray: 4-965999-1/25
- Core/Insulation Crimp: C/A
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

Seat Horizontal Motor - Driver (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	1 TN	285	Driver Seat Horizontal Motor Forward Control
2	1 L-GN	284	Driver Seat Horizontal Motor Rearward Control

Seat Horizontal Motor - Passenger (AAQ/AG2)

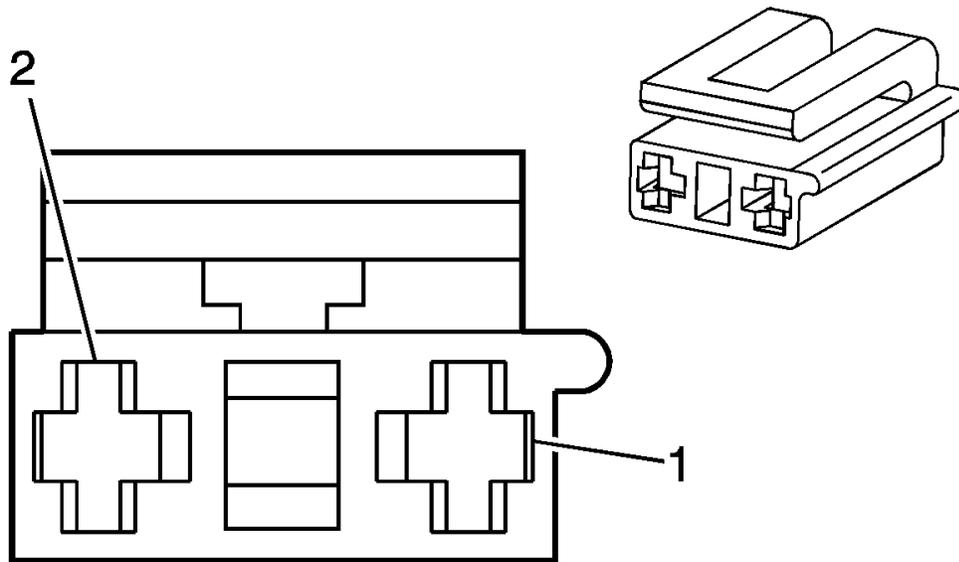


Fig. 30: Seat Horizontal Motor - Passenger (AAQ/AG2) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Horizontal Motor - Passenger (AAQ/AG2) Connector Parts Information

Connector Part Information

- OEM: 623346-1
- Service: See Catalog
- Description: 2-Way F (GY)

Terminal Part Information

- Terminal/Tray: 4-965999-1/25
- Core/Insulation Crimp: 4/A
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

Seat Horizontal Motor - Passenger (AAQ/AG2) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	2 TN	296	Passenger Seat Horizontal Motor Forward Control
2	2 L-GN	290	Passenger Seat Horizontal Motor Rearward Control

Seat Horizontal Position Sensor (AG3)

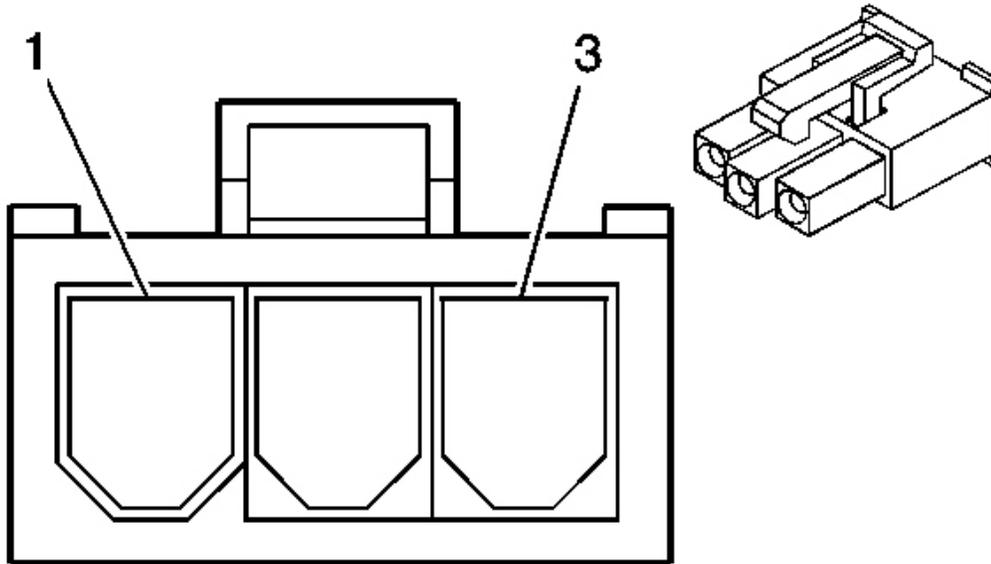


Fig. 31: Seat Horizontal Position Sensor (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Horizontal Position Sensor (AG3) Connector Parts Information

Connector Part Information

- OEM: 39-01-4030
- Service: See Catalog
- Description: 3-Way F Mini-Fit Series (NA)

Terminal Part Information

- Terminal/Tray: 39-00-0059/28
- Core/Insulation Crimp: K/K
- Release Tool/Test Probe: J-38125-560/J-35616-12 (BU)

Seat Horizontal Position Sensor (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

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1	0.35 TN	6207	5-Volt Reference
2	0.35 D-GN	569	Horizontal Seat Motor Position Sensor Signal
3	0.35 GY	6206	Low Reference

Seat Lumbar Horizontal Motor - Driver (AG3)

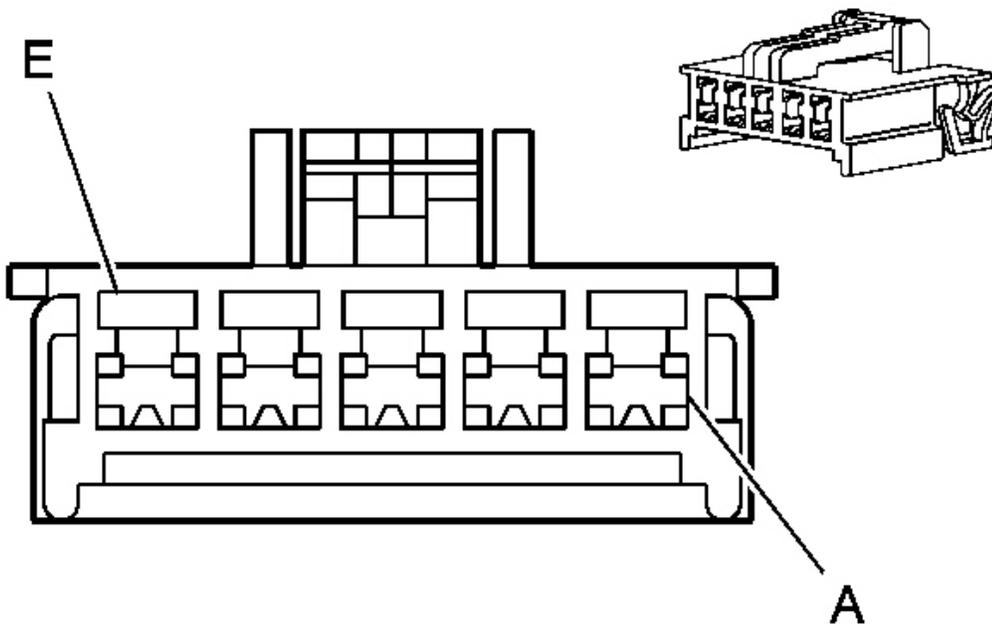


Fig. 32: Seat Lumbar Horizontal Motor - Driver (AG3) Connector End View
Courtesy of GENERAL MOTORS CORP.

Seat Lumbar Horizontal Motor - Driver (AG3) Connector Parts Information

Connector Part Information

- OEM: 6098-2180
- Service: 88988384
- Description: 5-Way F 090 Series (BK)

Terminal Part Information

- Pins: 1, 5

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- Terminal/Tray: 8240-4422/6
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-14 (GN)

- Pins: 2-4
- Terminal/Tray: 8240-4412/22
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-14 (GN)

Seat Lumbar Horizontal Motor - Driver (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	1 D-BU	611	Driver Seat Lumbar Motor Forward Control
2	0.35 GY	6206	Low Reference
3	0.35 YE	1063	Driver Seat Lumbar Horizontal Position Sensor Signal
4	0.35 TN	6207	5-Volt Reference
5	1 PK	610	Driver Seat Lumbar Motor Rearward Control

Seat Lumbar Horizontal Motor - Driver (AH5)

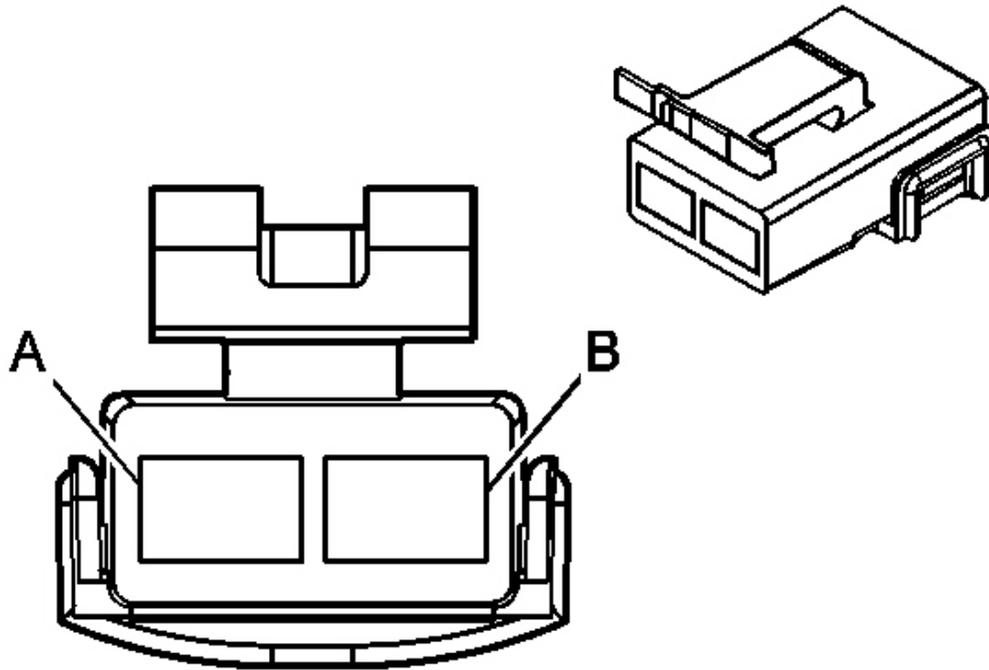


Fig. 33: Seat Lumbar Horizontal Motor - Driver (AH5) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Lumbar Horizontal Motor - Driver (AH5) Connector Parts Information

Connector Part Information

- OEM: 12020556
- Service: 12101820
- Description: 2-Way F Metri-Pack 480 Series (BK)

Terminal Part Information

- Terminal/Tray: 12084595/2
- Core/Insulation Crimp: F/G
- Release Tool/Test Probe: 12094430/J-35616-40 (BU)

Seat Lumbar Horizontal Motor - Driver (AH5) Connector Terminal Identification

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Pin	Wire	Circuit No.	Function
A	3 D-BU	611	Driver Seat Lumbar Motor Forward Control
B	3 PK	610	Driver Seat Lumbar Motor Rearward Control

Seat Lumbar Horizontal Motor - Passenger (AAQ)

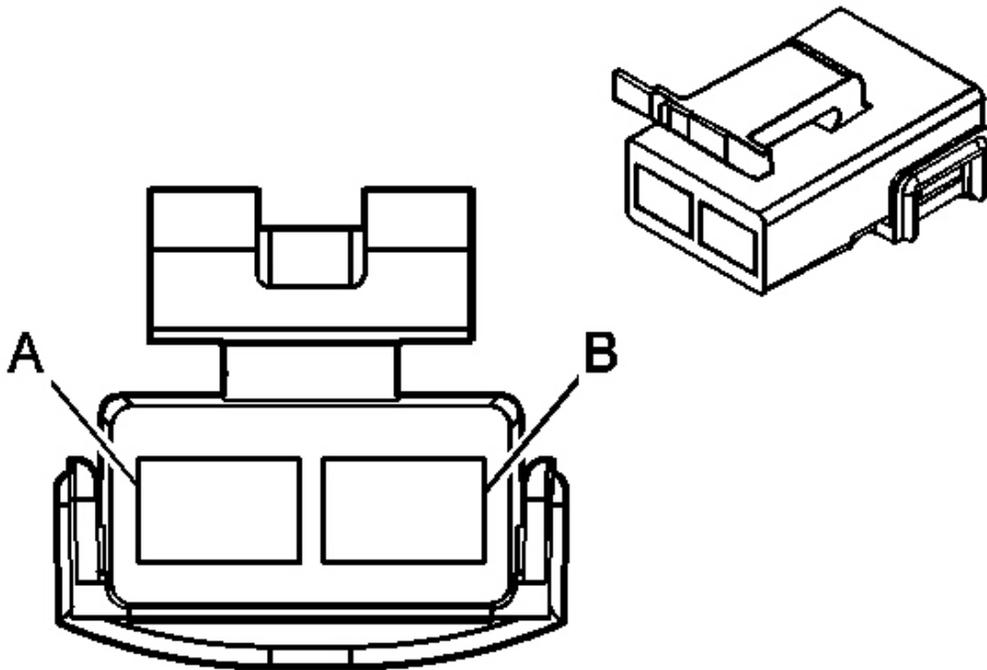


Fig. 34: Seat Lumbar Horizontal Motor - Passenger (AAQ) Connector End View
Courtesy of GENERAL MOTORS CORP.

Seat Lumbar Horizontal Motor - Passenger (AAQ) Connector Parts Information

Connector Part Information

- OEM: 12020556
- Service: 12101820
- Description: 2-Way F Metri-Pack 480 Series (BK)

Terminal Part Information

- Terminal/Tray: 12084595/2
- Core/Insulation Crimp: F/G
- Release Tool/Test Probe: 12094430/J-35616-40 (BU)

Seat Lumbar Horizontal Motor - Passenger (AAQ) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	3 D-BU	211	Passenger Seat Lumbar Motor Forward Control
B	3 WH	210	Passenger Seat Lumbar Motor Rearward Control

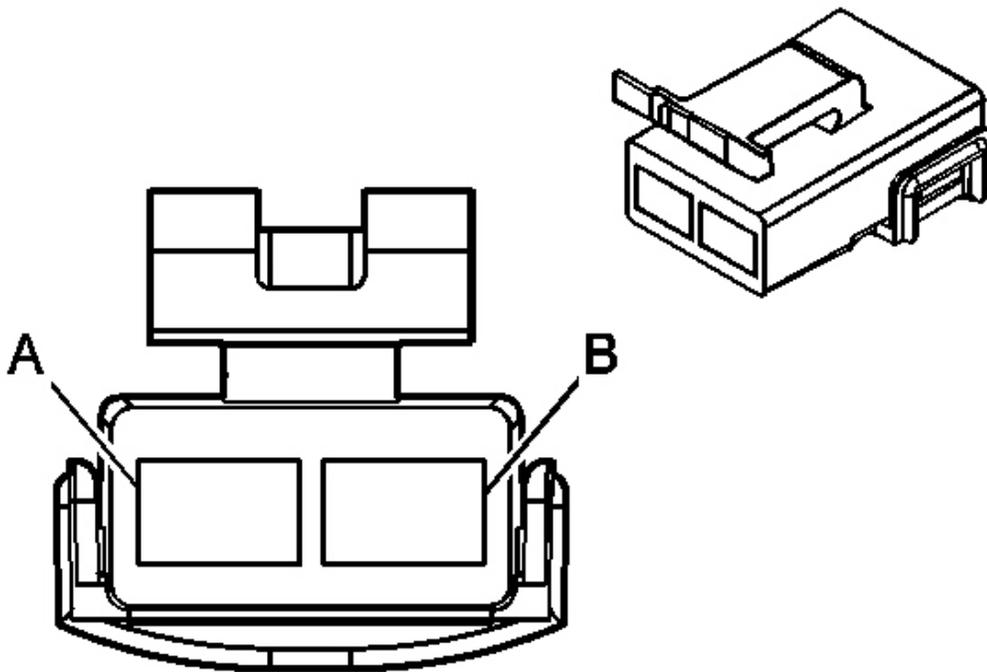
Seat Lumbar Switch - Driver (AG3/AH5)

Fig. 35: Seat Lumbar Switch - Driver (AG3/AH5) Connector End View
 Courtesy of GENERAL MOTORS CORP.

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Seat Lumbar Switch - Driver (AG3/AH5) Connector Parts Information

Connector Part Information

- OEM: 12020556
- Service: 12101820
- Description: 2-Way F Metri-Pack 480 Series (BK)

Terminal Part Information

- Terminal/Tray: 12084595/2
- Core/Insulation Crimp: F/G
- Release Tool/Test Probe: 12094430/J-35616-40 (BU)

Seat Lumbar Switch - Driver (AG3/AH5) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	3 PU	767	Driver Seat Lumbar Motor Down Control
B	3 TN	768	Driver Seat Lumbar Motor Up Control

Seat Lumbar Switch - Driver (AG3)

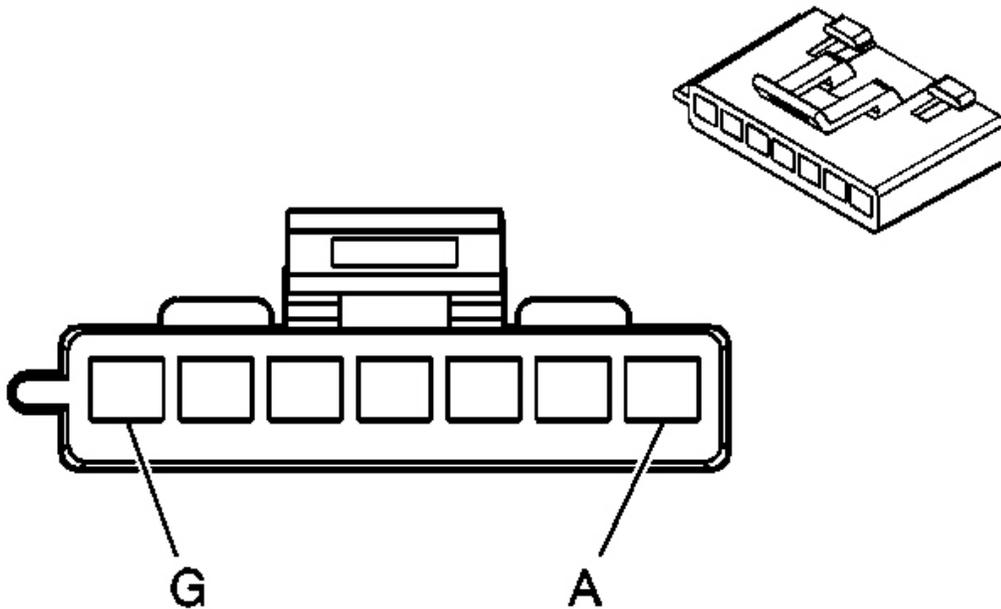


Fig. 36: Seat Lumbar Switch - Driver (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Lumbar Switch - Driver (AG3) Connector Parts Information

Connector Part Information

- OEM: 12052854
- Service: 88953358
- Description: 7-Way F Metri-Pack 280 Series (BK)

Terminal Part Information

- Terminal/Tray: 12034046/2
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 12094430/J-35616-4A (PU)

Seat Lumbar Switch - Driver (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 YE	1065	Driver Seat Lumbar Forward Switch

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			Signal
B	0.35 YE/BK	1067	Driver Seat Lumbar Down Switch Signal
C	0.35 WH	1066	Driver Seat Lumbar Up Switch Signal
D-E	-	-	Not Used
F	0.35 D-BU	1064	Driver Seat Lumbar Rearward Switch Signal
G	0.35 PU/WH	6205	Driver Position Switch High Reference (AG3)

Seat Lumbar Switch - Driver (AH5)

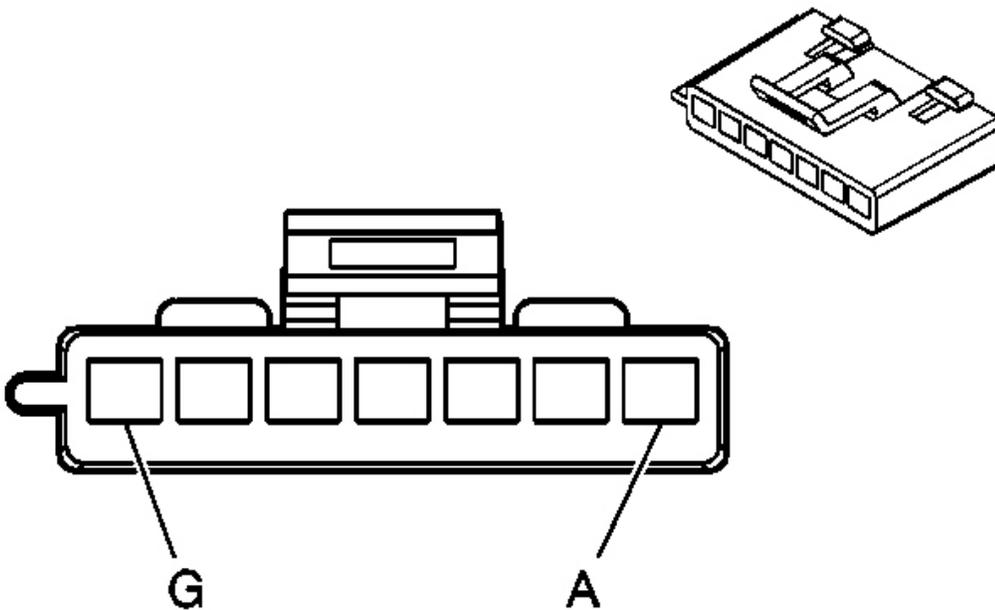


Fig. 37: Seat Lumbar Switch - Driver (AH5) Connector End View
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Seat Lumbar Switch - Driver (AH5) Connector Parts Information

Connector Part Information

- OEM: 12052854

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- Service: 88953358
- Description: 7-Way F Metri-Pack 280 Series (BK)

Terminal Part Information

- Terminal/Tray: 12015858/4
- Core/Insulation Crimp: F/G
- Release Tool/Test Probe: 12094430/J-35616-4A (PU)

Seat Lumbar Switch - Driver (AH5) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	3 D-BU	611	Driver Seat Lumbar Motor Forward Control
B	3 PU	767	Driver Seat Lumbar Motor Down Control
C	3 TN	768	Driver Seat Lumbar Motor Up Control
D	-	-	Not Used
E	3 BK	550	Ground
F	3 PK	610	Driver Seat Lumbar Motor Rearward Control
G	3 RD/WH	1140	Battery Positive Voltage

Seat Lumbar Switch - Passenger (AAQ)

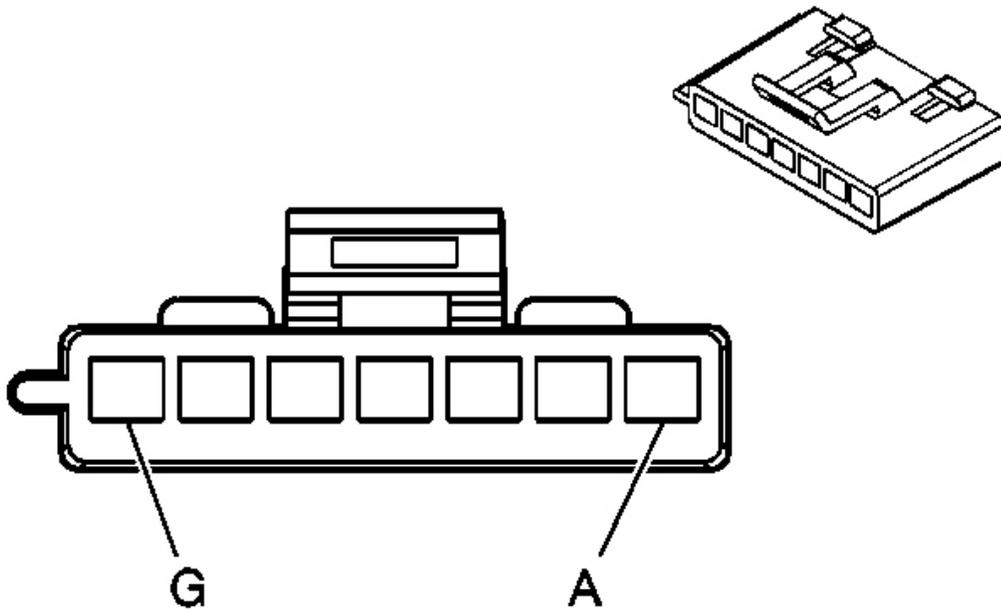


Fig. 38: Seat Lumbar Switch - Passenger (AAQ) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Lumbar Switch - Passenger (AAQ) Connector Parts Information

Connector Part Information

- OEM: 12052854
- Service: 88953358
- Description: 7-Way F Metri-Pack 280 Series (BK)

Terminal Part Information

- Terminal/Tray: 12015858/4
- Core/Insulation Crimp: F/G
- Release Tool/Test Probe: 12094430/J-35616-4A (PU)

Seat Lumbar Switch - Passenger (AAQ) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	3 D-BU	211	Passenger Seat Lumbar Motor Forward

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			Control
B	3 OG	792	Passenger Seat Lumbar Motor Down Control
C	3 PK	793	Passenger Seat Lumbar Motor Up Control
D	-	-	Not Used
E	3 BK	750	Ground
F	3 WH	210	Passenger Seat Lumbar Motor Rearward Control
G	3 RD/WH	3040	Battery Positive Voltage

Seat Lumbar Vertical Motor - Driver (AG3/AH5)

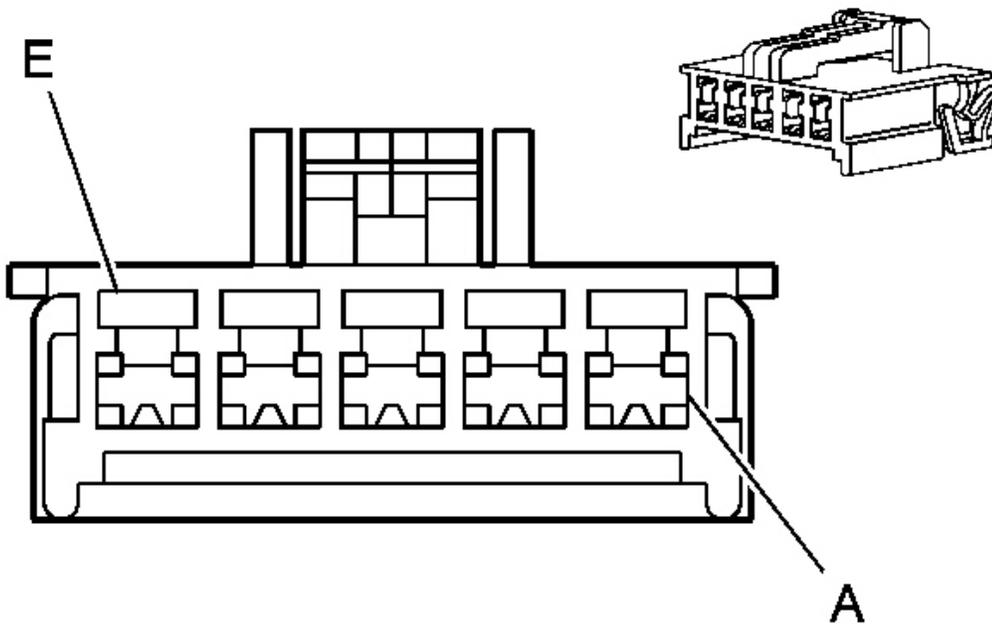


Fig. 39: Seat Lumbar Vertical Motor - Driver (AG3/AH5) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Lumbar Vertical Motor - Driver (AG3/AH5) Connector Parts Information

Connector Part Information

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- OEM: 6098-2180
- Service: 88988384
- Description: 5-Way F 090 Series (BK)

Terminal Part Information

- Pins: 1, 5
- Terminal/Tray: 8240-4422/6
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-14 (GN)

- Pins: 2-4
- Terminal/Tray: 8240-4412/22
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-14 (GN)

Seat Lumbar Vertical Motor - Driver (AG3/AH5) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	1 PU	767	Driver Seat Lumbar Motor Down Control
2	0.35 GY	6206	Low Reference
3	0.35 TN	1062	Driver Seat Lumbar Vertical Position Sensor Signal
4	0.35 TN	6207	5-Volt Reference
5	1 TN	768	Driver Seat Lumbar Motor Up Control

Seat Lumbar Vertical Motor - Passenger (AAQ)

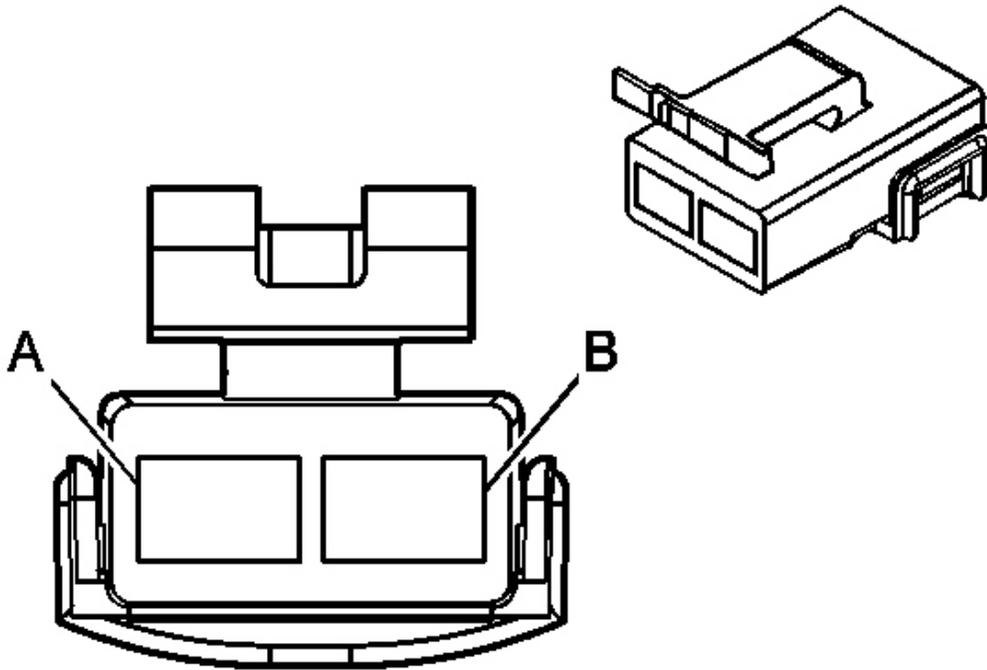


Fig. 40: Seat Lumbar Vertical Motor - Passenger (AAQ) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Lumbar Vertical Motor - Passenger (AAQ) Connector Parts Information

Connector Part Information

- OEM: 12020556
- Service: 12101820
- Description: 2-Way F Metri-Pack 480 Series (BK)

Terminal Part Information

- Terminal/Tray: 12084595/2
- Core/Insulation Crimp: F/G
- Release Tool/Test Probe: 12094430/J-35616-40 (BU)

Seat Lumbar Vertical Motor - Passenger (AAQ) Connector Terminal Identification

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Pin	Wire	Circuit No.	Function
A	3 PK	793	Passenger Seat Lumbar Motor Up Control
B	3 OG	792	Passenger Seat Lumbar Motor Down Control

Seat Rear Vertical Motor - Driver (AG1/AH5)

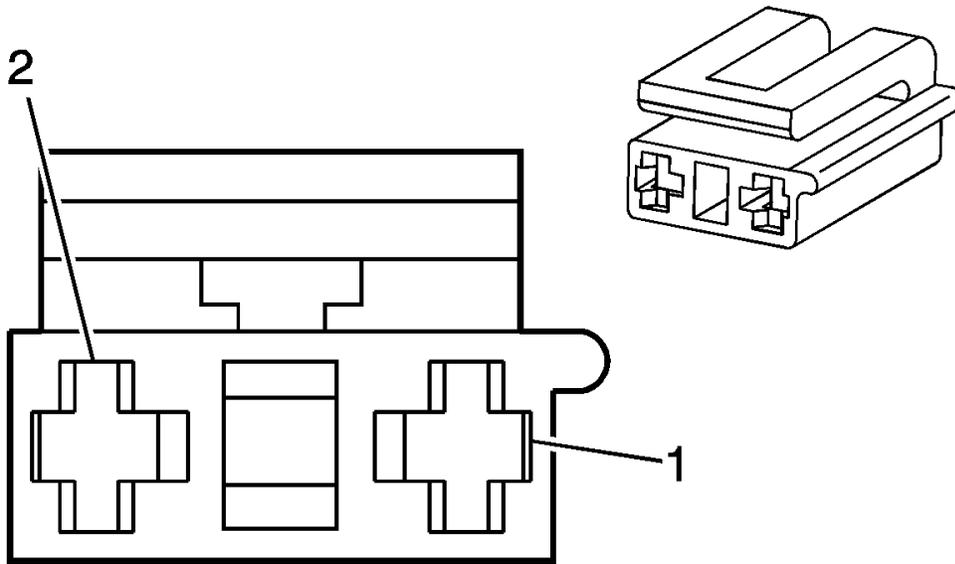


Fig. 41: Seat Rear Vertical Motor - Driver (AG1/AH5) Connector End View
Courtesy of GENERAL MOTORS CORP.

Seat Rear Vertical Motor - Driver (AG1/AH5) Connector Parts Information

Connector Part Information

- OEM: 623346-1
- Service: See Catalog
- Description: 2-Way F (GY)

Terminal Part Information

- Terminal/Tray: 4-965999-1/25
- Core/Insulation Crimp: 4/A
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

Seat Rear Vertical Motor - Driver (AG1/AH5) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	2 YE	282	Driver Seat Rear Vertical Motor Up Control
2	2 L-BU	283	Driver Seat Rear Vertical Motor Down Control

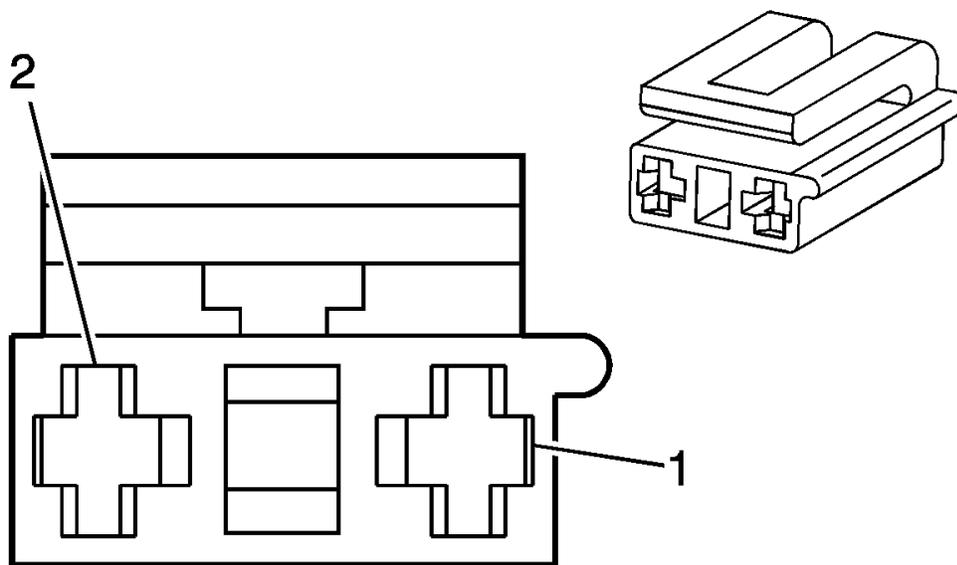
Seat Rear Vertical Motor - Driver (AG3)

Fig. 42: Seat Rear Vertical Motor - Driver (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Rear Vertical Motor - Driver (AG3) Connector Parts Information**Connector Part Information**

- OEM: 623346-1
- Service: See Catalog
- Description: 2-Way F (GY)

Terminal Part Information

- Terminal/Tray: 4-965999-1/25
- Core/Insulation Crimp: C/A

- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

Seat Rear Vertical Motor - Driver (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	1 YE	282	Driver Seat Rear Vertical Motor Up Control
2	1 L-BU	283	Driver Seat Rear Vertical Motor Down Control

Seat Rear Vertical Position Sensor (AG3)

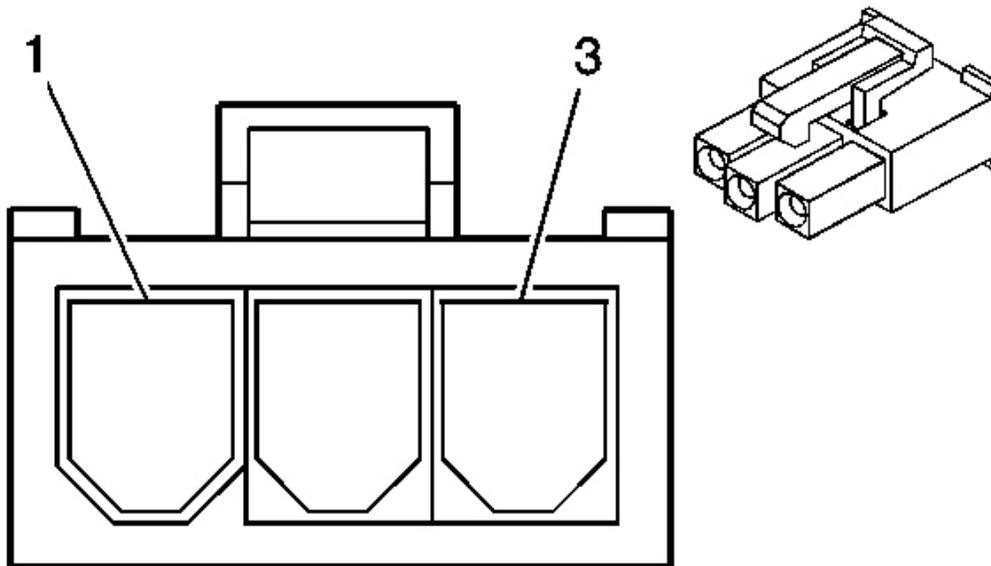


Fig. 43: Seat Rear Vertical Position Sensor (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Rear Vertical Position Sensor (AG3) Connector Parts Information

Connector Part Information

- OEM: 39-01-4030
- Service: See Catalog

- Description: 3-Way F Mini-Fit Series (NA)

Terminal Part Information

- Terminal/Tray: 39-00-0059/28
- Core/Insulation Crimp: K/K
- Release Tool/Test Probe: J-38125-560/J-35616-12 (BU)

Seat Rear Vertical Position Sensor (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 TN	6207	5-Volt Reference
2	0.35 TN	568	Rear Vertical Seat Motor Position Sensor Signal
3	0.35 GY	6206	Low Reference

Seat Recline Motor - Driver (AG3)

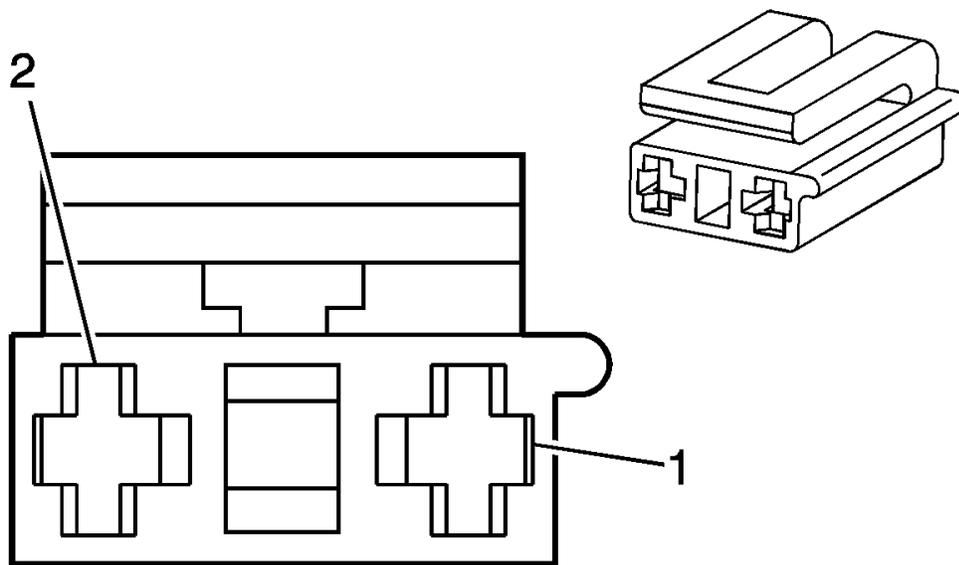


Fig. 44: Seat Recline Motor - Driver (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Recline Motor - Driver (AG3) Connector Parts Information

Connector Part Information

- OEM: 1326490-3
- Service: See Catalog
- Description: 4-Way F JR-POWER MICRO III

Terminal Part Information

- Terminal/Tray: 4-965999-1/25
- Core/Insulation Crimp: C/A
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

Seat Recline Motor - Driver (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	1 L-BU	277	Driver Seat Recline Motor Rearward Control
2	1 L-GN	276	Driver Seat Recline Motor Forward Control
3-4	-	-	Not Used

Seat Recline Motor - Driver (AH5)

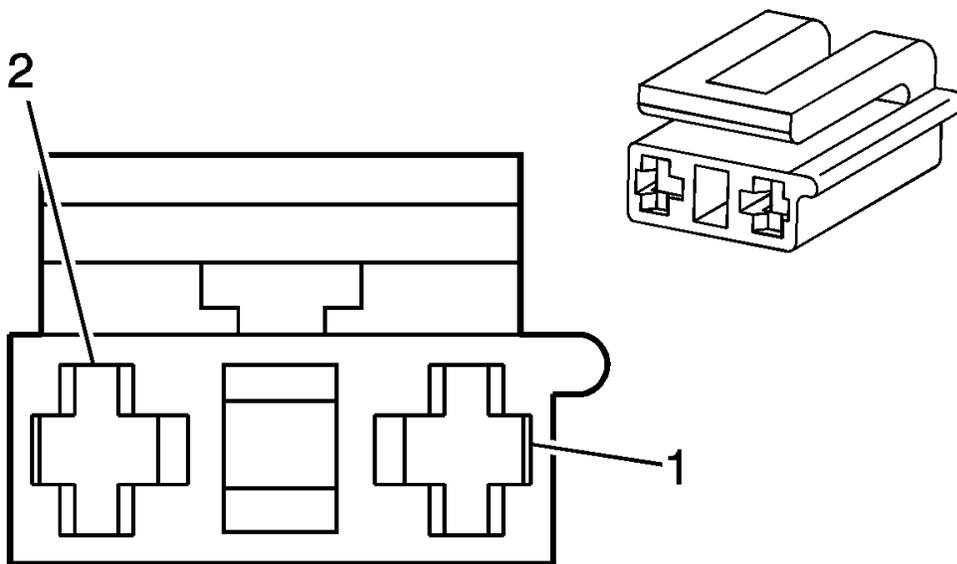


Fig. 45: Seat Recline Motor - Driver (AH5) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Recline Motor - Driver (AH5) Connector Parts Information

Connector Part Information

- OEM: 1326490-3
- Service: See Catalog
- Description: 4-Way F JR-POWER MICRO III

Terminal Part Information

- Terminal/Tray: 4-965999-1/25
- Core/Insulation Crimp: C/A
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

Seat Recline Motor - Driver (AH5) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	1 L-BU	277	Driver Seat Recline Motor Rearward Control
2	1 L-GN	276	Driver Seat Recline Motor Forward Control
3-4	-	-	Not Used

Seat Recline Motor - Passenger (AAQ)

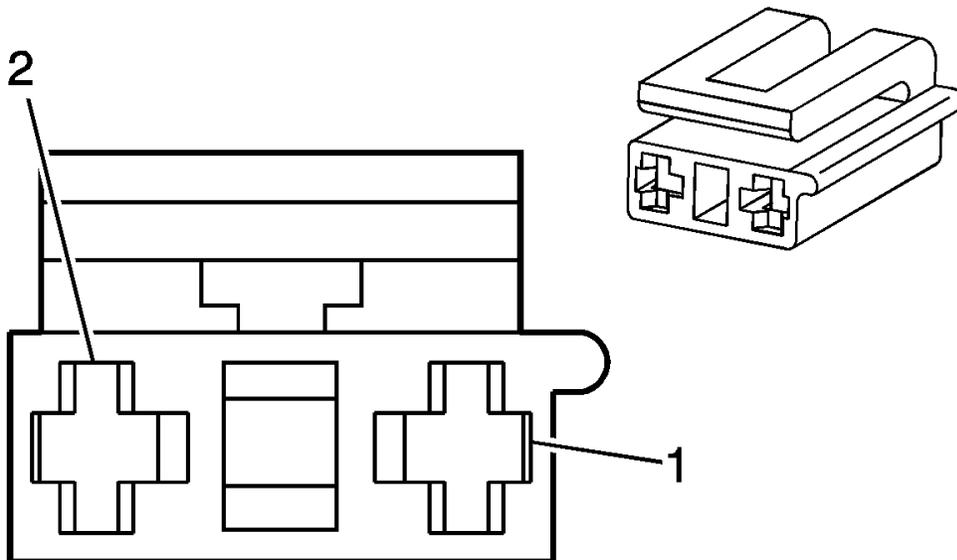


Fig. 46: Seat Recline Motor - Passenger (AAQ) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Recline Motor - Passenger (AAQ) Connector Parts Information

Connector Part Information

- OEM: 1326490-3
- Service: See Catalog
- Description: 4-Way F JR-POWER MICRO III

Terminal Part Information

- Terminal/Tray: 4-965999-1/25
- Core/Insulation Crimp: C/A
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

Seat Recline Motor - Passenger (AAQ) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	1 D-BU	77	Passenger Seat Recline Motor Rearward
2	1 D-GN	76	Passenger Seat Recline Motor Forward
3-4	-	-	Not Used

Seat Recline Position Sensor - Driver (AG3)

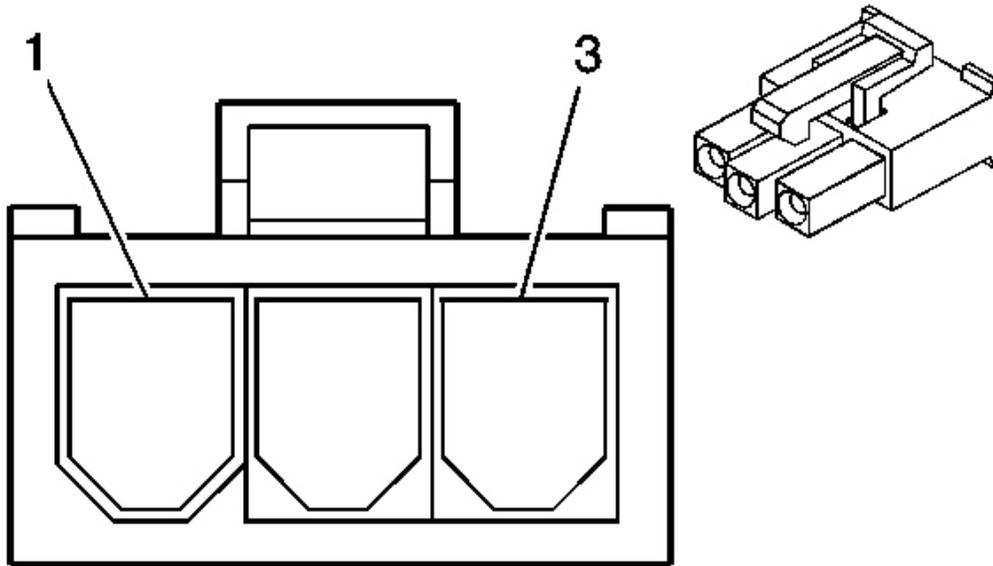


Fig. 47: Seat Recline Position Sensor - Driver (AG3) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Seat Recline Position Sensor - Driver (AG3) Connector Parts Information

Connector Part Information

- OEM: 39-01-4030
- Service: See Catalog
- Description: 3-Way F Mini-Fit Series (NA)

Terminal Part Information

- Terminal/Tray: 39-00-0059/28
- Core/Insulation Crimp: K/K
- Release Tool/Test Probe: J-38125-560/J-35616-12 (BU)

Seat Recline Position Sensor - Driver (AG3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 TN	6207	5-Volt Reference
			Driver Seat Recline Motor Position

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2	0.35 WH/BK	570	Sensor Signal
3	0.35 GY	6206	Low Reference

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
<u>DTC B1335</u>	Device Power 3 Circuit Ccern(s)
<u>DTC B1395</u>	Device Voltage Reference Output Circuit Shorted To Ground, Battery Or Open
<u>DTC B1735, B1740, B1745, B1750, B1755, B1760, B1815 or B1820</u>	Driver Seat Front Switch Circuit Malfunction(s)
<u>DTC B1825, B1850, B1860, B2355, B2365 or B2375</u>	Driver Seat Position Sensor Circuit Malfunction(s)
<u>DTC B3920 or B3921</u>	Group 1 Seat Motors Circuit Shorted To Battery, Ground Or Open

DIAGNOSTIC STARTING POINT - SEATS

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			

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Battery Voltage Signal	Inputs	Volts	Varies
Current	Inputs	amps	Varies
Driver Seat Front Vertical Sensor	Seat 1 Info	Volts	0-5 Volts
Driver Seat Horizontal Sensor	Seat 1 Info	Volts	0-5 Volts
Driver Seat Rear Vertical Sensor	Seat 1 Info	Volts	0-5 Volts
Driver Seat Recline Sensor	Seat 1 Info	Volts	0-5 Volts
Front Vertical Downward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Front Vertical Upward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Front Vertical Motor Downward	Seat 1 Outputs	Active/Inactive	Inactive
Front Vertical Motor Upward	Seat 1 Outputs	Active/Inactive	Inactive
Horizontal Motor Forward	Seat 1 Outputs	Active/Inactive	Inactive
Horizontal Motor Rearward	Seat 1 Outputs	Active/Inactive	Inactive
Horizontal Forward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Horizontal Rearward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Lumbar Downward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Lumbar Forward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Lumbar Horizontal Position	Memory Data 1	Volts	0-5 Volts
Lumbar Horizontal Position	Memory Data 2	Volts	0-5 Volts
Lumbar Horizontal Sensor	Seat 1 Info	Volts	0-5 Volts
Lumbar Motor Downward	Seat 1 Outputs	Active/Inactive	Inactive
Lumbar Motor Forward	Seat 1 Outputs	Active/Inactive	Inactive
Lumbar Motor Rearward	Seat 1 Outputs	Active/Inactive	Inactive
Lumbar Motor Upward	Seat 1 Outputs	Active/Inactive	Inactive
Lumbar Rearward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Lumbar Upward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Lumbar Vertical Position	Memory Data 1	Volts	0-5 Volts
Lumbar Vertical Position	Memory Data 2	Volts	0-5 Volts
Lumbar Vertical Sensor	Seat 1 Info	Volts	0-5 Volts
Recline Forward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Recline Motor Forward	Seat 1 Outputs	Active/Inactive	Inactive
Recline Motor Rearward	Seat 1 Outputs	Active/Inactive	Inactive

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Recline Rearward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Rear Vertical Downward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Rear Vertical Motor Downward	Seat 1 Outputs	Active/Inactive	Inactive
Rear Vertical Motor Upward	Seat 1 Outputs	Active/Inactive	Inactive
Rear Vertical Upward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Seat Horizontal Position	Memory Data 1	Volts	0-5 Volts
Seat Horizontal Position	Memory Data 2	Volts	0-5 Volts
Seat Front Vertical Position	Memory Data 1	Volts	0-5 Volts
Seat Front Vertical Position	Memory Data 2	Volts	0-5 Volts
Seat Rear Vertical Position	Memory Data 1	Volts	0-5 Volts
Seat Rear Vertical Position	Memory Data 2	Volts	0-5 Volts
Seat Recline Position	Memory Data 1	Volts	0-5 Volts
Seat Recline Position	Memory Data 2	Volts	0-5 Volts

Door Module(s)

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF			
Battery Voltage Signal	Data	Volts	Varies
Memory Recall Switch	Inputs	Inactive/Memory 1/Memory 2/Exit	Inactive
Seat Back Heat Mode Ind. Cmd.	Outputs	OFF/ON	OFF
Seat Back Heat Mode Sw.	Inputs	Inactive/Active	Inactive
Seat Cool Mode Ind. Cmd	Outputs	OFF/ON	OFF
Seat Cool Mode Switch	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

Rear Heated Seat Module

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value

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Operating Conditions: Ignition ON/Engine OFF

Battery Voltage Signal	Data	Volts	Varies
Seat Back Heat Mode Ind. Cmd.	Outputs	OFF/ON	OFF
Seat Back Heat Mode Sw.	Inputs	Inactive/Active	Inactive
Seat Cool Mode Ind. Cmd	Outputs	OFF/ON	OFF
Seat Cool Mode Switch	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

SCAN TOOL DATA DEFINITIONS

8-Digit GM Part Number

The scan tool displays the part number of the module.

Battery Voltage

The scan tool displays 0-16 volts. The level of battery voltage at the module.

Calibration ID

The scan tool displays a 4-digit number. This number designates the calibration or program level used in the PROM.

Current

The scan tool displays 0-127.5 amps. The current measured during seat operation.

Front Vertical Sensor

The scan tool displays 0-5.0 volts or 0-255 A/D. The sensor potentiometer provides an analog voltage which varies directly with the seat front vertical position. High scan tool values (volts or A/D) indicate that the seat front is in the up position and low values indicate that the seat front is in the down position.

Hardware Level

The scan tool displays a 4-digit number representing the level of hardware incorporated into the module.

Horizontal Sensor

The scan tool displays 0-5.0 volts or 0-255 A/D. The sensor potentiometer provides an analog voltage which varies directly with the seat horizontal position. High scan tool values (volts or A/D) indicate that the seat is in the forward position and low values indicate that the seat is in the rearward position.

Julian Date of Build

The scan tool displays a 3-digit number. This number is the day of the year that the module was built.

Lumbar Horizontal Sensor

The scan tool displays 0-5.0 volts or 0-255 A/D. The sensor potentiometer provides an analog voltage which varies directly with the lumbar horizontal position. High scan tool values (volts or A/D) indicate that the Lumbar is in the forward position and low values indicate that the lumbar is in the rearward position.

Lumbar Vertical Sensor

The scan tool displays 0-5.0 volts or 0-255 A/D. The sensor potentiometer provides an analog voltage which varies directly with the lumbar vertical position. High scan tool values (volts or A/D) indicate that the lumbar is in the up position and low values indicate that the lumbar is in the down position.

Memory Recall Switches

The scan tool displays Idle/Memory 1/memory 2/Exit/Set. When a memory function switch is activated, the scan tool will momentarily display the switch input function to the driver door switch assembly (DDSA) as selected.

PROM ID

The scan tool displays a 4-digit number. This is the identification number of the PROM that is incorporated into the module.

Rear Vertical Sensor

The scan tool displays 0-5.0 volts or 0-255 A/D. The sensor potentiometer provides an analog voltage which varies directly with the seat rear vertical position. High scan tool values (volts or A/D) indicate that the seat rear vertical is in the up position and low values indicate that the seat rear vertical is in the down position.

Recline Sensor

The scan tool displays 0-5.0 volts or 0-255 A/D. The sensor potentiometer provides an analog voltage which varies directly with the seat recline position. High scan tool values (volts or A/D) indicate that the seat recline is in the forward position and low values indicate that the seat recline is in the rearward position.

Seat Back Heat Mode Cmd.

The scan tool displays Off/On. When the Heated Seat Back Only Mode Switch is activated, the scan tool will momentarily display On while the output from the door module signals the heated seat module to deactivate the heat from the seat cushion.

Seat Back Heat Mode Ind. Cmd.

The scan tool displays Off/On. When the Heated Seat Back Only Mode Switch is activated, this parameter indicates that the door module has illuminated the Back Only Mode Indicator.

Seat Back Heat Mode Sw.

The scan tool displays Off/On. When the Heated Seat Back Only Mode Switch is activated, the scan tool will momentarily display the switch input to the door module as On.

Seat Cool Mode Switch

The scan tool displays Off/On. When the Heated Seat Cool Switch is activated, the scan tool will momentarily display the switch input to the door module as On.

Seat Forward - Input

The scan tool displays Inactive/Active. When the seat forward switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Seat Forward - Output

The scan tool displays Inactive/Active. When the seat forward switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat horizontal motor in the forward direction.

Seat Front Down - Input

The scan tool displays Inactive/Active. When the seat front down switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Seat Front Down - Output

The scan tool displays Inactive/Active. When the seat front down switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat front vertical motor in the down direction.

Seat Front Up - Input

The scan tool displays Inactive/Active. When the seat front up switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Seat Front Up - Output

The scan tool displays Inactive/Active. When the seat front up switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat front vertical motor in the up direction.

Seat Heat High Ind. Cmd.

The scan tool displays Off/On. When the Heated or Cool Seat Temperature Switch is activated, this parameter indicates that the door module has illuminated the seat high temperature indicator.

Seat Heat Low Ind. Cmd.

The scan tool displays Off/On. When the Heated or Cool Seat Temperature Switch is activated, this parameter indicates that the door module has illuminated the seat low temperature indicator.

Seat Heat Medium Ind. Cmd.

The scan tool displays Off/On. When the Heated or Cool Seat Temperature Switch is activated, this parameter indicates that the door module has illuminated the seat medium temperature indicator.

Seat Heat Mode Cmd.

The scan tool displays Off/On. When the Heated Seat Heat/Off Temperature Switch is first activated, the scan tool will momentarily display On, while the output from the door module signals the heated seat module to turn on to the High heat mode. With each additional activation of the switch, the heated seat module will increment through the remaining temperature modes (Med/Low/Off).

Seat Heat Mode Switch.

The scan tool displays Off/On. When the Heated Seat Heat/Off Temperature Switch is activated, the scan tool will momentarily display the switch input to the door module as On.

Seat Lumbar Down - Input

The scan tool displays Inactive/Active. When the seat lumbar down switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Seat Lumbar Down - Output

The scan tool displays Inactive/Active. When the seat lumbar down switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the lumbar vertical motor in the down direction.

Seat Lumbar Forward - Input

The scan tool displays Inactive/Active. When the seat lumbar forward switch is activated, the scan tool will momentarily display switch input to the memory seat module as Active.

Seat Lumbar Forward - Output

The scan tool displays Inactive/Active. When the seat lumbar forward switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the lumbar horizontal motor in the forward direction.

Seat Lumbar Rearward - Input

The scan tool displays Inactive/Active. When the seat lumbar rearward switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Seat Lumbar Rearward - Output

The scan tool displays Inactive/Active. When the seat lumbar rearward switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the lumbar horizontal motor in the rearward direction.

Seat Lumbar Up - Input

The scan tool displays Inactive/Active. When the seat lumbar up switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Seat Lumbar Up - Output

The scan tool displays Inactive/Active. When the seat lumbar up switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory module is commanding the lumbar vertical motor the up direction.

Seat Rear Down - Input

The scan tool displays Inactive/Active. When the seat rear down switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Seat Rear Down - Output

The scan tool displays Inactive/Active. When the seat rear down switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat rear vertical motor in the down direction.

Seat Rear Up - Input

The scan tool displays Inactive/Active. When the seat rear up switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Seat Rear Up - Output

The scan tool displays Inactive/Active. When the seat rear up switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat rear vertical motor in the up direction.

Seat Rearward - Input

The scan tool displays Inactive/Active. When the seat rearward switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Seat Rearward - Output

The scan tool displays Inactive/Active. When the seat rearward switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat horizontal motor in the rearward direction.

Seat Recline Forward - Input

The scan tool displays Inactive/Active. When the seat recline forward switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Seat Recline Forward - Output

The scan tool displays Inactive/Active. When the seat recline forward switch is activated or a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat recline motor in the forward direction.

Seat Recline Rearward - Input

The scan tool displays Inactive/Active. When the seat recline rearward switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Seat Recline Rearward - Output

The scan tool displays Inactive/Active. When the seat recline rearward switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat recline motor in the rearward direction.

Software Level

The scan tool displays the 4-digit number of the software incorporated into the module.

Year Module Built

The scan tool displays a 4-digit number. This number represents the year the module was built.

DTC B1335

Diagnostic Instructions

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

DTC Descriptors

DTC B1335 00

Device Power 3 Circuit

DTC B1335 0B

Device Power 3 Circuit Current Above Threshold

DTC B1335 42

Device Power 3 Circuit Calibration Data Set Not Programed

DTC B1335 4B

Device Power 3 Circuit Calibration Not Learned

Diagnostic Fault Information

DTC B1335

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Seat Front Vertical Motor Down Control	B3920 02	1	B3920 01	B1335 00 B1335 0B

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Driver Seat Front Vertical Motor Up Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Rear Vertical Motor Down Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Rear Vertical Motor Up Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Horizontal Motor Forward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Horizontal Motor Rearward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Recline Motor Forward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Recline Motor Rearward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Lumbar Motor Up Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Lumbar Motor Down Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Lumbar Motor Forward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Lumbar Motor Rearward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Adjustable Pedal Motor Forward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Adjustable Pedal Motor Rearward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
1. Power Seat Motor Inoperative				

Circuit/System Description

The memory seat module (MSM) monitors the current supplied to the seat adjuster motors. The MSM can detect both absolute and differential current levels from the seat motors. Absolute current is the maximum allowable current the module will supply to the motors. A differential current mismatch occurs when the current supplied to the seat motors does not match the current returning from the motors.

Conditions for Running the DTC

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The MSM establishes that it is not closing to a shorted motor control circuit before the motors are active.

Conditions for Setting the DTC

The following conditions exist for more than 1 second:

B1335 00

Current out of the module does not match the current returning to the module within 5 amps.

B1335 0B

The absolute current or an over-current has exceeded the maximum value allowed.

B1335 42

This DTC will set if the module calibration is not programmed.

B1335 4B

This DTC will set if the module calibration is out of range.

Action Taken When the DTC Sets

The adjustable pedal motor and all driver seat adjuster motors are disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set the code to history, 3 seconds after no motor movement is requested or the current is no longer mismatched 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

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference

Power 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**

Module Internal Malfunction

If DTCs B1335 42 or B1335 4B are set history or current, the only option is module replacement.

Circuit/System Testing

1. Use a scan tool to clear the current and history diagnostic trouble code.
2. Ignition ON, while observing the scan tool for DTCs, operate the seat adjuster switch in both directions for each directional motor.
3. Disconnect the suspect seat motor for which the DTC set.
4. Clear the current and history diagnostic trouble code.
5. While observing the scan tool for DTCs, operate the suspect seat motor adjuster switch in both directions.
 - If the DTC set current or history, test the motor control circuits for a short to ground or an open/high resistance. If the circuits test normal, replace the memory seat module.
6. If all circuits/connections test normal, replace the seat motor.

Repair Procedures

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

- **Front Seat Recliner Actuator Motor Replacement**
- **Front Seat Lumbar Support Replacement**
- **Control Module References** for MSM replacement, setup and programming

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Diagnostic Instructions

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

DTC Descriptors

DTC B1395 02

Device Voltage Reference Output Circuit Shorted to Ground

DTC B1395 05

Device Voltage Reference Output Circuit Shorted to Battery or Open

Diagnostic Fault Information

DTC B1395

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
5-Volt Reference	B1395 02	B1395 05	B1395 05	-
Memory Seat Sensor Low Reference	-	B1825 01, B1850 01, B1860 01, B2355 01, B2365 01, B2375 01	-	-
Driver Seat Front Vertical Position Sensor Signal	B2355 06	B2355 06	B2355 01	-
Driver Seat Rear Vertical Position Sensor Signal	B2365 06	B2365 06	B2365 01	-
Driver Seat Horizontal Position Sensor Signal	B2375 06	B2375 06	B2375 01	-
Driver Seat Lumbar Vertical Position Sensor Signal	B1860 06	B1860 06	B1860 01	-
Driver Seat Lumbar Horizontal Position Sensor Signal	B1850 06	B1850 06	B1850 01	-

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Driver Seat Recline Position Sensor Signal	B1825 06	B1825 06	B1825 01	-
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Circuit/System Description

The memory seat module (MSM) supplies a 5-volt reference voltage to the driver seat and adjustable pedal position sensors. The MSM monitors this reference voltage to ensure the accuracy of the voltages being returned from the sensors. If the voltage exceeds the normal operating range, errors will occur in the memory recall operations of the seat and adjustable pedals.

Conditions for Running the DTC

The memory seat module must be powered.

Conditions for Setting the DTC

The following conditions exist for more than 1 second:

B1395 02

The reference voltage drops below 4.75 volts.

B1395 05

The reference voltage exceeds 5.15 volts.

Action Taken When the DTC Sets

All memory recall functions 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

- **Driver Seat Schematics**

- **Passenger Seat Schematics**

Connector End View Reference

Power 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**

Diagnostic Aids

An internal short to ground in one of the position sensors may set this DTC.

Circuit/System Testing

Ignition ON, test for 4.75-5.15 volts between the 5-volt reference circuit and ground.

- If less than 4.75 volts, test the 5-volt reference circuit to all position sensors for a short to ground or an open. If the circuit tests normal, replace the memory seat module.
- If greater than 5.15 volts, test the 5-volt reference circuit to all position sensors or a short to voltage. If the circuit tests normal, replace the memory seat module.

Repair Procedures

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

- **Front Seat Lumbar Support Replacement**
- **Front Seat Recliner Actuator Motor Replacement**
- **Control Module References** for MSM replacement, setup and programming

DTC B1735, B1740, B1745, B1750, B1755, B1760, B1815 OR B1820

Diagnostic Instructions

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

DTC Descriptors

DTC B1735 01

Driver Seat Front Up Switch Circuit Short to Battery

DTC B1740 01

Driver Seat Front Down Switch Circuit Short to Battery

DTC B1745 01

Driver Seat Rear Up Switch Circuit Short to Battery

DTC B1750 01

Driver Seat Rear Down Switch Circuit Short to Battery

DTC B1755 01

Driver Seat Assembly Horizontal Forward Switch Circuit Short to Battery

DTC B1760 01

Driver Seat Assembly Horizontal Rearward Switch Circuit Short to Battery

DTC B1815 01

Driver Seat Recline Forward Switch Circuit Short to Battery

DTC B1820 01

Driver Seat Recline Rearward Switch Circuit Short to Battery

Circuit Description

When the power seat switches are pressed, they send a 12-volt signal through the switch signal circuits to the memory seat module (MSM). The MSM then commands the driver seat motors to move in response to the switch signals.

Conditions for Running the DTC

The memory seat module must be powered.

Conditions for Setting the DTC

- If a seat switch circuit is active in one direction and the switch for the opposite direction is pressed, this DTC will set.
- Multiple DTCs will set if one of the switch signal circuits is shorted to voltage.

Action Taken When the DTC Sets

- A motor output driven in response to a switch considered failed, is deactivated for both directions.
- All memory recall commands are ignored.
- The MSM will respond to any other switch signal that has not set a DTC.

Conditions for Clearing the DTC

- The current DTC will clear and set the code to history, 3 seconds after the fault is no longer present 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

Driver Seat Schematics

Connector End View Reference

Power 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

Circuit/System Verification

Ignition ON, observe the scan tool seat switch parameters while pressing the appropriate seat directional switches. The reading should change between Inactive and Active.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the seat adjuster switch.
2. Test for infinite resistance between each seat direction signal terminal and the switch B+ terminal with the switch in the open position.
 - If not Inactive, test the signal circuit that displays Active for a short to voltage. If the circuit tests normal, replace the MSM.
3. If all circuits test normal, test or replace the seat adjuster switch.

Component Testing

1. Ignition OFF, disconnect the harness connector at the seat adjuster switch.
2. Test for infinite resistance between each seat direction signal terminal and the switch B+ terminal with the switch in the open position.
 - If less than infinite resistance, replace the switch.
3. Test for less than 1 ohm of resistance between each seat direction signal terminal and the B+ terminal with the switch in the closed position.
 - If greater than 1 ohm, replace the switch.

Repair Procedures

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

- **Power Seat Switch Replacement**
- **Control Module References** for memory seat module replacement, setup and programming

Diagnostic Instructions

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

DTC Descriptors

DTC B1825 01

Driver Seat Recline Position Sensor Circuit Short to Battery

DTC B1825 06

Driver Seat Recline Position Sensor Circuit Short to Ground or Open

DTC B1825 5A

Driver Seat Recline Position Sensor Circuit Plausibility Failure

DTC B1850 01

Driver Seat Lumbar Horizontal Position Sensor Circuit Short to Battery

DTC B1850 06

Driver Seat Lumbar Horizontal Position Sensor Circuit Short to Ground or Open

DTC B1850 5A

Driver Seat Lumbar Horizontal Position Sensor Circuit Plausibility Failure

DTC B1860 01

Driver Seat Lumbar Vertical Position Sensor Circuit Short to Battery

DTC B1860 06

Driver Seat Lumbar Vertical Position Sensor Circuit Short to Ground or Open

DTC B1860 5A

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Driver Seat Lumbar Vertical Position Sensor Circuit Plausibility Failure

DTC B2355 01

Driver Seat Front Vertical Position Sensor Circuit Short to Battery

DTC B2355 06

Driver Seat Front Vertical Position Sensor Circuit Short to Ground or Open

DTC B2355 5A

Driver Seat Front Vertical Position Sensor Circuit Plausibility Failure

DTC B2365 01

Driver Seat Rear Vertical Position Sensor Circuit Short to Battery

DTC B2365 06

Driver Seat Rear Vertical Position Sensor Circuit Short to Ground or Open

DTC B2365 5A

Driver Seat Rear Vertical Position Sensor Circuit Plausibility Failure

DTC B2375 01

Driver Seat Assembly Horizontal Position Sensor Circuit Short to Battery

DTC B2375 06

Driver Seat Assembly Horizontal Position Sensor Circuit Short to Ground or Open

DTC B2375 5A

Driver Seat Assembly Horizontal Position Sensor Circuit Plausibility Failure

Circuit Description

The position sensor that sets this diagnostic trouble code (DTC) is either attached to the seat directional motor drive cable or directly to the motor it monitors. It receives a 5-volt reference

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and ground from the memory seat module (MSM). The sensor sends a voltage signal that varies with the movement of the seat through the signal circuit to the MSM. Then based on this voltage signal, the MSM determines the position of the seat.

Conditions for Running the DTC

The memory seat module must be powered.

Conditions for Setting the DTC

B1825 01, B1850 01, B1860 01, B2355 01, B2365 01, B2375 01

If the MSM sees the analog input from this sensor is greater than 4.65 volts, the sensor will be considered out of range and the MSM will set this DTC.

B1825 06, B1850 06, B1860 06, B2355 06, B2365 06, B2375 06

If the MSM sees the analog input from this sensor is less than 0.27 volt, the sensor will be considered out of range and the MSM will set this DTC.

B1825 5A, B1850 5A, B1860 5A, B2355 5A, B2365 5A, B2375 5A

This DTC will set, if the MSM is controlling a motor in one direction and its position sensor is tracking the motor in the opposite direction. The sensor is either mounted or wired incorrectly or the polarity of the motor control circuits are reversed.

Action Taken When the DTC Sets

The MSM disables the memory recall and easy exit/entry action commands of the motor monitored by the sensor. The motor will respond to manual positioning commands.

Conditions for Clearing the DTC

- The current DTC will clear and set to history, when the MSM sees the analog input from the sensor as between 0.27-4.65 volts 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.

Diagnostic Aids

- All position sensors use common ground and 5-volt reference circuits.
- If the 5-volt reference circuit is shorted to voltage, multiple codes will set.

- If the 5-volt reference circuit is shorted to ground, multiple codes will set.
- If the sensor ground circuit is open, multiple codes will set.

Reference Information

Schematic Reference

Driver Seat Schematics

Connector End View Reference

Power 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

Ignition ON, observe the scan tool Driver Seat and Lumbar position sensor parameters. The readings should be between 0.27-2.65 volts and change while adjusting seat and lumbar positions.

Circuit/System Testing

B1825

1. Ignition OFF, disconnect the C2 harness connector at the seat recline motor.
2. Ignition OFF, test for less than 2 ohms of resistance between the low reference circuit terminal 1 and ground.
 - If greater than 2 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the MSM.
3. Ignition ON, test for 4.8-5.2 volts between the 5-volt reference circuit terminal 3 and ground.

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- If less than 4.8 volts, test the 5-volt reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
 - If greater than 5.2 volts, test the 5-volt reference circuit for a short to voltage. If the circuit tests normal, replace the MSM.
4. Verify the scan tool Driver Seat Recline Sensor parameter is less than 2.0 volts.
 - If greater than 2.0 volts, test the signal circuit terminal 2 for a short to voltage. If the circuit tests normal, replace the MSM.
 5. Install a 3A fused jumper wire between the signal circuit terminal 2 and the 5-volt reference circuit terminal 3. Verify the scan tool Driver Seat Recline Sensor parameter is greater than 4.65 volts.
 - If less than 4.65 volts, test the signal circuit for short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
 6. If all circuits test normal, test or replace the seat recline position sensor.

B2355, B2365, B2375

1. Ignition OFF, disconnect the C2 harness connector at the seat adjuster motor assembly.
2. Ignition OFF, test for less than 2 ohms of resistance between the low reference circuit terminal 2 and ground.
 - If greater than 2 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the MSM.
3. Ignition ON, test for 4.8-5.2 volts between the 5-volt reference circuit terminal 6 and ground.
 - If less than 4.8 volts, test the 5-volt reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
 - If greater than 5.2 volts, test the 5-volt reference circuit for a short to voltage. If the circuit tests normal, replace the MSM.
4. Verify the appropriate scan tool Driver Seat Sensor parameter is less than 2.0 volts.
 - If greater than 2.0 volts, test the appropriate signal circuit for a short to voltage. If the circuit tests normal, replace the MSM.
 - Seat front vertical position sensor terminal 1
 - Seat rear vertical position sensor terminal 5
 - Seat horizontal position sensor terminal 3
5. Install a 3A fused jumper wire between the signal circuit and the 5-volt reference circuit terminal 6. Verify the appropriate scan tool Driver Seat position sensor parameter is greater than 4.65 volts.

- Seat front vertical position sensor terminal 1
 - Seat rear vertical position sensor terminal 5
 - Seat horizontal position sensor terminal 3
 - If less than 4.65 volts, test the signal circuit for short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
6. If all circuits test normal, test or replace the seat adjuster motor assembly.

B1850, B1860

1. Ignition OFF, disconnect the C2 harness connector at the seat lumbar motor assembly.
2. Ignition OFF, test for less than 2 ohms of resistance between the low reference circuit terminal C and ground.
 - If greater than 2 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the MSM.
3. Ignition ON, test for 4.8-5.2 volts between the 5-volt reference circuit terminal A and ground.
 - If less than 4.8 volts, test the 5-volt reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
 - If greater than 5.2 volts, test the 5-volt reference circuit for a short to voltage. If the circuit tests normal, replace the MSM.
4. Verify the appropriate scan tool Lumbar Sensor parameter is less than 2.0 volts.
 - If greater than 2.0 volts, test the appropriate signal circuit for a short to voltage. If the circuit tests normal, replace the MSM.
 - Lumbar vertical position sensor terminal B
 - Lumbar horizontal position sensor terminal D
5. Install a 3A fused jumper wire between the signal circuit and the 5-volt reference circuit terminal C. Verify the appropriate scan tool Lumbar Sensor parameter is greater than 4.65 volts.
 - Lumbar vertical position sensor terminal B
 - Lumbar horizontal position sensor terminal D
 - If less than 4.65 volts, test the signal circuit for short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
6. If all circuits test normal, test or replace the lumbar motor assembly.

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

- **Front Seat Lumbar Support Replacement**
- **Front Seat Recliner Actuator Motor Replacement**
- **Control Module References** for MSM replacement, setup and programming

DTC B3920 OR B3921

Diagnostic Instructions

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

DTC Descriptors

DTC B3920 01

Group 1 Seat Motors Circuit Shorted to Battery or Open

DTC B3920 02

Group 1 Seat Motors Circuit Shorted to Ground

Diagnostic Fault Information

DTC B3920 or B3921

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Seat Front Vertical Motor Down Control	B3920 02	1	B3920 01	-
Driver Seat Front Vertical Motor Up Control	B3920 02	1	B3920 01	-
Driver Seat Rear Vertical Motor Down Control	B3920 02	1	B3920 01	-
Driver Seat Rear Vertical Motor Up	B3920 02	1	B3920 01	-

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Control				
Driver Seat Horizontal Motor Forward Control	B3920 02	1	B3920 01	-
Driver Seat Horizontal Motor Rearward Control	B3920 02	1	B3920 01	-
Driver Seat Recline Motor Forward Control	B3920 02	1	B3920 01	-
Driver Seat Recline Motor Rearward Control	B3920 02	1	B3920 01	-
Driver Seat Lumbar Motor Down Control	B3920 02	1	B3920 01	-
Driver Seat Lumbar Motor Forward Control	B3920 02	1	B3920 01	-
Driver Seat Lumbar Motor Up Control	B3920 02	1	B3920 01	-
Driver Seat Lumbar Motor Rearward Control	B3920 02	1	B3920 01	-
Adjustable Pedal Motor Forward Down Control	B3920 02	1	B3920 01	-
Adjustable Pedal Motor Rearward Control	B3920 02	1	B3920 01	-
1. Power Seat Motor Inoperative				

Circuit/System Description

The memory seat module (MSM) controls the seat and lumbar motors via half bridges that are connected to a common power rail internal to the module. Group 1 includes the following motors:

- Seat front vertical motor
- Seat rear vertical motor
- Seat horizontal motor
- Seat recline motor
- Seat lumbar horizontal motor
- Seat lumbar vertical motor

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When a power seat switch is pressed or when a memory recall is requested, each seat or lumbar motor receives battery voltage and ground from the MSM via the motor control circuits. All seat and lumbar motors are reversible, so the direction the seat moves depends on which control circuit voltage is applied and which control circuit the ground is applied. For example, to move the seat in the forward direction, the module applies voltage to the seat horizontal motor forward control circuit and ground to the seat horizontal motor rearward control circuit. When the seat is operated in the opposite direction, the module reverses the polarity and applies voltage and ground to the opposite circuits to move the seat in the rearward direction. All seat and lumbar motors are powered this way.

Conditions for Running the DTC

The MSM must be powered.

Conditions for Setting the DTC

B3920 01

The MSM detects a short to battery voltage on a group 1 motor control circuit.

B3920 02

The MSM detects a short to ground on a group 1 motor control circuit.

Action Taken When the DTC Sets

The MSM disables all motors in the group for which the DTC was set.

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.
- A history DTC will clear after 50 ignition cycles or with a scan tool using the clear DTCs function.

Reference Information

Schematic Reference

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference

Power 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 MSM.
2. Ignition ON, verify that a test does not illuminate between any of the following motor control circuits and ground:
 - Front vertical motor terminal 12
 - Front vertical motor terminal 13
 - Rear vertical motor terminal 15
 - Rear vertical motor terminal 16
 - Seat horizontal motor terminal 9
 - Seat horizontal motor terminal 10
 - If the test lamp illuminates, test the control circuit for a short to voltage.
3. Test for infinite resistance between the following motor control circuits and ground:
 - Front vertical motor terminal 12
 - Front vertical motor terminal 13
 - Rear vertical motor terminal 15
 - Rear vertical motor terminal 16
 - Seat horizontal motor terminal 9
 - Seat horizontal motor terminal 10
 - If less than infinite resistance, test the motor control circuit for a short to ground.
4. Test for greater resistance values than specified between the following motor control circuits:

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- 1 ohm for front vertical motor terminal 12 and terminal 13
 - 1 ohm for rear vertical motor terminal 15 and terminal 16
 - 10 ohms for seat horizontal motor terminal 9 and terminal 10
 - If less than the specified resistance, test the control circuits for a short together or shorted motor.
5. Ignition OFF, disconnect the C4 harness connector at the MSM.
6. Ignition ON, verify that a test does not illuminate between any of the following motor control circuits and ground:
- Lumbar vertical motor terminal 1
 - Lumbar vertical motor terminal 2
 - Lumbar horizontal motor terminal 12
 - Lumbar horizontal motor terminal 13
 - Seat recline motor terminal 15
 - Seat recline motor terminal 16
 - If the test lamp illuminates, test the control circuit for a short to voltage.
7. Test for infinite resistance between the following motor control circuits and ground:
- Lumbar vertical motor terminal 1
 - Lumbar vertical motor terminal 2
 - Lumbar horizontal motor terminal 12
 - Lumbar horizontal motor terminal 13
 - Seat recline motor terminal 15
 - Seat recline motor terminal 16
 - If less than infinite resistance, test the motor control circuit for a short to ground.
8. Test for greater resistance values than specified between the following motor control circuits:
- 10 ohms for lumbar horizontal motor terminal 12 and terminal 13
 - 1 ohm for recline motor terminal 15 and terminal 16
 - If less than the specified resistance, test the control circuits for a short together or shorted motor.
9. If all circuits test normal, replace the MSM.

Repair Procedures

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

- **Front Seat Recliner Actuator Motor Replacement**
- **Front Seat Lumbar Support Replacement**
- **Control Module References** for the memory seat module replacement, programming and setup

SYMPTOMS - POWER SEATS

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:
 - **Memory Seats Description and Operation**
 - **Power Seats System 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:

- **Memory Seat Feature Inoperative**
- **Power Seat Inoperative (w/o Memory)** or **Power Seat Inoperative (w/Memory)**

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MEMORY SEAT FEATURE INOPERATIVE

Memory Seat Feature Inoperative

Step	Action	Values	Yes	No
Schematic Reference: <u>Driver Seat Schematics</u> Connector End View Reference: <u>Power Seat Connector End Views</u> DEFINITION: One or more of the memory recall functions are inoperative.				
1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Attempt to set and recall memory 1, memory 2 and exit seat position settings. Does the system operate normally?	-	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	1. Install a scan tool. 2. Observe the Memory Switch parameter in the driver door switch data list. 3. Press the memory 1 switch. Does the scan tool display the memory 1 switch as Active only while the switch is pressed?	-	Go to Step 4	Go to Step 6
4	1. Observe the Memory Switch parameter in the driver door switch data list. 2. Press the memory 2 switch. Does the scan tool display the memory 2 switch as Active only while the switch is pressed?	-	Go to Step 5	Go to Step 7
	1. Observe the Memory Switch parameter in the driver door switch data list.			

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5	<p>2. Press the EXIT switch.</p> <p>Does the scan tool display the EXIT switch as Active only while the switch is pressed?</p>	-	Go to Step 11	Go to Step 8
6	<p>1. Disconnect the memory switch connector from the driver door switch.</p> <p>2. Using a DMM, test the resistance through the memory switch from the switch supply voltage circuit terminal to the memory switch signal circuit terminal in the pigtail connector. Refer to Circuit Testing and to Wiring Repairs .</p> <p>3. Press the memory 1 switch.</p> <p>Is the resistance at or near the specified value only while the switch is pressed?</p>	2.26K ohms	Go to Step 12	Go to Step 10
7	<p>1. Disconnect the memory switch connector from the driver door module.</p> <p>2. Using a DMM, test the resistance through the memory switch from the switch supply voltage circuit terminal to the memory switch signal circuit terminal in the pigtail connector. Refer to Circuit Testing and to Wiring Repairs .</p> <p>3. Press the memory 2 switch.</p> <p>Is the resistance at or near the specified value only while the</p>	4.26K ohms		Go to Step

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	switch is pressed?		Go to Step 12	10
8	<ol style="list-style-type: none"> 1. Disconnect the memory switch connector from the driver door module. 2. Using a DMM, test the resistance through the memory switch from the switch supply voltage circuit terminal to the memory switch signal circuit terminal in the pigtail connector. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> . 3. Press the EXIT switch. <p>Is the resistance at or near the specified value only while the switch is pressed?</p>	9.25K ohms	Go to Step 9	Go to Step 10
9	<p>Test the memory switch signal circuits in the switch harness for a short to ground or voltage. Refer to <u>Circuit Testing</u> .</p> <p>Are either of the switch signal circuits shorted to ground or voltage?</p>	-	Go to Step 13	Go to Step 12
10	<p>Inspect for poor connections at the memory switch connector. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> .</p> <p>Did you find and correct the condition?</p>	-	Go to Step 16	Go to Step 13
11	<p>Inspect for poor connections at the driver seat module connectors. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector</u></p>	-		

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	Repairs . Did you find and correct the condition?		Go to Step 16	Go to Step 14
12	Inspect for poor connections at the driver door switch connector. Refer to Testing for Intermittent Conditions and Poor Connections and to Connector Repairs . Did you find and correct the condition?	-	Go to Step 16	Go to Step 15
13	Replace the memory switch. Refer to Front Side Door Trim Panel Replacement - Left Side . Is the repair complete?	-	Go to Step 16	-
14	Replace the driver seat module. Refer to Control Module References for replacement, setup and programming. Is the repair complete?	-	Go to Step 16	-
15	Replace the driver door switch. Refer to Control Module References for replacement, setup and programming. Is the repair complete?	-	Go to Step 16	-
16	Operate the memory seat system to verify the repair. Did you correct the condition?	-	System OK	Go to Step 3

POWER SEAT INOPERATIVE (W/O MEMORY)

Diagnostic Instructions

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

Circuit/System Description

Power seats without memory are completely controlled through the power seat switch. Battery voltage is supplied to the power seat switch through the power seat circuit breaker. While the seat adjuster switches are in an inactive state the switch contacts are closed to the power seat switch ground circuit. When a power seat switch is pressed to an active state the switch contact is closed to the battery voltage supply circuit. Each seat adjuster motor is controlled by the power seat switch through 2 motor control circuits. The seat adjuster motors are bidirectional and the direction of adjuster motor rotation is determined by which of the adjuster motor control circuits is switched to battery voltage while the other remains grounded.

Reference Information**Schematic Reference**

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference**Power Seat Connector End Views****Electrical Information Reference**

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

Circuit/System Testing

1. Disconnect the seat adjuster or power lumbar switch connector.
2. Verify that a test lamp illuminates when connected from battery voltage to the ground circuit terminal.
 - If the test lamp does not illuminate, repair the ground circuit for an open/high resistance.
3. Verify that a test lamp illuminates when connected from the battery supply circuit terminal to ground.
 - If the test lamp does not illuminate, repair the battery supply circuit for an open/high resistance or short to ground.
4. Connect the seat adjuster or power lumbar switch connector and disconnect the inoperative motor assembly connector.

5. Connect a test lamp across the inoperative motor control circuit terminals.
6. Verify that the test lamp illuminates when the appropriate switch is pressed.
 - If the test lamp does not illuminate, repair the motor circuits for an open/high resistance or short to ground. If the circuits test normal replace the seat adjuster or power lumbar switch.
7. If the circuits test normal, replace the inoperative motor assembly.

Repair Procedures

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

- **Power Seat Switch Replacement**
- **Front Seat Lumbar Control Switch Replacement**
- **Front Seat Lumbar Support Replacement**
- **Front Seat Recliner Actuator Motor Replacement**

POWER SEAT INOPERATIVE (W/MEMORY)**Diagnostic Instructions**

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

Circuit/System Description

The 8-way power driver seat with memory is controlled by the memory seat module (MSM). The low current battery supply circuit from the DSM 10A fuse supplies the logic power and reference voltages to the MSM. The high current battery supply circuit from the DRIVER SEAT 2 25A circuit breaker supplies the MSM power rail 1 which is used to drive the power seat motors, adjustable pedals motor and seat heater elements with heated seats only. The MSM supplies a battery voltage reference circuit to the seat adjuster and lumbar switches. The switch signal circuits are referenced from ground within the MSM and when a switch is activated the signal circuit goes high. Each seat adjuster motor is controlled by the MSM through 2 motor control circuits. While the seat adjuster motors are in an inactive state the motor control circuits are closed to ground circuit contacts within the MSM. The MSM operates the seat adjuster motors by switching one of a motors control circuits to battery voltage. The seat adjuster motors are bidirectional and the direction of adjuster motor rotation is determined by which of the adjuster motor control circuits is switched to battery voltage while the other remains grounded.

Reference Information

Schematic Reference

Driver Seat Schematics

Connector End View Reference

Power 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

Circuit/System Verification

1. Install a scan tool and display the MSM switch inputs.
2. Verify that none of the switches are displayed as Active while in an inactive state.
 - If any of the switch inputs are Active, perform the affected Switch Circuit Test.
3. Verify that the switch inputs are displayed as Active while the switch is pressed.
 - If any of the switch inputs remain Inactive while the switch is pressed, perform the affected Switch Circuit Test.
4. If the switch inputs to the MSM function normal, perform the Motor Control Circuit Test.

Circuit/System Testing

Seat Adjuster Switch Circuit Test

1. Disconnect the MSM connector C7 and verify that none of the adjuster switch inputs are displayed as Active.
 - If any of the switch inputs are Active, replace the MSM.
2. Verify that battery voltage is not present at the affected switch signal circuit terminal while the switch is inactive.
 - If battery voltage is present while the switch is not pressed, replace the seat adjuster

switch.

3. Verify that battery voltage is present at the affected switch signal circuit terminal while pressing the switch.
 - If battery voltage is not present while the switch is pressed, repair the switch supply circuit for an open/high resistance. If the circuit tests normal replace the seat adjuster switch.
4. If the circuits test normal replace the MSM.

Lumbar Switch Circuit Test

1. Disconnect the MSM connector C6 and verify that none of the lumbar switch inputs are displayed as Active.
 - If any of the switch inputs are Active, replace the MSM.
2. Verify that battery voltage is not present at the affected switch signal circuit terminal while the switch is inactive.
 - If battery voltage is present while the switch is not pressed, replace the lumbar switch.
3. Verify that battery voltage is present at the affected switch signal circuit terminal while pressing the switch.
 - If battery voltage is not present while the switch is pressed, repair the switch supply circuit for an open/high resistance. If the circuit tests normal replace the lumbar switch.
4. If the circuits test normal replace the MSM.

Motor Control Circuit Test

1. Disconnect the MSM connector C3.
2. Verify that a test lamp illuminates when connected from the high current battery supply circuit terminal 5 to ground.
 - If the test lamp does not illuminate, repair the high current battery supply circuit for an open or short to ground.
3. Connect the MSM connector C3 and disconnect the seat adjuster assembly or lumbar adjuster assembly connector C2.
4. Connect a test lamp across the affected motor control circuit terminals.
5. Verify that the test lamp illuminates while the affected switch is pressed.
 - If the test lamp does not illuminate, repair the motor control circuits for an open/high resistance. If the circuits test normal replace the MSM.
6. If the circuits test normal replace the affected adjuster assembly.

Repair Procedures

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

- **Power Seat Switch Replacement**
- **Front Seat Lumbar Control Switch Replacement**
- **Front Seat Lumbar Support Replacement**
- **Front Seat Recliner Actuator Motor Replacement**
- **Control Module References** for MSM replacement, setup and programming

REPAIR INSTRUCTIONS

POWER SEAT SWITCH REPLACEMENT

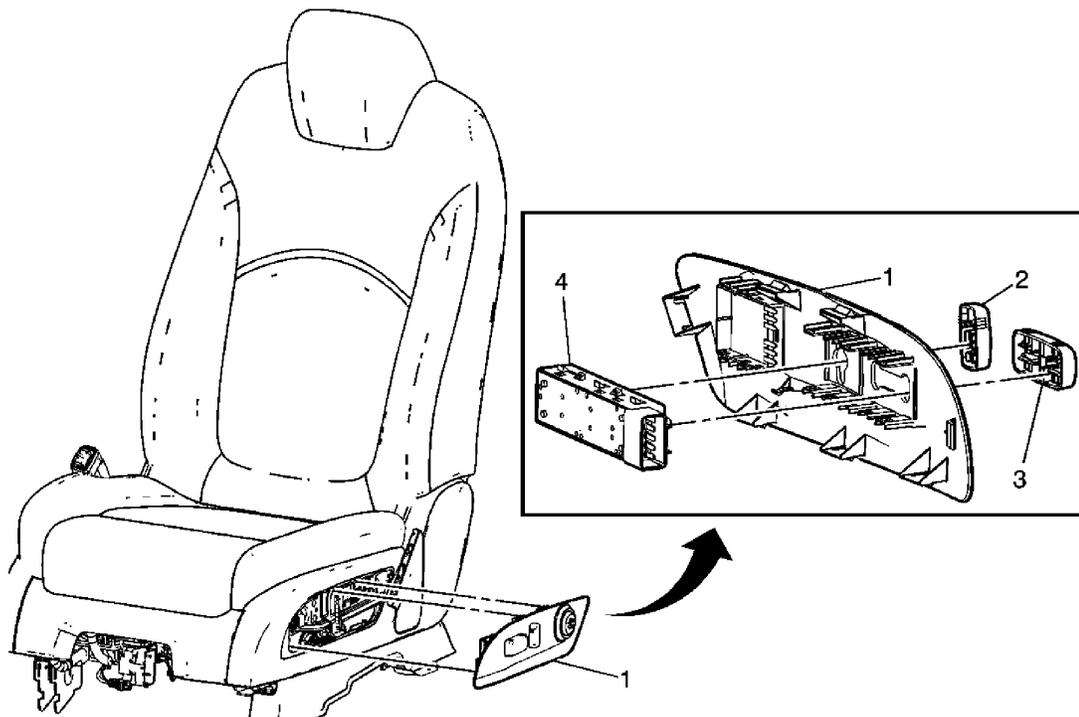


Fig. 48: Identifying Power Seat Switch
 Courtesy of GENERAL MOTORS CORP.

Power Seat Switch Replacement

Callout	Component Name
	Front Seat Adjuster Switch Mounting Plate

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	Procedure
1	<ol style="list-style-type: none">1. Using a non-metallic flat-bladed tool, release the retainer tabs starting at the rear edge and working forward while pulling outward on the mounting plate.2. Disconnect the electrical connectors from the switch assemblies.
2	Front Seat Recliner Knob Tip: Use a flat-bladed tool to release the knob from the mounting plate.
3	Front Seat Adjuster Knob Tip: Use a flat-bladed tool to release the knob from the mounting plate.
4	Front Seat Adjuster and Recliner Switch Tip: Use a flat-bladed tool to release the switch from the mounting plate.

DRIVER SEAT ADJUSTER MEMORY SWITCH REPLACEMENT

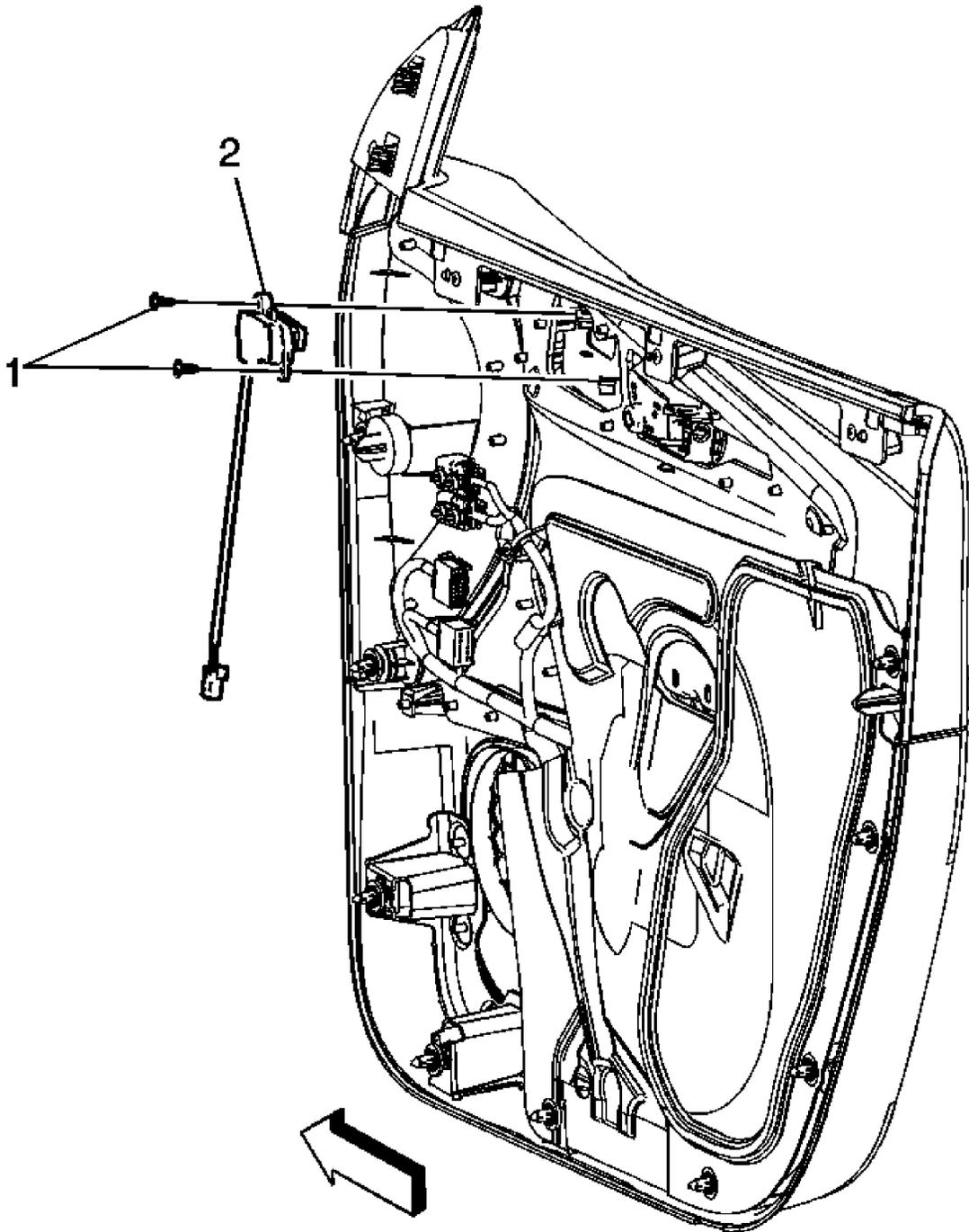


Fig. 49: View Of Driver Seat Adjuster Memory Switch
 Courtesy of GENERAL MOTORS CORP.

Driver Seat Adjuster Memory Switch Replacement

Callout	Component Name

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Preliminary Procedure:

Remove the front driver side door trim panel. Refer to **Front Side Door Trim Panel Replacement - Left Side** .

1	Driver Seat Adjustable Memory Switch Screw (Qty: 2) NOTE: Refer to <u>Fastener Notice</u> . Tighten: 3 N.m (27 lb in)
2	Driver Seat Adjustable Memory Switch Procedure: Disconnect the electrical connector.

MEMORY SEAT CONTROL MODULE REPLACEMENT

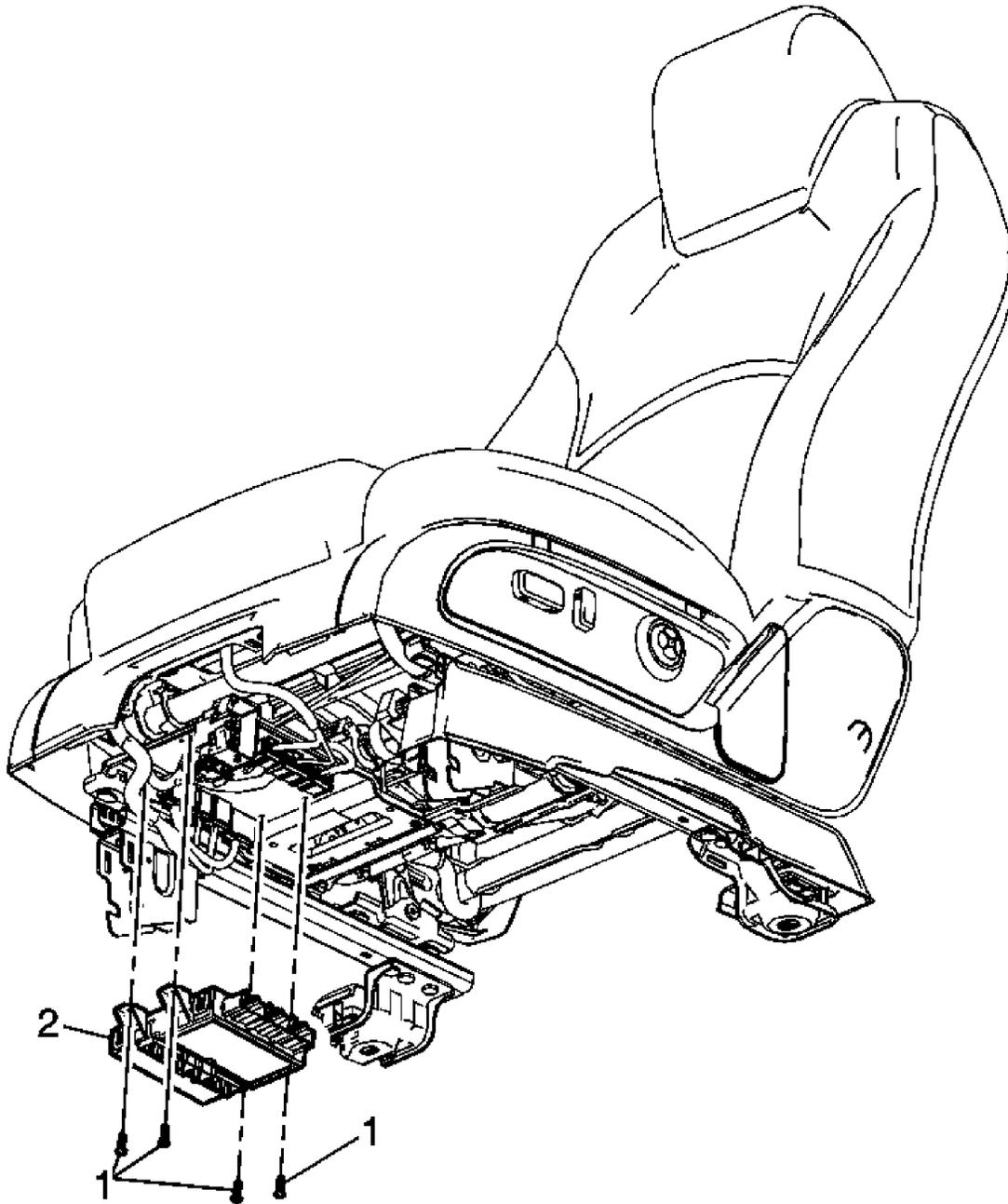


Fig. 50: Locating Memory Seat Control Module
 Courtesy of GENERAL MOTORS CORP.

Memory Seat Control Module Replacement

Callout	Component Name
Preliminary Procedure:	
Remove the front seat. Refer to <u>Bucket Seat Replacement</u> .	

<p>1</p>	<p>Driver Seat Adjuster Memory Module Screw (Qty: 4)</p> <p>NOTE: Refer to <u>Fastener Notice</u> .</p> <p>Tighten: 2 N.m (18 lb in)</p>
<p>2</p>	<p>Driver Seat Adjuster Memory Module</p> <p>Procedure</p> <ol style="list-style-type: none"> 1. Disconnect the electrical connector. 2. Reprogram the module after replacement. Refer to <u>Control Module References</u> .

FRONT SEAT LUMBAR CONTROL SWITCH REPLACEMENT

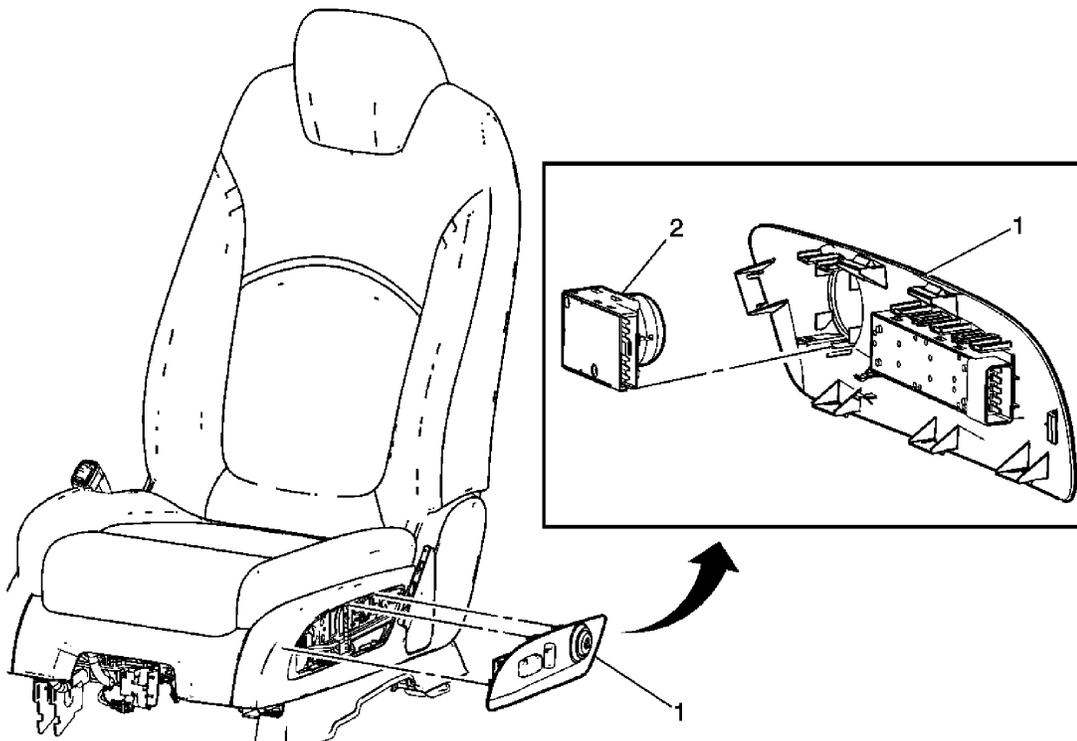


Fig. 51: Identifying Front Seat Lumbar Control Switch
 Courtesy of GENERAL MOTORS CORP.

Front Seat Lumbar Control Switch Replacement

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Callout	Component Name
1	<p>Front Seat Adjuster Switch Mounting Plate</p> <p>Procedure</p> <ol style="list-style-type: none">1. Using a non-metallic flat-bladed tool, release the retainer tabs starting at the rear edge and working forward while pulling outward on the mounting plate.2. Disconnect the electrical connectors from the switch assemblies.
2	<p>Front Seat Lumbar Control Switch Assembly</p> <p>Tip: Use a flat-bladed tool to release the switch from the mounting plate.</p>

FRONT SEAT LUMBAR SUPPORT REPLACEMENT

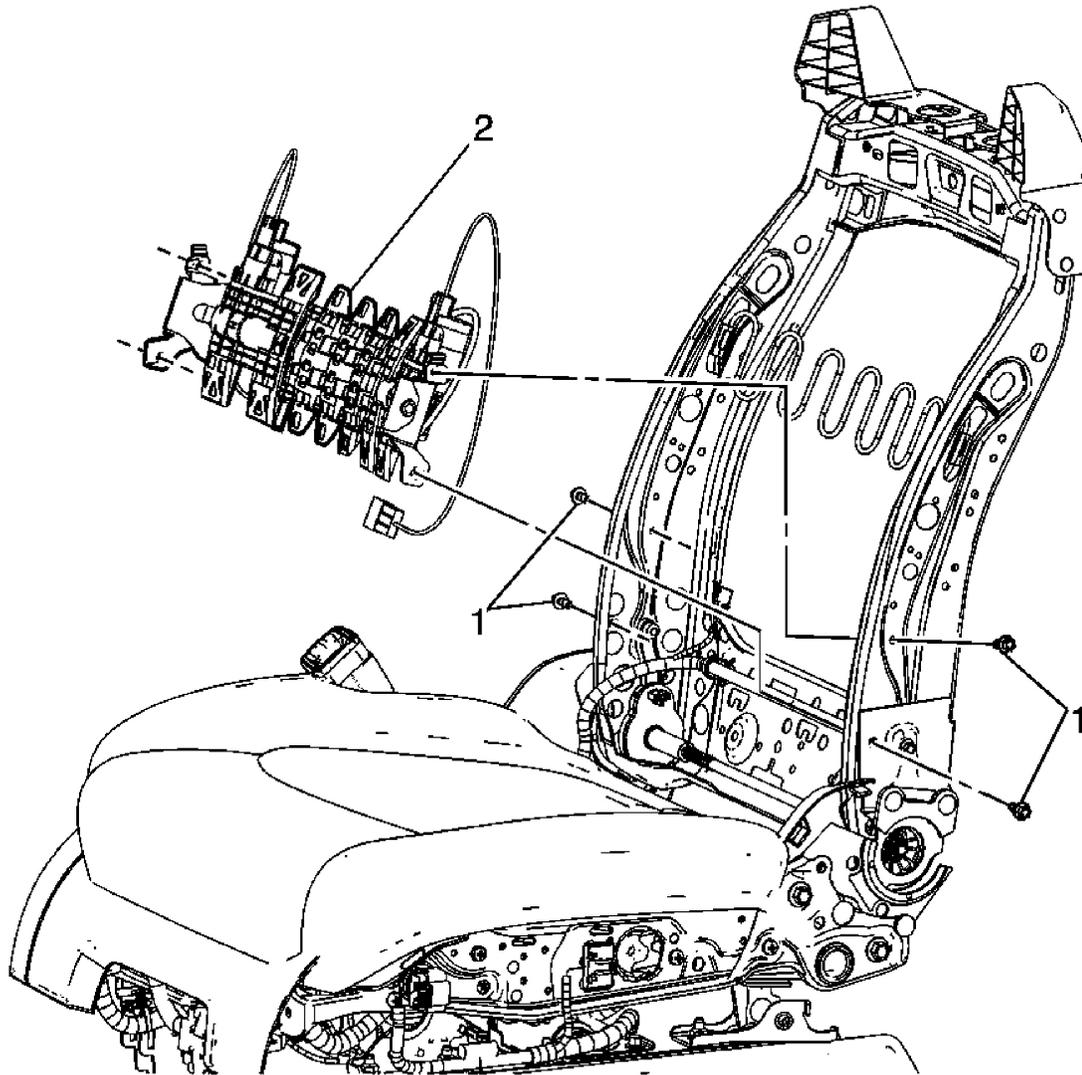


Fig. 52: View Of Front Seat Lumbar Support
 Courtesy of GENERAL MOTORS CORP.

Front Seat Lumbar Support Replacement

Callout	Component Name
<p>Preliminary Procedure: Remove the front seat back cushion cover j-clips and reposition the seat back cushion cover to gain access to the lumbar support and bolts.</p>	
<p>1</p>	<p>Front Seat Lumbar Assembly Bolt (Qty: 4)</p> <p>NOTE: Refer to Fastener Notice .</p>

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	Tighten: 9 N.m (80 lb in)
2	Front Seat Lumbar Assembly Procedure: Disconnect the electrical connector.

FRONT SEAT RECLINER ACTUATOR MOTOR REPLACEMENT

The front seat recliner actuator motor is serviced as part of the front seat back frame assembly and is not available separately. Refer to **Front Seat Back Frame Replacement** .

DESCRIPTION AND OPERATION

MEMORY SEATS DESCRIPTION AND OPERATION

There are 2 options of power seat systems available in full size trucks. The first is 6 way driver and passenger power seats without memory. The second is an 8-way driver seat plus 4-way lumbar with memory, heat and optional cool function. While the passenger has 8-way power seats with heat and optional cool function. For the driver memory seat operation, refer to Memory Seats Description and Operation. Power seats without memory are completely controlled through the power seat switch. Battery voltage is supplied to the power seat switch through the power seat circuit breaker. While the seat adjuster switches are in an inactive state the switch contacts are closed to the power seat switch ground circuit. When a power seat switch is pressed to an active state the switch contact is closed to the battery voltage supply circuit. Each seat adjuster motor is controlled by the power seat switch through 2 motor control circuits. The seat adjuster motors are bidirectional and the direction of adjuster motor rotation is determined by which of the adjuster motor control circuits is switched to battery voltage while the other remains grounded.

POWER SEATS SYSTEM DESCRIPTION AND OPERATION

There are 2 options of power seat systems available in full size trucks. The first is 6 way driver and passenger power seats without memory. The second is an 8-way driver seat plus 4-way lumbar with memory, heat and optional cool function. While the passenger has 8-way power seats with heat and optional cool function. For the driver memory seat operation, refer to Memory Seats Description and Operation. Power seats without memory are completely controlled through the power seat switch. Battery voltage is supplied to the power seat switch through the power seat circuit breaker. While the seat adjuster switches are in an inactive state the switch contacts are closed to the power seat switch ground circuit. When a power seat switch is pressed to an active state the switch contact is closed to the battery voltage supply circuit. Each seat adjuster motor is controlled by the power seat switch through 2 motor control circuits. The seat adjuster motors are bidirectional and the direction of adjuster motor rotation is determined by which of the adjuster

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motor control circuits is switched to battery voltage while the other remains grounded.