

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

2005 ACCESSORIES & EQUIPMENT

Seats - XLR

SPECIFICATIONS

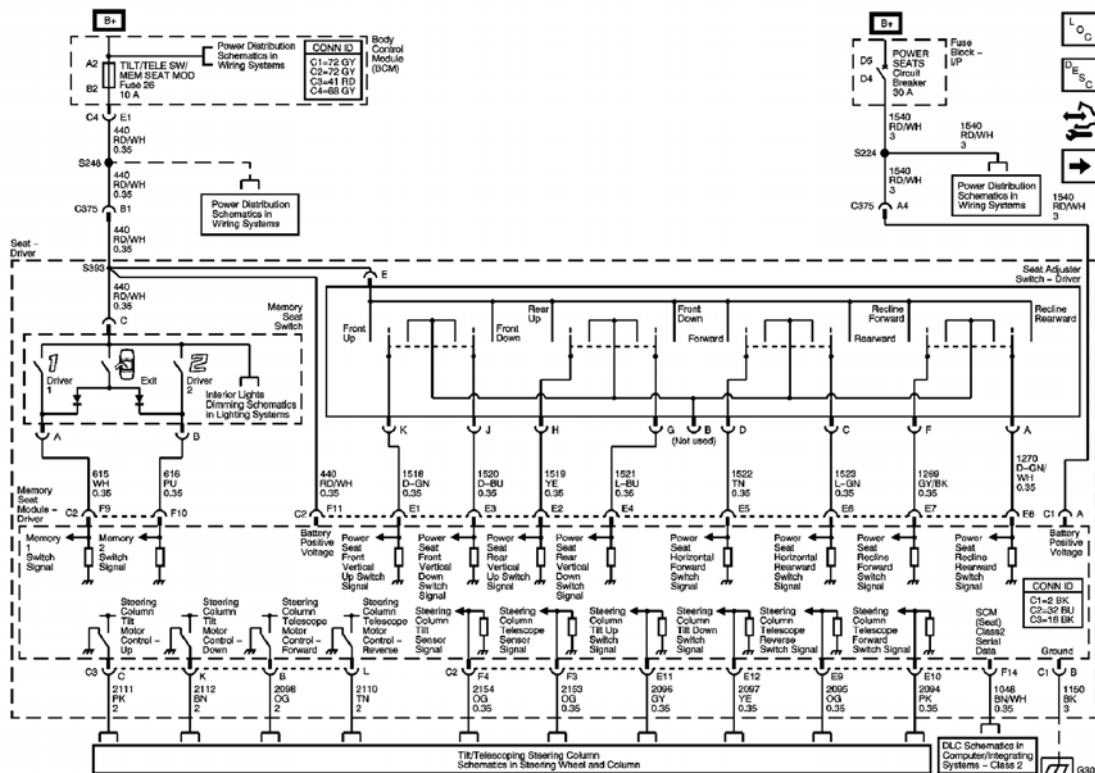
FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Adjuster Mounting Nuts	50 N.m	37 lb ft
Hinge Bolt Nuts	24 N.m	18 lb ft
Seat to Adjuster Bolts	24 N.m	18 lb lb ft
Seat to Adjuster Nuts	24 N.m	18 lb ft
Seat Belt Buckle Side Mounting Nut	40 N.m	29 lb ft

SCHEMATIC AND ROUTING DIAGRAMS

DRIVER SEAT SCHEMATICS



2005 Cadillac XLR

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Fig. 1: DLC, Ground, Power, Switches and References to Tilt/Telescope Steering Driver Seat Schematics
Courtesy of GENERAL MOTORS CORP.

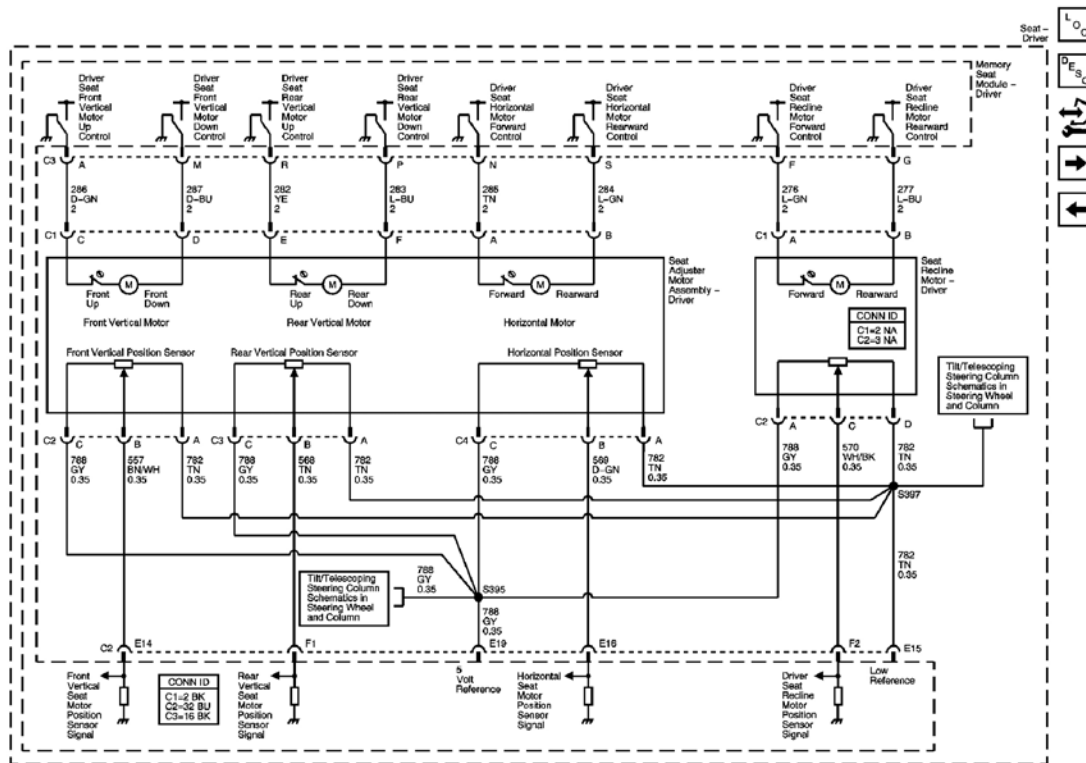


Fig. 2: Motors Driver Seat Schematics
Courtesy of GENERAL MOTORS CORP.

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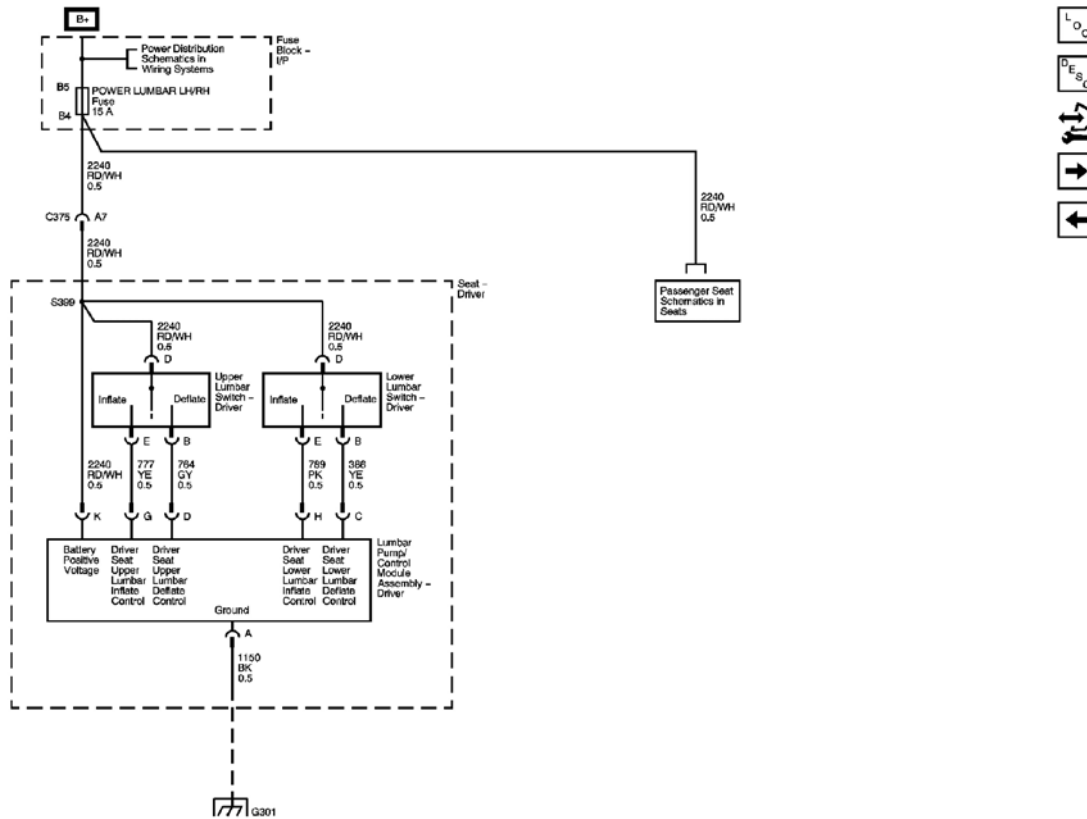


Fig. 3: Lumbar Support Driver Seat Schematics
Courtesy of GENERAL MOTORS CORP.

2005 Cadillac XLR

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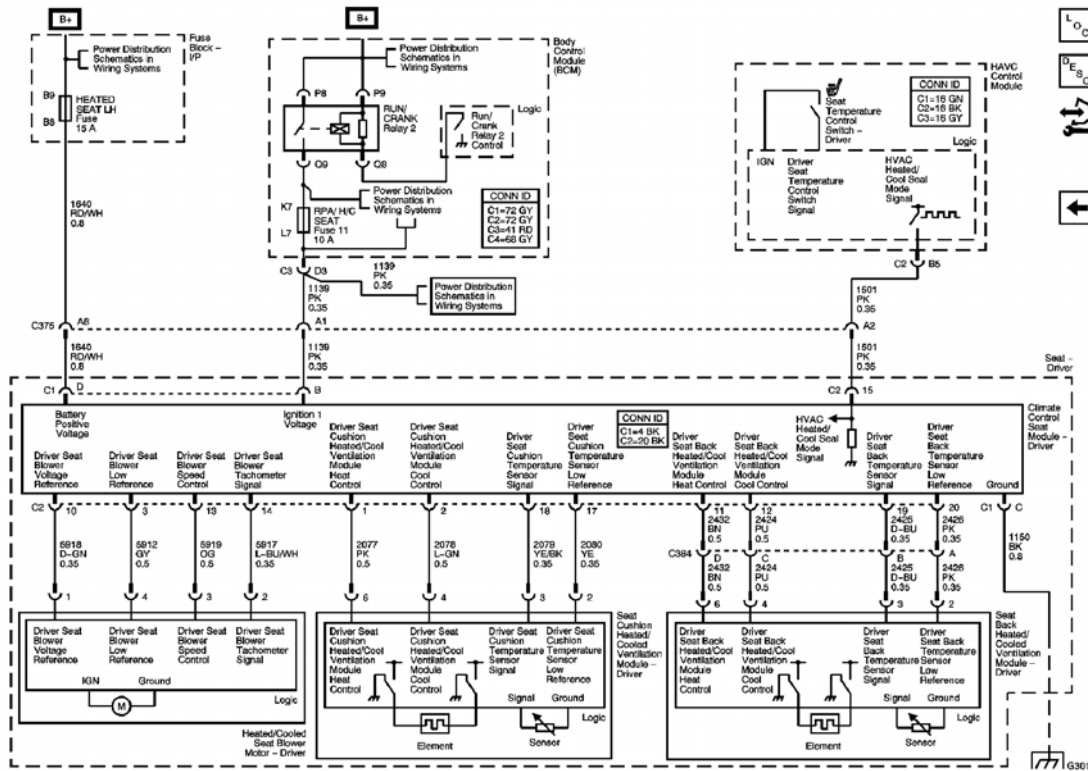


Fig. 4: Heated/Cooled Seats Driver Seat Schematics
 Courtesy of GENERAL MOTORS CORP.

PASSENGER SEAT SCHEMATICS

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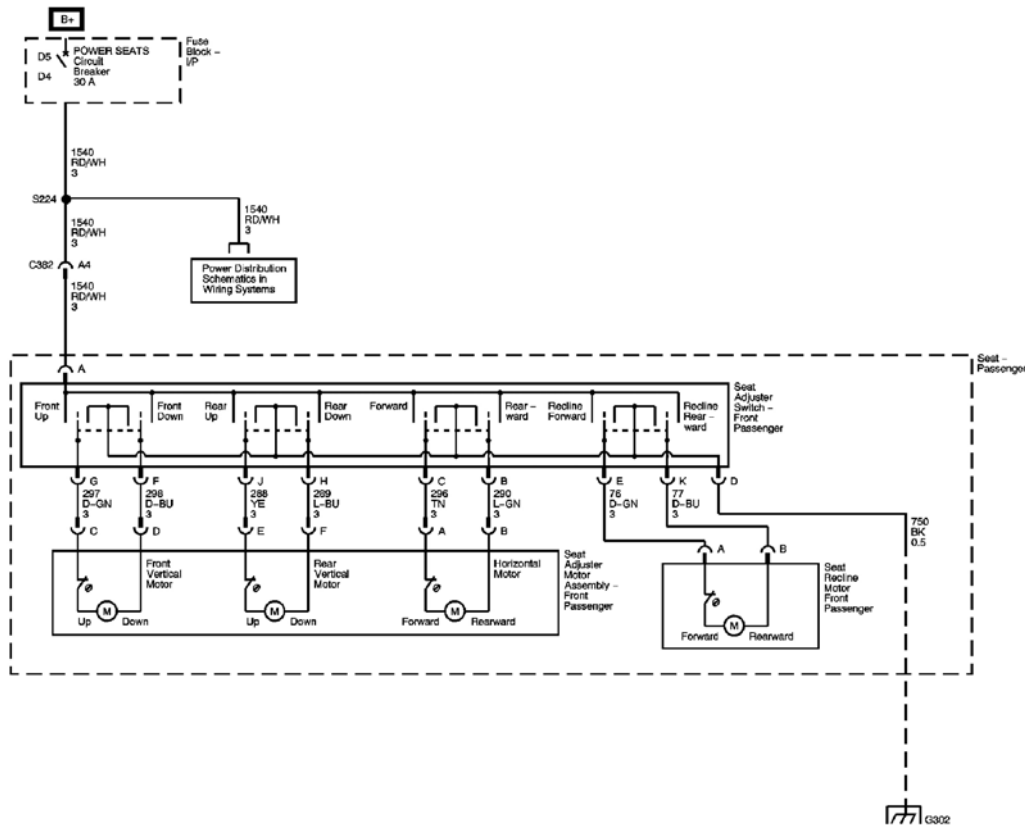


Fig. 5: 8-Way Power Seat Controls Passenger Seat Schematics
 Courtesy of GENERAL MOTORS CORP.

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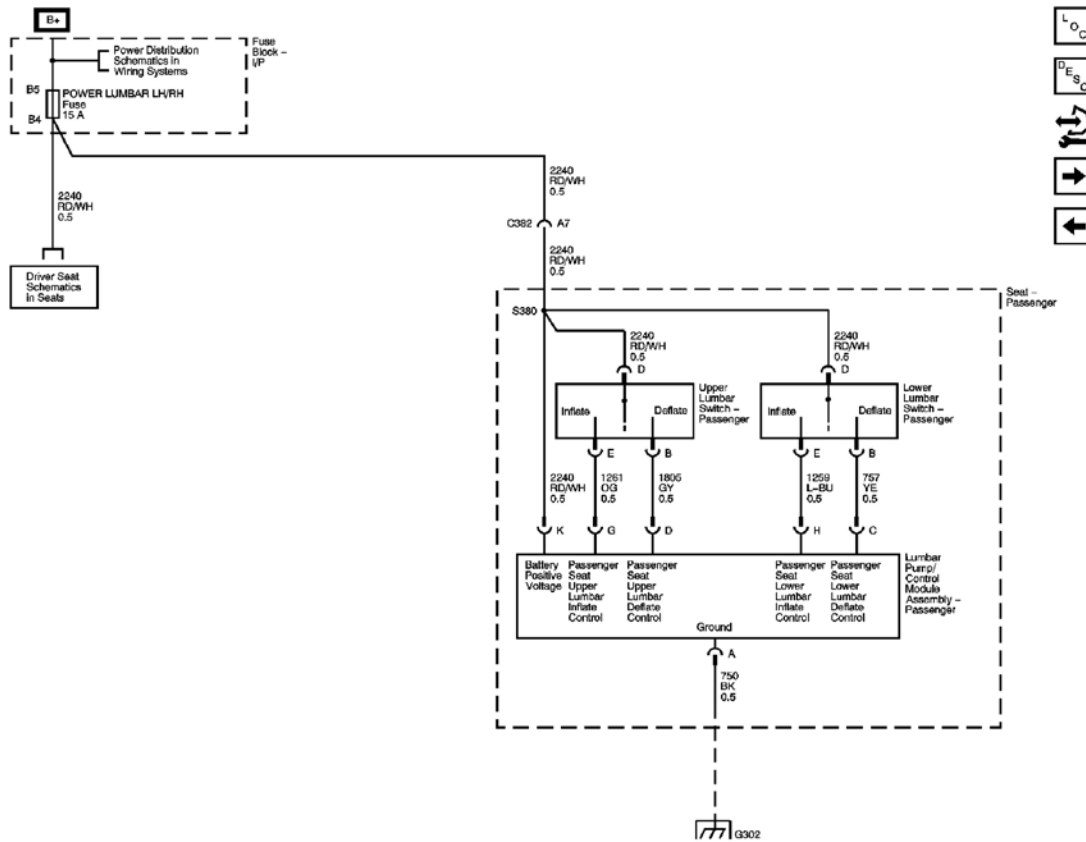


Fig. 6: Lumbar Support Passenger Seat Schematics
Courtesy of GENERAL MOTORS CORP.

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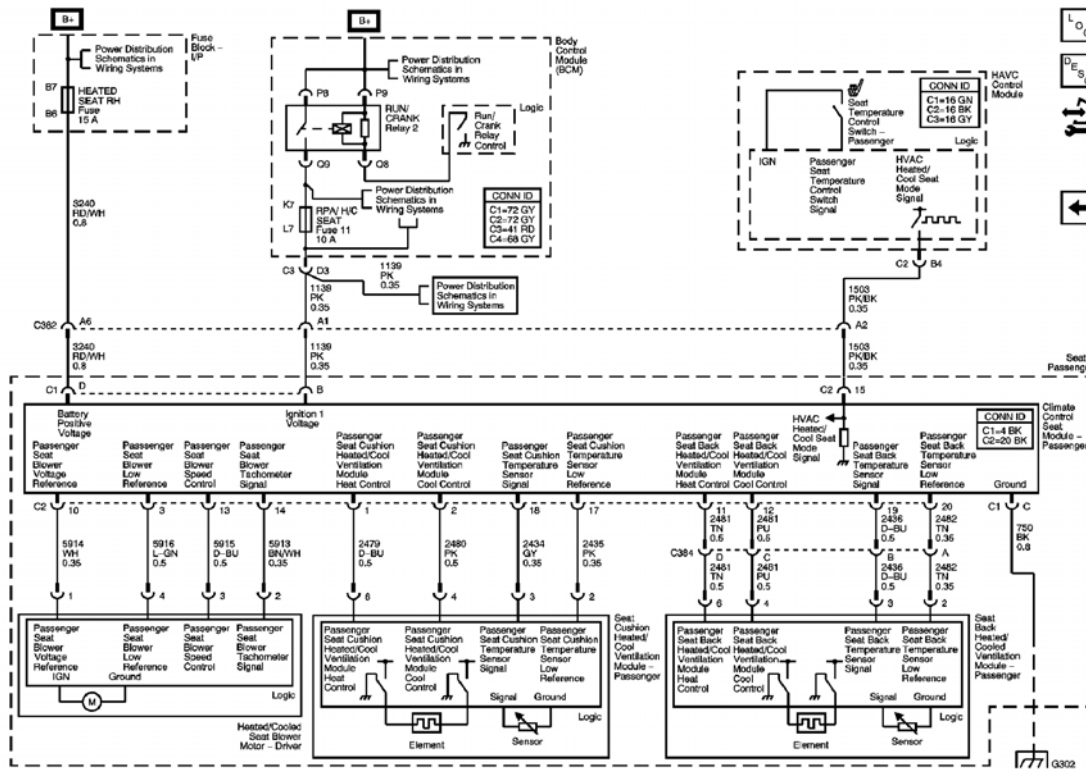


Fig. 7: Heated/Cooled Seats Passenger Seat Schematics
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

POWER SEAT SYSTEMS COMPONENT VIEWS

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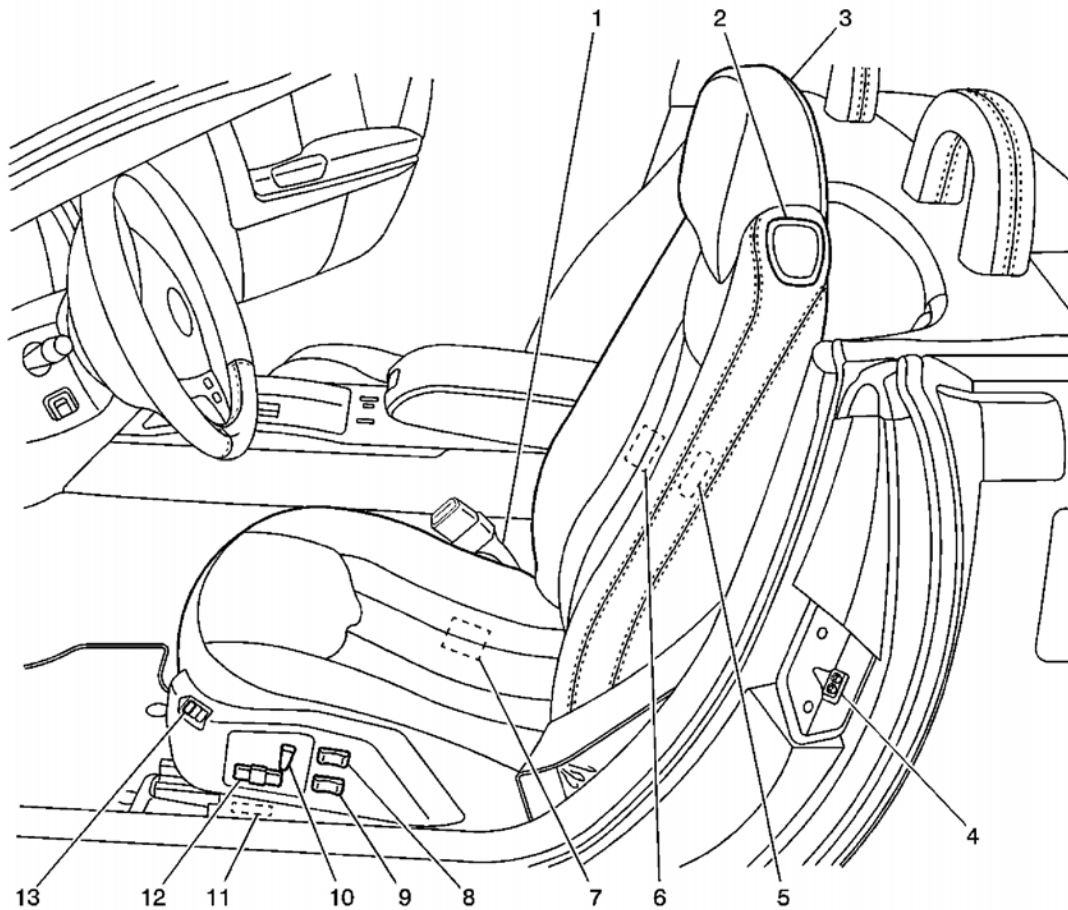


Fig. 8: Driver Seat Component View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 8

Callout	Component Name
1	Seat Belt Pretensioner - Left
2	Speaker - Driver Side Left
3	Speaker - Driver Side Right
4	Door Latch - Driver
5	Inflatable Restraint Side Impact Module - Left
6	Seat Back Heated/Cooled Ventilation Module - Driver
7	Seat Cushion Heated/Cooled Ventilation Module - Driver
8	Upper Lumbar Switch - Driver
9	Lower Lumbar Switch - Driver
10	Seat Adjuster Switch - Driver
11	Inflatable Restraint Seat Position Switch - Left
12	Seat Adjuster Switch - Driver

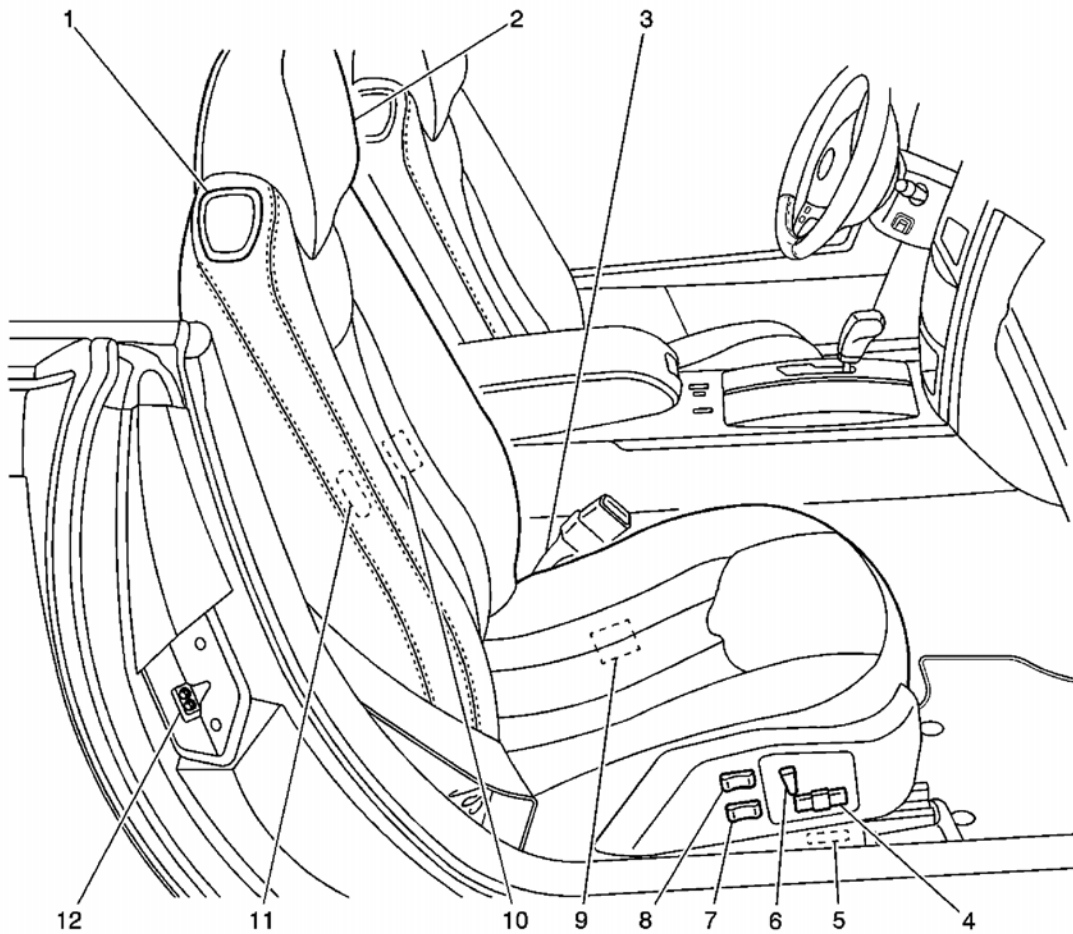


Fig. 9: Passenger Seat Component View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 9

Callout	Component Name
1	Speaker - Passenger Seat Right
2	Speaker - Passenger Seat Left
3	Seat Belt Pretensioner - Right
4	Seat Adjuster Switch - Front Passenger
5	Inflatable Restraint Seat Position Switch - Right
6	Seat Adjuster Switch - Front Passenger
7	Lower Lumbar Switch - Passenger
8	Upper Lumbar Switch - Passenger
9	Seat Cushion Heated/Cooled Ventilation Module - Front Passenger

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

10	Seat Back Heated/Cooled Ventilation Module - Passenger
11	Inflatable Restraint Side Impact Module - Right
12	Door Latch - Front Passenger

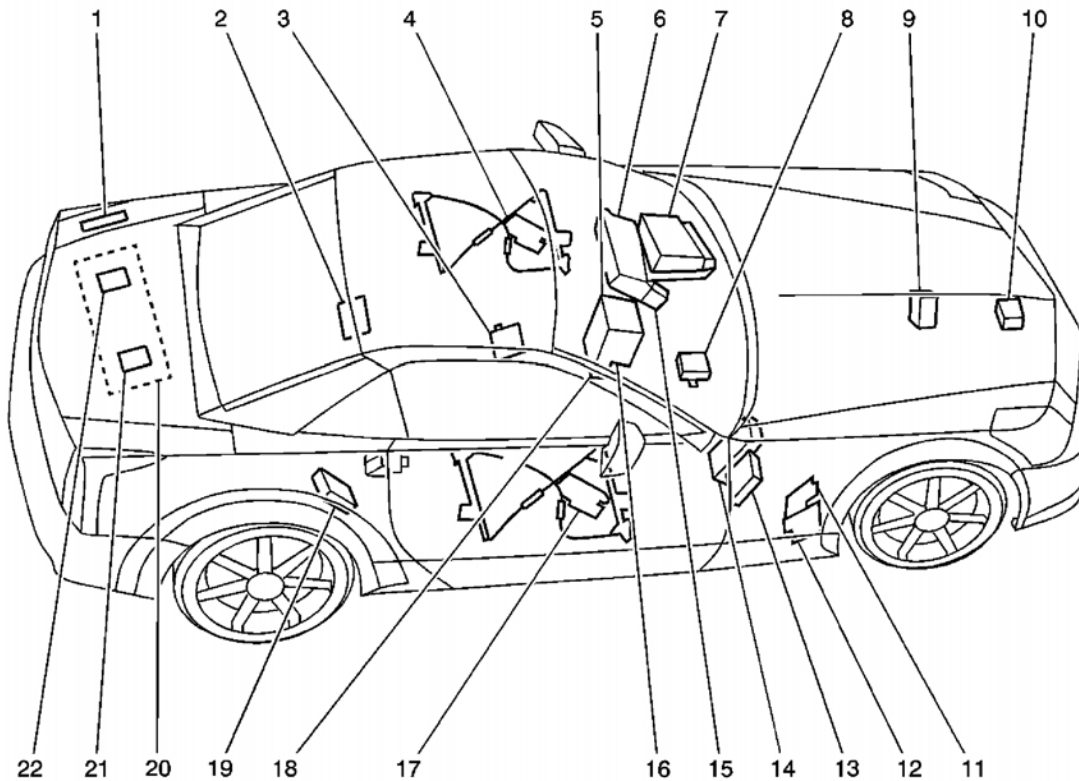


Fig. 10: Modules Component View
Courtesy of GENERAL MOTORS CORP.

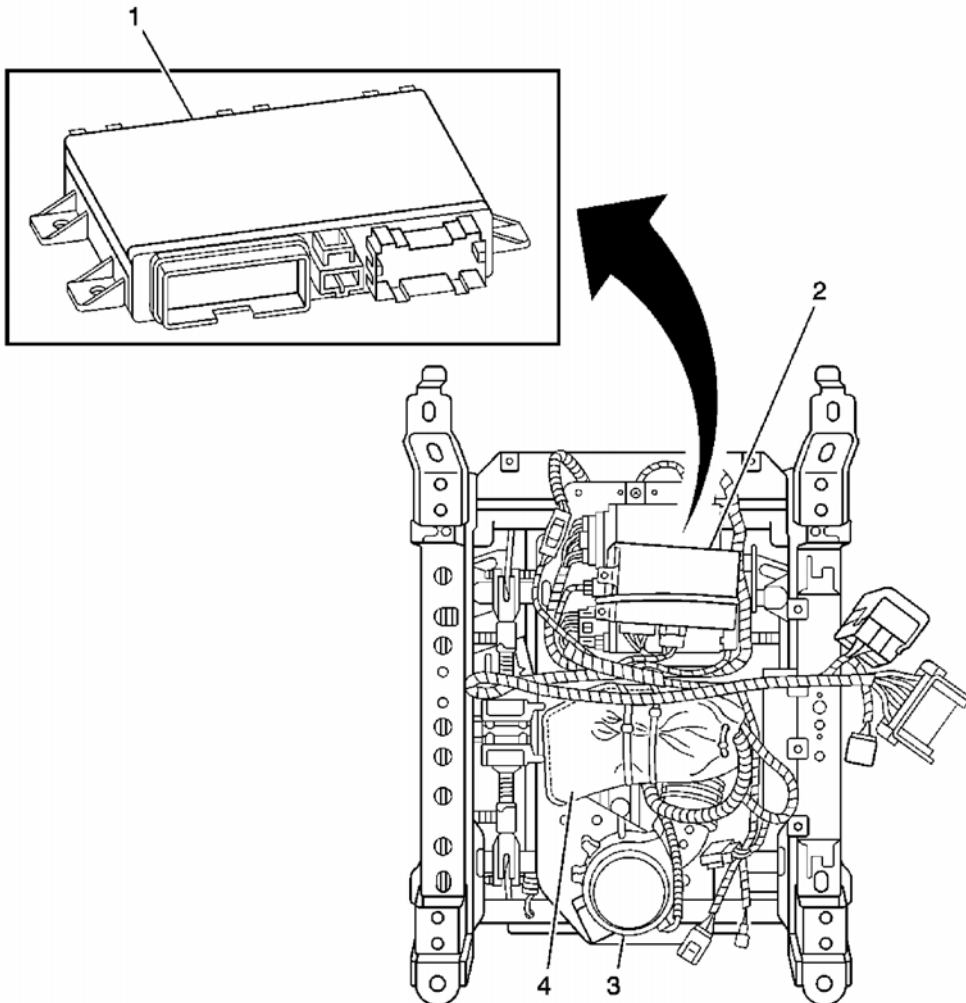
Callouts For Fig. 10

Callout	Component Name
1	Folding Top Module
2	Rear Object Sensor Control Module
3	Memory Seat Module
4	Driver Door Module (DDM)
5	Radio
6	Instrument Panel Cluster (IPC)
7	Head-Up Display (HUD)
8	Remote Control Door Lock Receiver (RCDLR)
9	EBCM - BPMV

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

10	Distance Sensing Control Module
11	Transmission Control Module (TCM)
12	Engine Control Module (ECM)
13	Body Control Module (BCM)
14	Audio Amplifier
15	Steering Column Lock Control Module (Export)
16	Inflatable Restraint Sensing and Diagnostic Module (SDM)
17	Front Passenger Door Module (FPDM)
18	HVAC Control Module
19	Vehicle Communication Interface Module (VCIM)
20	Antenna Ground Plane
21	Antenna Module - Right
22	Antenna Module - Left



2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

Fig. 11: Bottom of Drivers Seat Component View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 11

Callout	Component Name
1	Memory Seat Module - Driver
2	Climate Control Seat Module - Driver
3	Heated/Cooled Seat Blower Motor - Driver
4	Lumbar Pump/Control Module Assembly - Driver

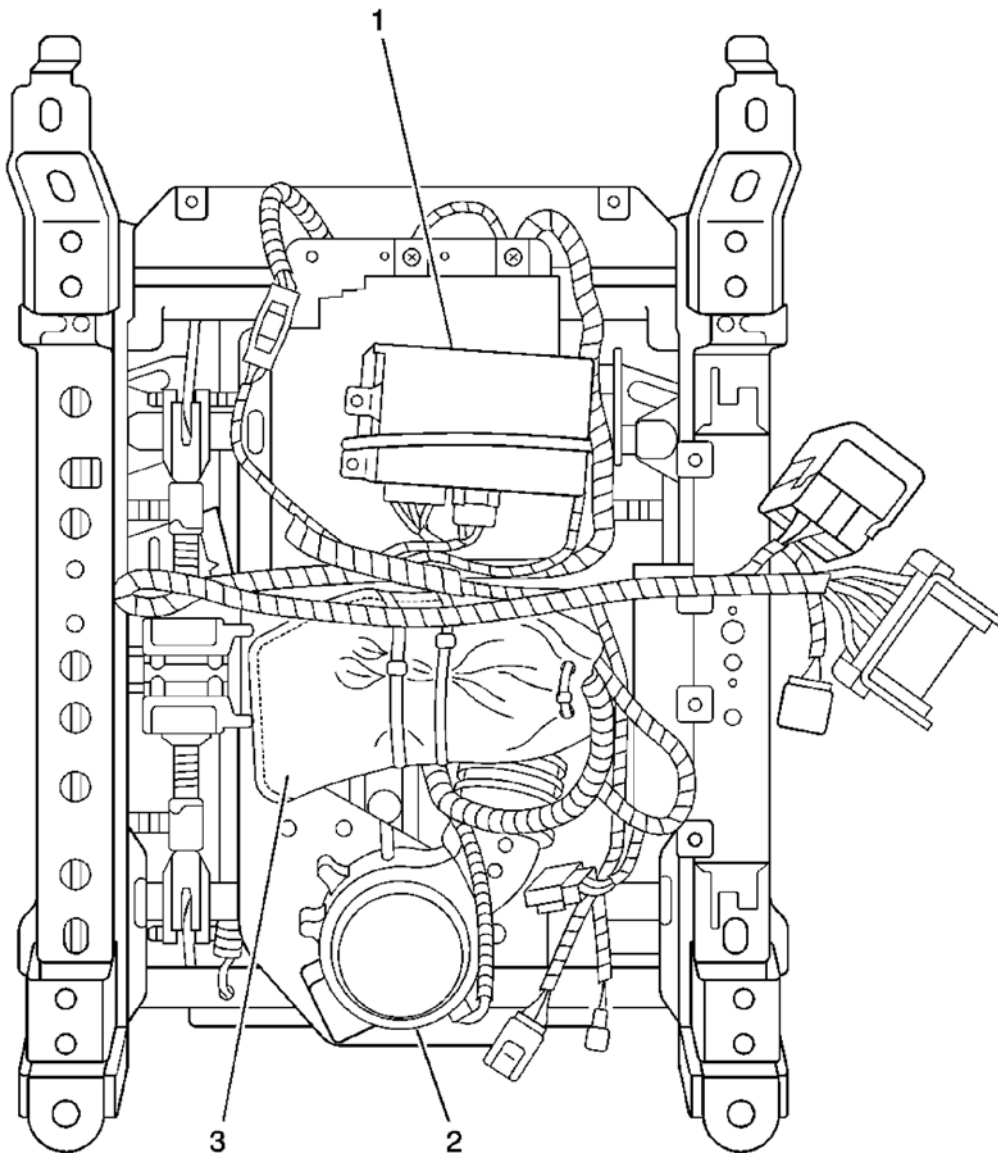


Fig. 12: Bottom of Passengers Seat Component View

Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 12

Callout	Component Name
1	Climate Control Seat Module - Passenger
2	Heated/Cooled Seat Blower Motor - Passenger
3	Lumbar Pump/Control Module Assembly - Passenger

POWER SEAT SYSTEMS CONNECTOR END VIEWS

Climate Control Seat Module - Driver C1 Connector End View

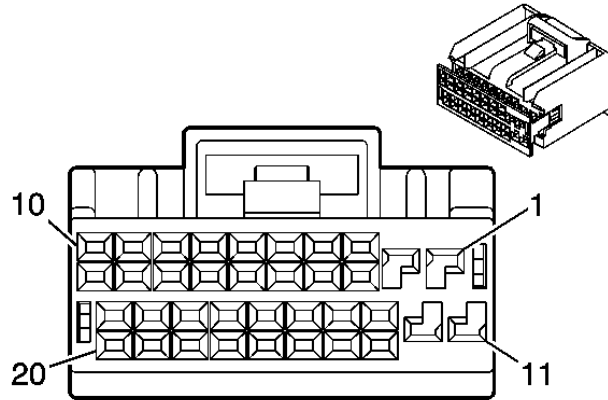
Connector Part Information		<ul style="list-style-type: none"> OEM: 12052856 Service: 12125636 4-Way F Metri-Pack 280 Series (BK) 	
Pin	Wire Color	Circuit No.	Function
A	-	-	Not Used
B	PK	1139	Run/Crank Ignition 1 Voltage
C	BK	1150	Ground
D	RD/WH	1640	Battery Positive Voltage

Climate Control Seat Module - Driver C2 Connector End View



2005 Cadillac XLR

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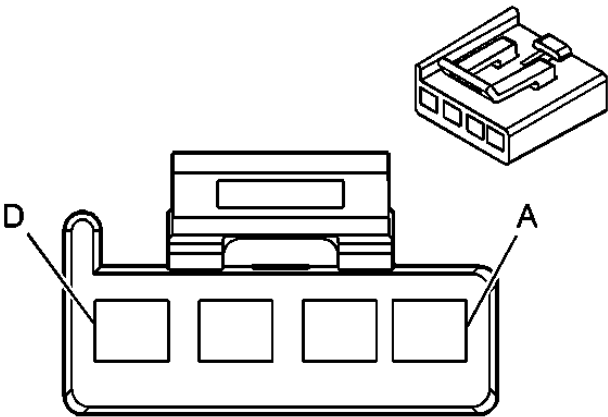


Connector Part Information		<ul style="list-style-type: none">• OEM: 638082-1• Service: NS	
Pin	Wire Color	Circuit No.	Function
1	PK	2077	Driver Heated Seat Element Supply Voltage
2	L-GN	2078	Driver Heated Seat Element Low Reference
3	GY	5912	Driver Seat Fan Low Reference
4-9	-	-	Not Used
10	D-GN	5918	Driver Seat Fan Voltage Reference
11	BN	2432	Driver Heated Back Element Supply Voltage
12	PU	2424	Driver Heated Back Element Low Reference
13	OG	5919	Driver Seat Fan Speed Control
14	L-BU/WH	5917	Driver Seat Fan Tachometer Signal
15	PK	1501	Driver Heated Seat High/Low Signal
16	-	-	Not Used
17	YE	2080	Driver Heated Seat NTC Low Reference
18	YE/BK	2079	Driver Heated Seat NTC Signal
19	D-BU	2425	Driver Heated Back NTC Signal
20	PK	2426	Driver Heated Back NTC Low Reference

Climate Control Seat Module - Passenger C1 Connector End View

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

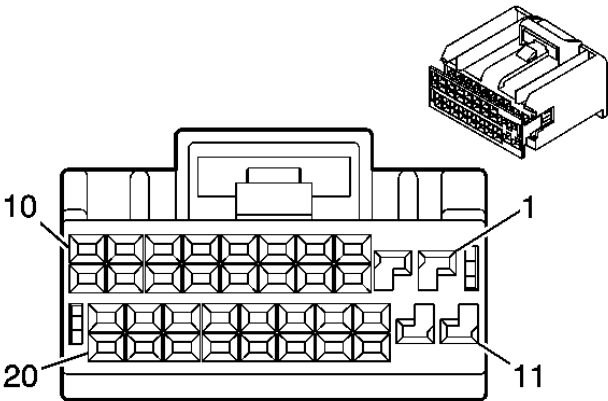


Connector Part Information

- OEM: 12052856
- Service: 12125636
- 4-Way F Metri-Pack 280 Series (BK)

Pin	Wire Color	Circuit No.	Function
A	-	-	Not Used
B	PK	1139	Run/Crank Ignition 1 Voltage
C	BK	750	Ground
D	RD/WH	3240	Battery Positive Voltage

Climate Control Seat Module - Passenger C2 Connector End View



Connector Part Information

- OEM: 638082-1
- Service: NS

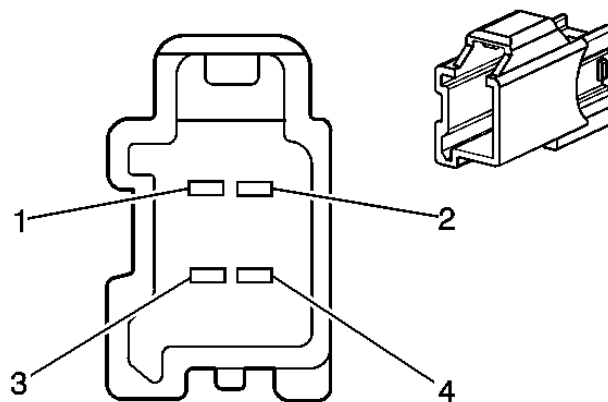
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2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

Pin	Wire Color	Circuit No.	Function
1	D-BU	2479	Passenger Heated Seat Element Supply Voltage
2	PK	2480	Passenger Heated Seat Element Low Reference
3	L-GN	5916	Passenger Seat Fan Low Reference
4-9	-	-	Not Used
10	WH	5914	Passenger Seat Fan Voltage Reference
11	TN	2481	Passenger Heated Back Element Supply Voltage
12	L-BU	2433	Passenger Heated Back Element Low Reference
13	D-BU	5915	Passenger Seat Fan Speed Control
14	BN/WH	5913	Passenger Seat Fan Tachometer Signal
15	PK/BK	1503	Passenger Heated Seat High/Low Signal
16	-	-	Not Used
17	PK	2435	Passenger Heated Seat NTC Low Reference
18	GY	2434	Passenger Heated Seat NTC Signal
19	TN	2436	Passenger Heated Back NTC Signal
20	TN	2482	Passenger Heated Back NTC Low Reference

Heated/Cooled Seat Blower Motor - Driver Connector End View



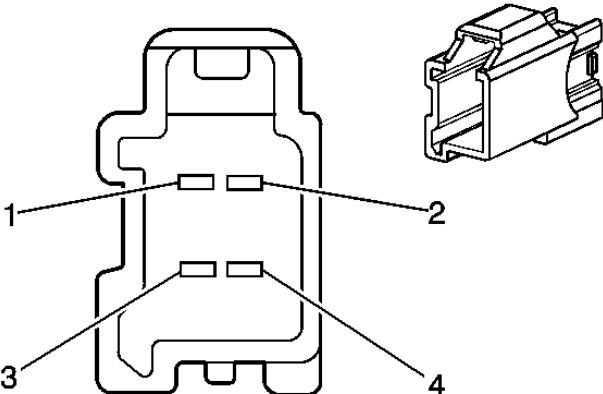
Connector Part Information

- OEM: 72825531-41
- Service: NS
- 4-Way M YESC/USCAR Class III Series (GY)

Pin	Wire Color	Circuit No.	Function
1	D-GN	5918	Driver Seat Fan Voltage Reference

2	L-BU/WH	5917	Driver Seat Fan Tachometer Signal
3	OG	5919	Driver Seat Fan Speed Control
4	GY	5912	Driver Seat Fan Low Reference

Heated/Cooled Seat Blower Motor - Passenger Connector End View



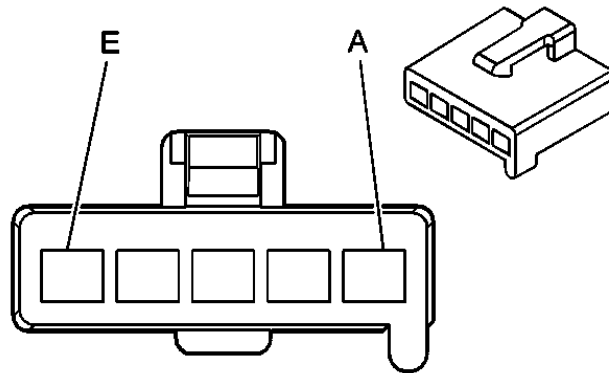
Connector Part Information		<ul style="list-style-type: none"> • OEM: 72825531-41 • Service: NS • 4-Way M YESC/USCAR Class III Series (GY) 	
Pin	Wire Color	Circuit No.	Function
1	WH	5914	Passenger Seat Fan Voltage Reference
2	BN/WH	5913	Passenger Seat Fan Tachometer Signal
3	D-BU	5915	Passenger Seat Fan Speed Control
4	L-GN	5916	Passenger Seat Fan Low Reference

Lower Lumbar Switch - Driver Connector End View



2005 Cadillac XLR

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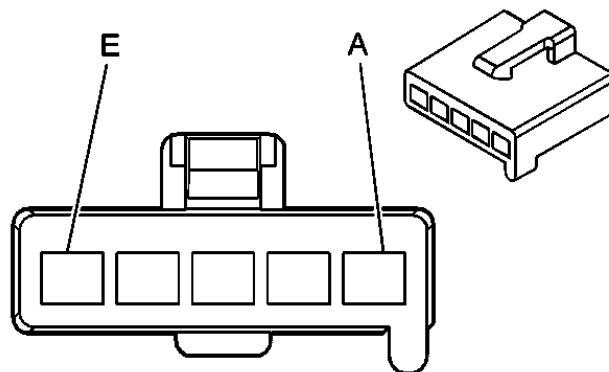


Connector Part Information

- OEM: 12041429
- Service: 12167129
- 5-Way F Metri-Pack 280 Series (BK)

Pin	Wire Color	Circuit No.	Function
A	-	-	Not Used
B	YE	386	Driver Power Seat Lumbar Down Relay Control
C	-	-	Not Used
D	RD/WH	2240	Battery Positive Voltage
E	PK	789	Driver Pneumatic Seat Lower Lumbar Solenoid Control

Lower Lumbar Switch - Passenger Connector End View



Connector Part Information

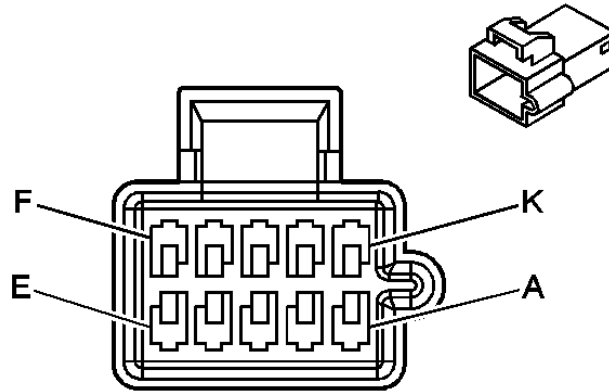
- OEM: 12041429
- Service: 12167129

2005 Cadillac XLR

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• 5-Way F Metri-Pack 280 Series (BK)			
Pin	Wire Color	Circuit No.	Function
A	-	-	Not Used
B	YE	757	Passenger Power Seat Lumbar Down Relay Control
C	-	-	Not Used
D	RD/WH	2240	Battery Positive Voltage
E	L-BU	1259	Passenger Pneumatic Seat Lower Lumbar Solenoid Control

Lumbar Pump/Control Module Assembly - Driver Connector End View

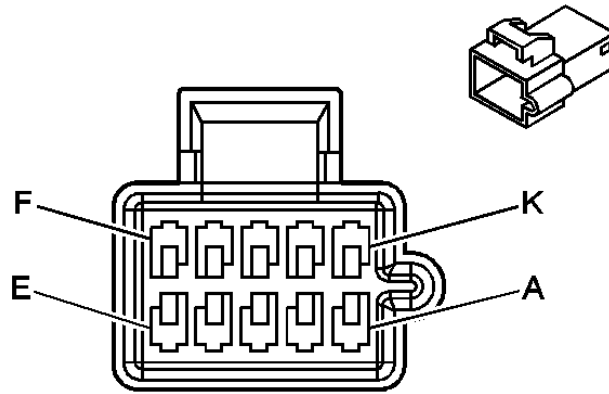


Connector Part Information		<ul style="list-style-type: none"> • OEM: 12064770 • Service: 12101823 • 10-Way M Metri-Pack 150 Series (WH) 	
Pin	Wire Color	Circuit No.	Function
A	BK	1150	Ground
B	-	-	Not Used
C	YE	386	Driver Power Seat Lumbar Down Relay Control
D	GY	764	Driver Seat Deflate Relay Control
E-F	-	-	Not Used
G	YE	777	Driver Pneumatic Seat Upper Lumbar Solenoid Control
H	PK	789	Driver Pneumatic Seat Lower Lumbar Solenoid Control
J	-	-	Not Used
K	RD/WH	2240	Battery Positive Voltage

2005 Cadillac XLR

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Lumbar Pump/Control Module Assembly - Passenger Connector End View



Connector Part Information

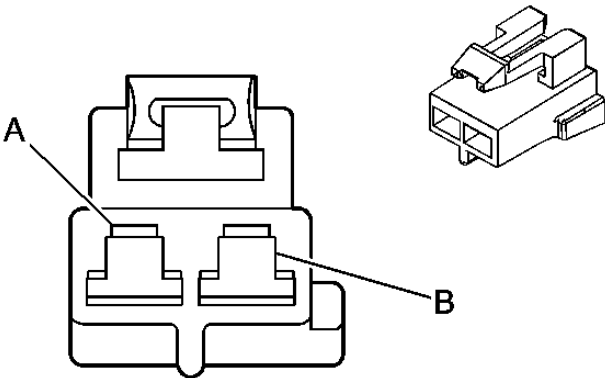
- OEM: 12064770
- Service: 12101823
- 10-Way M Metri-Pack 150 Series (WH)

Pin	Wire Color	Circuit No.	Function
A	BK	750	Ground
B	-	-	Not Used
C	YE	757	Passenger Power Seat Lumbar Down Relay Control
D	GY	1805	Passenger Pneumatic Seat Deflate Relay Control
E-F	-	-	Not Used
G	OG	1261	Passenger Pneumatic Seat Upper Lumbar Solenoid Control
H	L-BU	1259	Passenger Pneumatic Seat Lower Lumbar Solenoid Control
J	-	-	Not Used
K	RD/WH	2240	Battery Positive Voltage

Memory Seat Module - Driver C1 Connector End View

2005 Cadillac XLR

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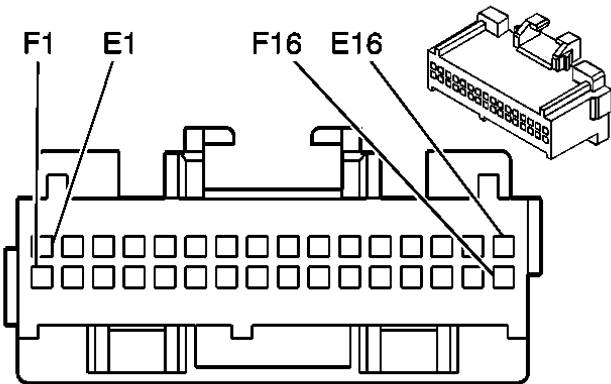


Connector Part Information

- OEM: 12064749
- Service: 12101888
- 2-Way F Metri-Pack 480 Series (BK)

Pin	Wire Color	Circuit No.	Function
A	RD/WH	1540	Battery Positive Voltage
B	BK	1150	Ground

Memory Seat Module - Driver C2 Connector End View



Connector Part Information

- OEM: 12110115
- Service: 12110115
- 32-Way F Micro-Pack 100 Series (BU)

Pin	Wire Color	Circuit No.	Function
E1	D-GN	1518	Power Seat Front Vertical Up Switch Signal
E2	YE	1519	Power Seat Rear Vertical Up Switch Signal

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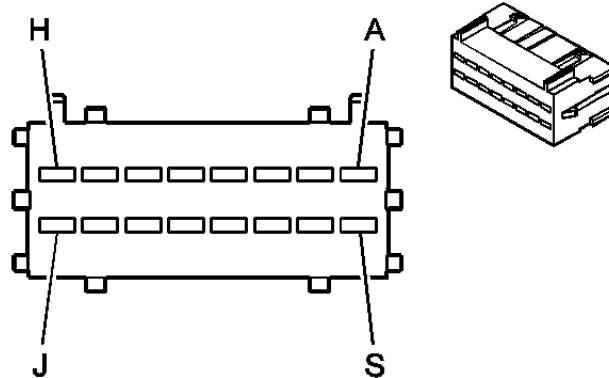
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E3	D-BU	1520	Power Seat Front Vertical Down Switch Signal
E4	L-BU	1521	Power Seat Rear Vertical Down Switch Signal
E5	TN	1522	Power Seat Horizontal Forward Switch Signal
E6	L-GN	1523	Power Seat Horizontal Rearward Switch Signal
E7	GY/BK	1269	Power Seat Recline Forward Switch Signal
E8	D-GN/WH	1270	Power Seat Recline Rearward Switch Signal
E9	OG	2095	Steering Column Tilt and Telescope Rearward Switch Signal
E10	PK	2094	Steering Column Tilt and Telescope Forward Switch Signal
E11	GY	2096	Steering Column Tilt and Telescope Up Switch Signal
E12	YE	2097	Steering Column Tilt and Telescope Down Switch Signal
E13	GY	788	Memory Mirror Position Sensor 5-Volt Reference
E14	BN/WH	557	Memory Seat Front Vertical Motor Position Sensor Signal
E15	TN	782	Memory Seat/Mirror Sensor Low Reference
E16	D-GN	569	Memory Seat Horizontal Motor Position Sensor Signal
F1	TN	568	Memory Seat Rear Vertical Motor Position Sensor Signal
F2	WH/BK	570	Driver Memory Seat Recline Motor Position Sensor Signal
F3	OG	2153	Steering Column Telescope Motor Signal
F4	OG	2154	Steering Column Tilt Motor Signal
F5-F8	-	-	Not Used
F9	WH	615	Memory Seat Switch Signal (1)
F10	PU	616	Memory Seat Switch Signal (2)
F11	RD/WH	440	Battery Positive Voltage
F12-F14	-	-	Not Used
F15	BN/WH	1048	Seat Control Module Class 2 Serial Data
F16	-	-	Not Used

Memory Seat Module - Driver C3 Connector End View

2005 Cadillac XLR

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Connector Part Information

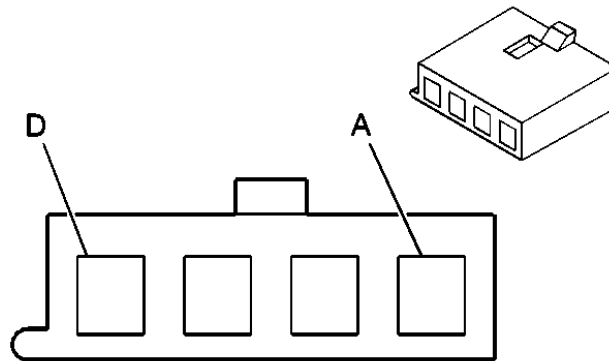
- OEM: 12129431
- Service: 12129431
- 16-Way F Metri-Pack 280 Series, ACT (BK)

Pin	Wire Color	Circuit No.	Function
A	D-GN	286	Driver Power Seat Front Vertical Motor Up Control
B	OG	2098	Steering Column Telescope Motor Forward
C	PK	2111	Steering Column Tilt Motor Up Control
D-E	-	-	Not Used
F	L-GN	276	Driver Power Seat Recline Motor Forward Control
G	L-BU	277	Driver Power Seat Recline Motor Rearward Control
H-J	-	-	Not Used
K	BN	2112	Steering Column Tilt Motor Down Control
L	TN	2110	Steering Column Telescope Motor Rearward
M	D-BU	287	Driver Power Seat Front Vertical Motor Down Control
N	TN	285	Driver Power Seat Horizontal Motor Forward Control
P	L-BU	283	Driver Power Seat Rear Vertical Motor Down Control
R	YE	282	Driver Power Seat Rear Vertical Motor Up Control
S	L-GN	284	Driver Power Seat Horizontal Motor Rearward Control

Memory Seat Switch Connector End View

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

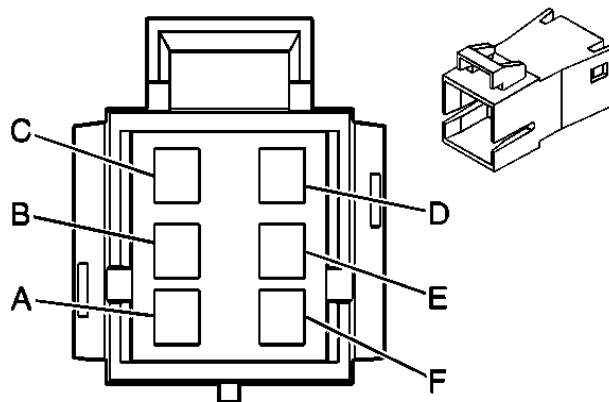


Connector Part Information

- OEM: 12092162
- Service: 15306021
- 4-Way F Metri-Pack 150 Series (BK)

Pin	Wire Color	Circuit No.	Function
A	WH	615	Memory Seat Switch Signal (1)
B	PU	616	Memory Seat Switch Signal (2)
C	RD/WH	440	Battery Positive Voltage
D	WH	1244	Instrument Panel Lamp Supply Voltage (2)

Seat Adjuster Motor Assembly - Driver C1 Connector End View



Connector Part Information

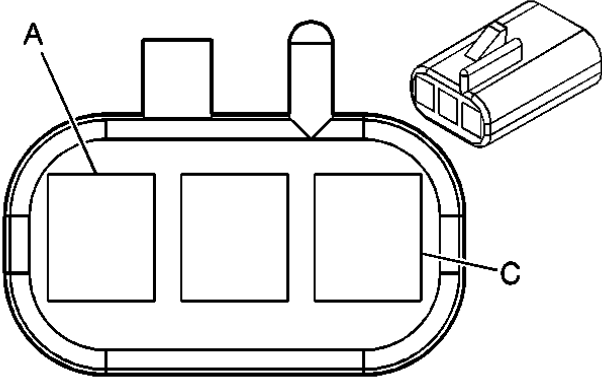
- OEM: 12064754
- Service: 15305872
- 6-Way M Metri-Pack 280 Series, Self Lock (BK)

Pin	Wire Color	Circuit No.	Function
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2005 Cadillac XLR
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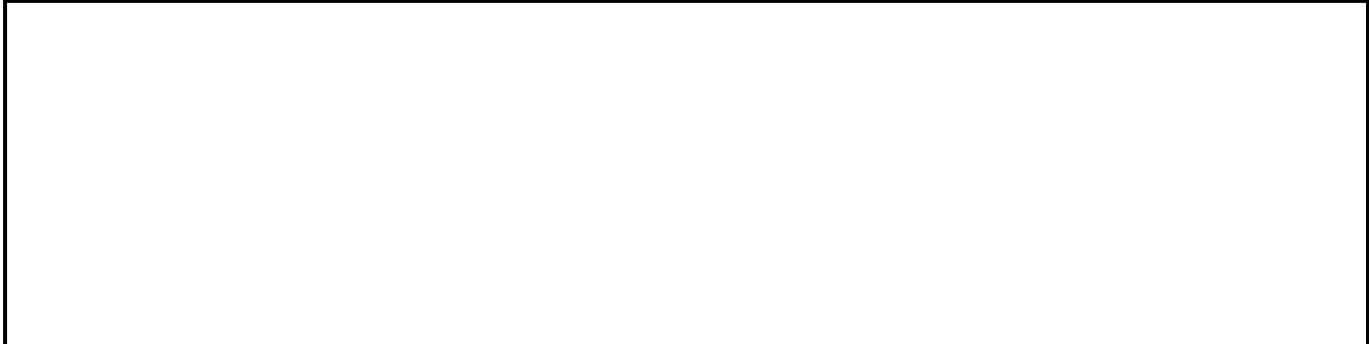
A	TN	285	Driver Power Seat Horizontal Motor Forward Control
B	L-GN	284	Driver Power Seat Horizontal Motor Rearward Control
C	D-GN	286	Driver Power Seat Front Vertical Motor Up Control
D	D-BU	287	Driver Power Seat Front Vertical Motor Down Control
E	YE	282	Driver Power Seat Rear Vertical Motor Up Control
F	L-BU	283	Driver Power Seat Rear Vertical Motor Down Control

Seat Adjuster Motor Assembly - Driver C2 Connector End View



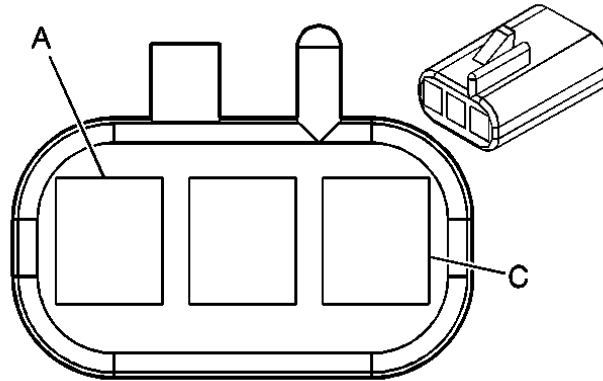
Connector Part Information		<ul style="list-style-type: none"> • OEM: 12047781 • Service: 12101864 • 3-Way F Metri-Pack 150 Series (BK) 	
Pin	Wire Color	Circuit No.	Function
A	TN	782	Low Reference
B	BN/WH	557	Front Vertical Motor Position Sensor Signal
C	GY	788	5-Volt Reference

Seat Adjuster Motor Assembly - Driver C3 Connector End View



2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

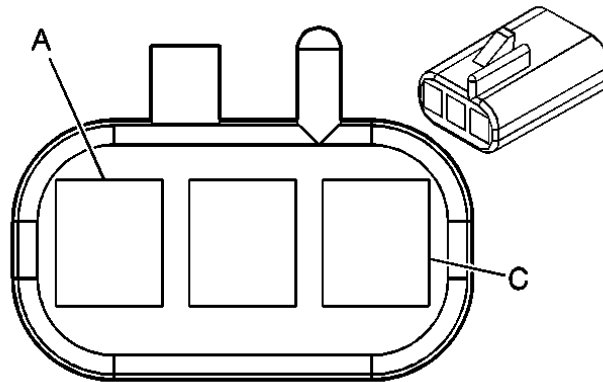


Connector Part Information

- OEM: 12047781
- Service: 12101864
- 3-Way F Metri-Pack 150 Series (BK)

Pin	Wire Color	Circuit No.	Function
A	TN	782	Low Reference
B	TN	568	Rear Vertical Motor Position Sensor Signal
C	GY	788	5-Volt Reference

Seat Adjuster Motor Assembly - Driver C4 Connector End View



Connector Part Information

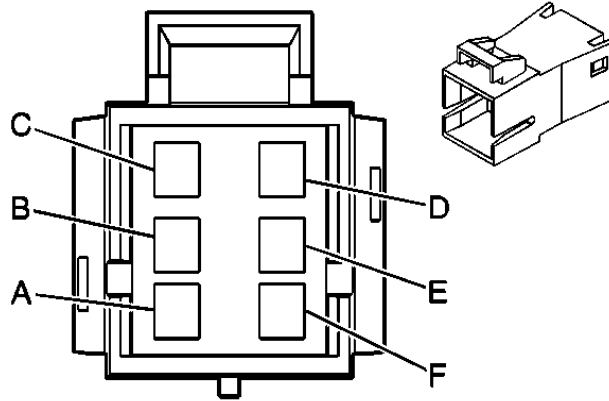
- OEM: 12047781
- Service: 12101864
- 3-Way F Metri-Pack 150 Series (BK)

Pin	Wire Color	Circuit No.	Function
A	TN	782	Low Reference
B	D-GN	569	Horizontal Seat Motor Position Sensor Signal
C	GY	788	5-Volt Reference

Seat Adjuster Motor Assembly - Front Passenger Connector End View

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR



Connector Part Information

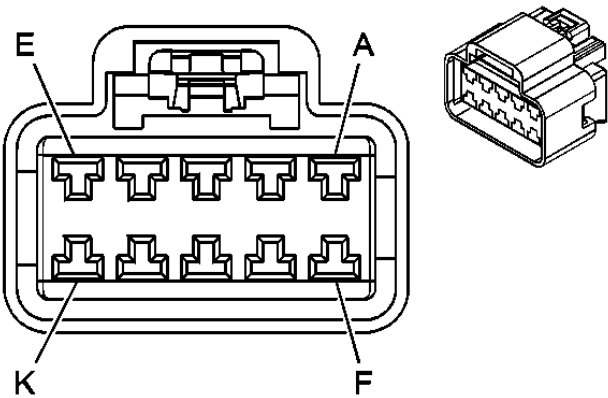
- OEM: 12064754
- Service: 15305872
- 6-Way M Metri-Pack 280 Series, Self Lock (BK)

Pin	Wire Color	Circuit No.	Function
A	TN	296	Passenger Power Seat Horizontal Motor Forward Control
B	L-GN	290	Passenger Power Seat Horizontal Motor Rearward Control
C	D-GN	297	Passenger Power Seat Front Vertical Motor Up Control
D	D-BU	298	Passenger Power Seat Front Vertical Motor Down Control
E	YE	288	Passenger Power Seat Rear Vertical Motor Up Control
F	L-BU	289	Passenger Power Seat Rear Vertical Motor Down Control

Seat Adjuster Switch - Driver Connector End View

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR



Connector Part Information

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

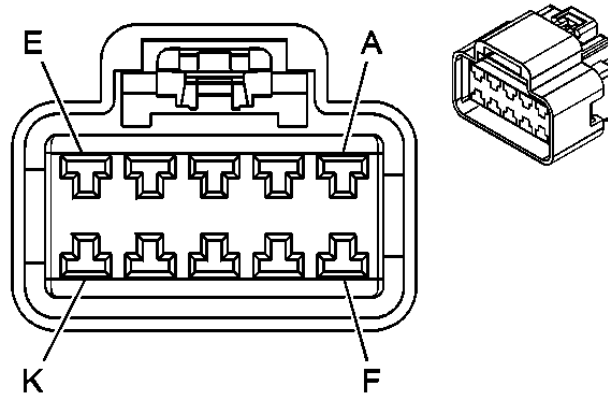
Pin	Wire Color	Circuit No.	Function
A	D-GN/WH	1270	Power Seat Recline Rearward Switch Signal
B	-	-	Not Used
C	L-GN	1523	Power Seat Horizontal Rearward Switch Signal
D	TN	1522	Power Seat Horizontal Forward Switch Signal
E	RD/WH	440	Battery Positive Voltage
F	GY/BK	1269	Power Seat Recline Forward Switch Signal
G	L-BU	1521	Power Seat Rear Vertical Down Switch Signal
H	YE	1519	Power Seat Rear Vertical Up Switch Signal
J	D-BU	1520	Power Seat Front Vertical Down Switch Signal
K	D-GN	1518	Power Seat Front Vertical Up Switch Signal

Seat Adjuster Switch - Front Passenger Connector End View



2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR



Connector Part Information

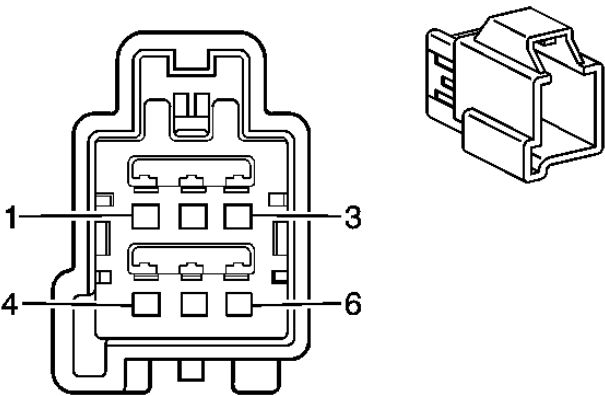
- OEM: 15326931
- Service: 15306309
- 10-Way F GT 280 Series (BK)

Pin	Wire Color	Circuit No.	Function
A	RD/WH	1540	Battery Positive Voltage
B	L-GN	290	Passenger Power Seat Horizontal Motor Rearward Control
C	TN	296	Passenger Power Seat Horizontal Motor Forward Control
D	BK	750	Ground
E	D-GN	76	Passenger Power Seat Recline Motor Forward
F	D-BU	298	Passenger Power Seat Front Vertical Motor Down Control
G	D-GN	297	Passenger Power Seat Front Vertical Motor Up Control
H	L-BU	289	Passenger Power Seat Rear Vertical Motor Down Control
J	YE	288	Passenger Power Seat Rear Vertical Motor Up Control
K	D-BU	77	Passenger Power Seat Recline Motor Rearward

Seat Back Heated/Cooled Ventilation Module - Driver Connector End View

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

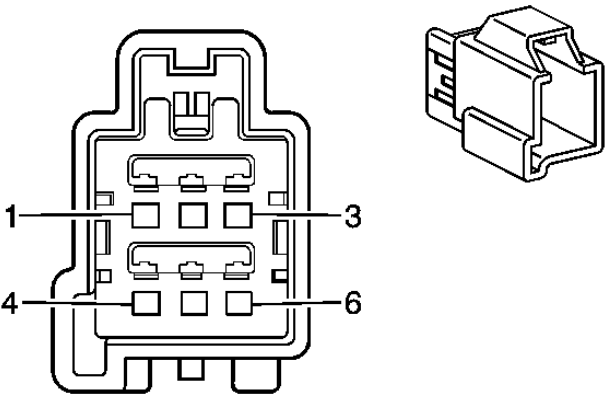


Connector Part Information

- OEM: 72835532-40
- Service: NS
- 6-Way M Yazaki (GY)

Pin	Wire Color	Circuit No.	Function
1	-	-	Not Used
2	PK	2426	Driver Heated Back NTC Low Reference
3	D-BU	2425	Driver Heated Back NTC Signal
4	PU	2424	Driver Heated Back Element Low Reference
5	-	-	Not Used
6	BN	2432	Driver Heated Back Element Supply Voltage

Seat Back Heated/Cooled Ventilation Module - Passenger Connector End View



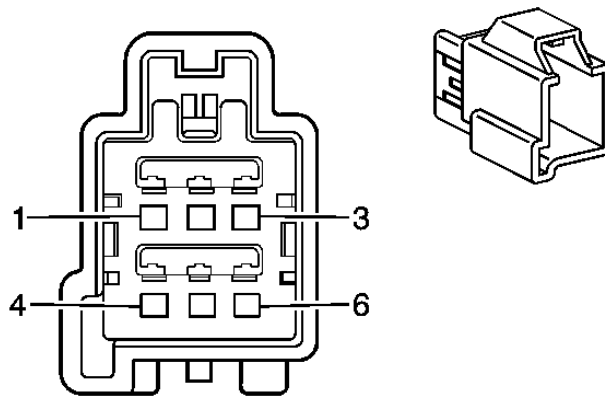
- OEM: 72835532-40

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

Connector Part Information		<ul style="list-style-type: none">• Service: NS• 6-Way M Yazaki (GY)	
Pin	Wire Color	Circuit No.	Function
1	-	-	Not Used
2	PK	2482	Passenger Heated Back NTC Low Reference
3	D-BU	2436	Passenger Heated Back NTC Signal
4	PU	2433	Passenger Heated Back Element Low Reference
5	-	-	Not Used
6	BN	2481	Passenger Heated Back Element Supply Voltage

Seat Cushion Heated/Cooled Ventilation Module - Driver Connector End View

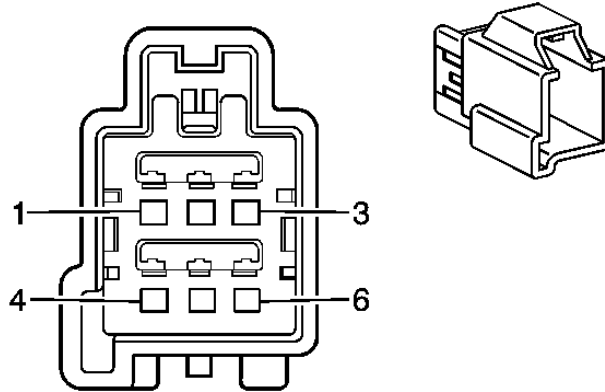


Connector Part Information		<ul style="list-style-type: none">• OEM: 72835532-40• Service: NS• 6-Way M Yazaki (GY)	
Pin	Wire Color	Circuit No.	Function
1	-	-	Not Used
2	YE	2080	Driver Heated Seat NTC Low Reference
3	YE/BK	2079	Driver Heated Seat NTC Signal
4	L-GN	2078	Driver Heated Seat Element Low Reference
5	-	-	Not Used
6	PK	2077	Driver Heated Seat Element Supply Voltage

Seat Cushion Heated/Cooled Ventilation Module - Passenger Connector End View

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

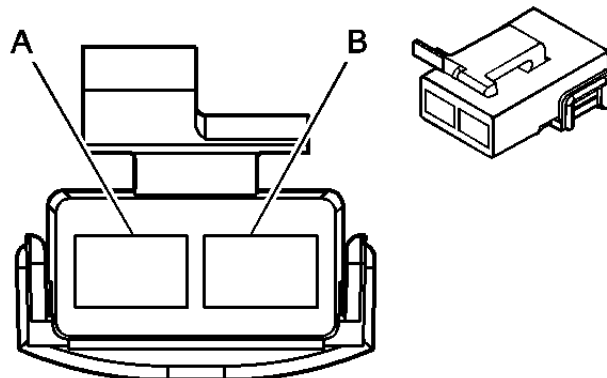


Connector Part Information

- OEM: 72835532-40
- Service: NS
- 6-Way M Yazaki (GY)

Pin	Wire Color	Circuit No.	Function
1	-	-	Not Used
2	PK	2435	Passenger Heated Seat NTC Low Reference
3	GY	2434	Passenger Heated Seat NTC Signal
4	PK	2480	Passenger Heated Seat Element Low Reference
5	-	-	Not Used
6	D-BU	2479	Passenger Heated Seat Element Supply Voltage

Seat Recline Motor - Driver C1 Connector End View



Connector Part Information		<ul style="list-style-type: none"> • OEM: 12052110 • Service: 12102768 • 2-Way F Metri-Pack 480 Series (WH) 	
Pin	Wire Color	Circuit No.	Function
A	L-GN	276	Driver Power Seat Recline Motor Forward Control
B	L-BU	277	Driver Power Seat Recline Motor Rearward Control

Seat Recline Motor - Driver C2 Connector End View

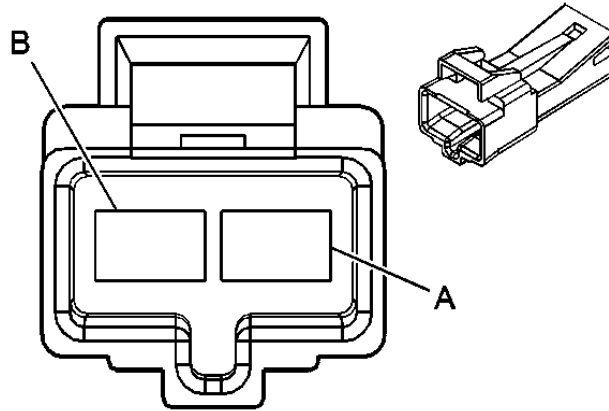
Connector Part Information		<ul style="list-style-type: none"> • OEM: 12059583 • Service: 15305814 • 3-Way F Metri-Pack 150 Series (WH) 	
Pin	Wire Color	Circuit No.	Function
A	GY	788	Memory Mirror Position Sensor 5-Volt Reference
B	-	-	Not Used
C	WH/BK	570	Driver Memory Seat Recline Motor Position Sensor Signal
D	TN	782	Memory Seat/Mirror Sensor Low Reference

Seat Recline Motor - Front Passenger Connector End View



2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

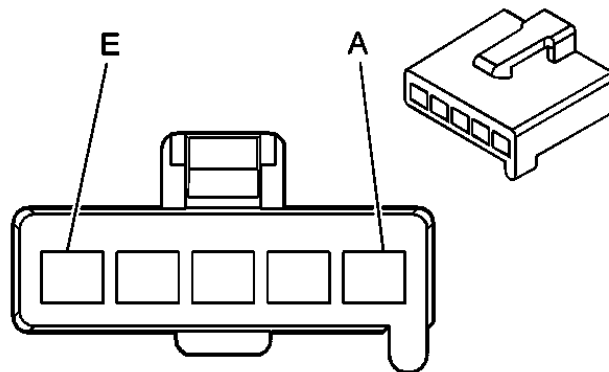


Connector Part Information

- OEM: 12064750
- Service: 12101935
- 2-Way M Metri-Pack 480 Series (WH)

Pin	Wire Color	Circuit No.	Function
A	D-GN	76	Passenger Power Seat Recline Motor Forward
B	D-BU	77	Passenger Power Seat Recline Motor Rearward

Upper Lumbar Switch - Driver Connector End View



Connector Part Information

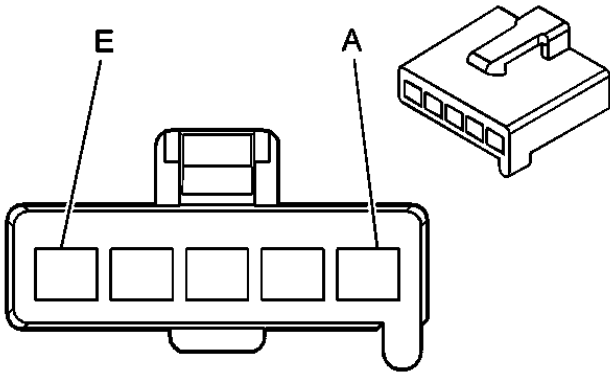
- OEM: 12041429
- Service: 12167129
- 5-Way F Metri-Pack 280 Series (BK)

Pin	Wire Color	Circuit No.	Function
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2005 Cadillac XLR			
2005 ACCESSORIES & EQUIPMENT Seats - XLR			

A	-	-	Not Used
B	GY	764	Driver Seat Deflate Relay Control
C	-	-	Not Used
D	RD/WH	2240	Battery Positive Voltage
E	YE	777	Driver Pneumatic Seat Upper Lumbar Solenoid Control

Upper Lumbar Switch - Passenger Connector End View

			
Connector Part Information		<ul style="list-style-type: none"> • OEM: 12041429 • Service: 12167129 • 5-Way F Metri-Pack 280 Series (BK) 	
Pin	Wire Color	Circuit No.	Function
A	-	-	Not Used
B	GY	1805	Passenger Pneumatic Seat Deflate Relay Control
C	-	-	Not Used
D	RD/WH	2240	Battery Positive Voltage
E	OG	1261	Passenger Pneumatic Seat Upper Lumbar Solenoid Control

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - SEATS

Always begin the diagnosis by reviewing the system Description and Operation. Reviewing the Description and Operation will help you determine the correct symptom diagnostic procedure when a malfunction exists. Reviewing the Description and Operation will also help you determine if the condition described by the customer is normal operation.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

For power seats without memory (A45), refer to **Symptoms - Seats** in order to identify the correct procedure for diagnosing the system and where the procedure is located.

For seats with memory (A45) and heated/cool seats, begin diagnosis with the **Diagnostic System Check - Vehicle** in Vehicle DTC Information. 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 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 OUTPUT CONTROLS

Seats Output Controls

Outputs	Additional Menu Selection(s)	Description
Drvr. Rear Vertical Motor Command	-	The DPM activates the seat rear vertical motor when you select Up or Down. The motor should tilt the rear of the seat in the selected upward or downward direction until it reaches it's end of travel.
Drvr. Front Vertical Motor Command	-	The DPM activates the seat front vertical motor when you select Up or Down. The motor should tilt the front of the seat in the selected upward or downward direction until the it reaches it's end of travel.
Drvr. Horizontal Motor Command	-	The DPM activates the seat horizontal motor when you select Forward or Rearward. The motor should move the entire seat in the selected forward or rearward direction until the it reaches it's end of travel.
Drvr. Recline Motor Command	-	The DPM activates the recline motor when you select Forward or Rearward. The motor should recline the seat back in the selected forward or rearward direction until the it reaches it's end of travel.
Memory 1 Recall	-	The DPM activates the previously programmed seat directional motors when you select On. The motors should move the seat to the memory position for driver 1 or until you select Off.
Memory 2 Recall	-	The DPM activates the previously programmed seat directional motors when you select On. The motors should move the seat to the memory position for driver 2 or until you select Off.
Memory Exit 1 Recall	-	The DPM activates the previously programmed seat directional motors when you select On. The motors should move the seat to the memory exit position for driver 1 or

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

		until you select Off.
Memory Exit 2 Recall	-	The DPM activates the previously programmed seat directional motors when you select On. The motors should move the seat to the memory exit position for driver 2 or until you select Off.

SCAN TOOL DATA LIST

Seats Data List

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Ignition ON/Engine OFF			
Battery Voltage Signal	Inputs	Volts	Varies
Current	Inputs	amps	Varies
Driver Seat Front Vertical Sensor	Sensor Data	Volts	0.0-5.0
Driver Seat Front Vertical Sensor	Sensor Data	Counts	0-255
Driver Seat Horizontal Sensor	Sensor Data	Volts	0.0-5.0
Driver Seat Horizontal Sensor	Sensor Data	Counts	0-255
Driver Seat Rear Vertical Sensor	Sensor Data	Volts	0.0-5.0
Driver Seat Rear Vertical Sensor	Sensor Data	Counts	0-255
Driver Seat Recline Sensor	Sensor Data	Volts	0.0-5.0
Driver Seat Recline Sensor	Sensor Data	Counts	0-255
Drvr. Seat Front Vertical Motor Command	Outputs	Inactive/Upward/Downward	Inactive
Drvr. Seat Front Vertical Switch	Inputs	Inactive/Upward/Downward	Inactive
Drvr. Seat Horizontal Motor Command	Outputs	Inactive/Forward/Rearward	Inactive
Drvr. Seat Horizontal Switch	Inputs	Inactive/Forward/Rearward	Inactive
Drvr. Seat Rear Vertical Motor Command	Outputs	Inactive/Upward/Downward	Inactive
Drvr. Seat Rear Vertical Switch	Inputs	Inactive/Upward/Downward	Inactive
Drvr. Seat Recline Motor Command	Outputs	Inactive/Forward/Rearward	Inactive
Drvr. Seat Recline Switch	Inputs	Inactive/Forward/Rearward	Inactive
Horizontal Value	Memory Data 1	Volts	0.0-5.0
Horizontal Value	Memory Data 1	Counts	0-255
Horizontal Value	Memory Data 2	Volts	0.0-5.0
Horizontal Value	Memory Data 2	Counts	0-255
Memory Switch	Inputs	Idle/Memory 1/Memory 2/Exit	Idle
Seat Front Vertical Exit Position	Memory Data Default	Volts	5.0 Volts
Seat Front Vertical Exit Position	Memory Data	Counts	255 Counts

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

	Default		
Seat Front Vertical Exit Position	Memory Data 1	Volts	0.0-5.0
Seat Front Vertical Exit Position	Memory Data 1	Counts	0-255
Seat Front Vertical Exit Position	Memory Data 2	Volts	0.0-5.0
Seat Front Vertical Exit Position	Memory Data 2	Counts	0-255
Seat Front Vertical Position	Memory Data 1	Volts	0.0-5.0
Seat Front Vertical Position	Memory Data 1	Counts	0-255
Seat Front Vertical Position	Memory Data 2	Volts	0.0-5.0
Seat Front Vertical Position	Memory Data 2	Counts	0-255
Seat Horizontal Exit Position	Memory Data Default	Volts	5.0 Volts
Seat Horizontal Exit Position	Memory Data Default	Counts	255 Counts
Seat Horizontal Exit Position	Memory Data 1	Volts	0.0-5.0
Seat Horizontal Exit Position	Memory Data 1	Counts	0-255
Seat Horizontal Exit Position	Memory Data 2	Volts	0.0-5.0
Seat Horizontal Exit Position	Memory Data 2	Counts	0-255
Seat Rear Vertical Exit Position	Memory Data Default	Volts	5.0 Volts
Seat Rear Vertical Exit Position	Memory Data Default	Counts	255 Counts
Seat Rear Vertical Exit Position	Memory Data 1	Volts	0.0-5.0
Seat Rear Vertical Exit Position	Memory Data 1	Counts	0-255
Seat Rear Vertical Exit Position	Memory Data 2	Volts	0.0-5.0
Seat Rear Vertical Exit Position	Memory Data 2	Counts	0-255
Seat Rear Vertical Position	Memory Data 1	Volts	0.0-5.0
Seat Rear Vertical Position	Memory Data 1	Counts	0-255
Seat Rear Vertical Position	Memory Data 2	Volts	0.0-5.0
Seat Rear Vertical Position	Memory Data 2	Counts	0-255
Seat Recline Exit Position	Memory Data Default	Volts	5.0 Volts
Seat Recline Exit Position	Memory Data Default	Counts	255 Counts
Seat Recline Exit Position	Memory Data 1	Volts	0.0-5.0
Seat Recline Exit Position	Memory Data 1	Counts	0-255
Seat Recline Exit Position	Memory Data 2	Volts	0.0-5.0
Seat Recline Exit Position	Memory Data 2	Counts	0-255
Seat Recline Position	Memory Data 1	Volts	0.0-5.0
Seat Recline Position	Memory Data 1	Counts	0-255
Seat Recline Position	Memory Data 2	Volts	0.0-5.0
Seat Recline Position	Memory Data 2	Counts	0-255

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

Seat Temp. Status	HVAC	Off/Max. Heat Min. Heat Max. Cool Min. Cool	Off
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SCAN TOOL DATA DEFINITIONS

Battery Voltage Signal - Inputs

The scan tool displays 0-16 Volts. The voltage measured between the module's battery positive voltage and ground circuits.

Current

The scan tool displays 0-127.5 Amps. The amount of amps used by the selected seat motors during operation.

Driver Seat Front Vertical Sensor

The scan tool displays 0-5.0 Volts. The sensor potentiometer provides an analog voltage which varies directly with the seat front vertical position. High scan tool voltage values indicate that the front of the seat cushion is in the upward position while low voltage values indicate that the front of the seat cushion is in the downward position.

Driver Seat Front Vertical Sensor

The scan tool displays 0-255 Counts. The sensor potentiometer provides an analog count value which varies directly with the seat front vertical position. High scan tool count values indicate that the front of the seat cushion is in the upward position, while low count values indicate that the front of the seat cushion is in the downward position.

Driver Seat Horizontal Sensor

The scan tool displays 0-5.0 Volts. The sensor potentiometer provides an analog voltage which varies directly with the seat horizontal position. High scan tool voltage values indicate that the seat is in the forward position, while low voltage values indicate that the seat is in the rearward position.

Driver Seat Horizontal Sensor

The scan tool displays 0-255 Counts. The sensor potentiometer provides an analog count value which varies directly with the seat horizontal position. High scan tool count values indicate that the seat is in the forward position, while low count values indicate that the seat is in the rearward position.

Driver Seat Rear Vertical Sensor

The scan tool displays 0-5.0 Volts. The sensor potentiometer provides an analog voltage which varies

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

directly with the seat rear vertical position. High scan tool voltage values indicate that the rear of the seat cushion is in the upward position while low voltage values indicate that the rear of the seat cushion is in the downward position.

Driver Seat Rear Vertical Sensor

The scan tool displays 0-255 Counts. The sensor potentiometer provides an analog count value which varies directly with the seat rear vertical position. High scan tool count values indicate that the rear of the seat cushion is in the upward position, while low count values indicate that the rear of the seat cushion is in the downward position.

Driver Seat Recline Sensor

The scan tool displays 0-5.0 Volts. The sensor potentiometer provides an analog voltage which varies directly with the seat recline position. High scan tool voltage values indicate that the seat recline is forward, while low voltage values indicate that the seat recline is rearward.

Driver Seat Recline Sensor

The scan tool displays 0-255 Counts. The sensor potentiometer provides an analog count value which varies directly with the seat recline position. High scan tool count values indicate that the seat recline is forward, while low count values indicate that the seat recline is rearward.

Drvr. Seat Front Vertical Motor Command - Outputs

The scan tool displays Inactive/Upward/Downward. When the seat front vertical switch is pressed, the scan tool displays the seat front vertical motor control output from the driver position module as selected, Upward or Downward.

Drvr. Seat Front Vertical Switch - Inputs

The scan tool displays Inactive/Upward/Downward. When the seat front vertical switch is pressed, the scan tool will display the switch input to the driver position module as selected, Upward or Downward.

Drvr. Seat Horizontal Motor Command - Outputs

The scan tool displays Inactive/Forward/Rearward. When the seat horizontal switch is pressed, the scan tool displays the seat horizontal motor control output from the driver position module as selected, Forward or Rearward.

Drvr. Seat Horizontal Switch - Inputs

The scan tool displays Inactive/Forward/Rearward. When the seat horizontal switch is pressed, the scan tool will display the switch input to the driver position module as selected, Forward or Rearward.

Drvr. Seat Rear Vertical Motor Command - Outputs

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

The scan tool displays Inactive/Upward/Downward. When the seat rear vertical switch is pressed, the scan tool displays the seat rear vertical motor control output from the driver position module as selected, Upward or Downward.

Drvr. Seat Rear Vertical Switch - Inputs

The scan tool displays Inactive/Upward/Downward. When the seat rear vertical switch is pressed, the scan tool will display the switch input to the driver position module as selected, Upward or Downward.

Drvr. Seat Recline Motor Command - Outputs

The scan tool displays Inactive/Forward/Rearward. When the seat recline switch is pressed, the scan tool displays the seat recline motor control output from the driver position module as selected, Forward or Rearward.

Drvr. Seat Recline Switch - Inputs

The scan tool displays Inactive/Forward/Rearward. When the seat recline switch is pressed, the scan tool will display the switch input to the driver position module as selected, Forward or Rearward.

Horizontal Value - Memory Data 1

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 1.

Horizontal Value - Memory Data 1

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 1.

Horizontal Value - Memory Data 2

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 2.

Horizontal Value - Memory Data 2

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 2.

Memory Switch - Inputs

The scan tool displays Inactive/Memory 1/Memory 2/Exit. When the memory function switch is pressed, the scan tool will momentarily display the switch input to the driver position module as selected.

Seat Front Vertical Exit Position - Memory Data Default

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

The scan tool displays 5.0 Volts. This parameter value is the default voltage value that is displayed for manufacturing purposes.

Seat Front Vertical Exit Position - Memory Data Default

The scan tool displays 255 Counts. This parameter value is the default count value that is displayed for manufacturing purposes.

Seat Front Vertical Exit Position - Memory Data 1

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 1.

Seat Front Vertical Exit Position - Memory Data 1

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 1.

Seat Front Vertical Exit Position - Memory Data 2

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 2.

Seat Front Vertical Exit Position - Memory Data 2

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 2.

Seat Front Vertical Position - Memory Data 1

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 1.

Seat Front Vertical Position - Memory Data 1

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 1.

Seat Front Vertical Position - Memory Data 2

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 2.

Seat Front Vertical Position - Memory Data 2

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

stored in memory for driver 2.

Seat Horizontal Exit Position - Memory Data Default

The scan tool displays 5.0 Volts. This parameter value is the default voltage value that is displayed for manufacturing purposes.

Seat Horizontal Exit Position - Memory Data Default

The scan tool displays 255 Counts. This parameter value is the default count value that is displayed for manufacturing purposes.

Seat Horizontal Exit Position - Memory Data 1

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 1.

Seat Horizontal Exit Position - Memory Data 1

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 1.

Seat Horizontal Exit Position - Memory Data 2

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 2.

Seat Horizontal Exit Position - Memory Data 2

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 2.

Seat Rear Vertical Exit Position - Memory Data Default

The scan tool displays 5.0 Volts. This parameter value is the default voltage value that is displayed for manufacturing purposes.

Seat Rear Vertical Exit Position - Memory Data Default

The scan tool displays 255 Counts. This parameter value is the default count value that is displayed for manufacturing purposes.

Seat Rear Vertical Exit Position - Memory Data 1

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 1.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

Seat Rear Vertical Exit Position - Memory Data 1

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 1.

Seat Rear Vertical Exit Position - Memory Data 2

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 2.

Seat Rear Vertical Exit Position - Memory Data 2

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 2.

Seat Rear Vertical Position - Memory Data 1

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 1.

Seat Rear Vertical Position - Memory Data 1

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 1.

Seat Rear Vertical Position - Memory Data 2

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 2.

Seat Rear Vertical Position - Memory Data 2

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 2.

Seat Recline Exit Position - Memory Data Default

The scan tool displays 5.0 Volts. This parameter value is the default voltage value that is displayed for manufacturing purposes.

Seat Recline Exit Position - Memory Data Default

The scan tool displays 255 Counts. This parameter value is the default count value that is displayed for manufacturing purposes.

Seat Recline Exit Position - Memory Data 1

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 1.

Seat Recline Exit Position - Memory Data 1

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 1.

Seat Recline Exit Position - Memory Data 2

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 2.

Seat Recline Exit Position - Memory Data 2

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 2.

Seat Recline Position - Memory Data 1

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 1.

Seat Recline Position - Memory Data 1

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 1.

Seat Recline Position - Memory Data 2

The scan tool displays 0-5.0 Volts. This parameter displays the position sensor voltage value that is stored in memory for driver 2.

Seat Recline Position - Memory Data 2

The scan tool displays 0-255 Counts. This parameter displays the position sensor count value that is stored in memory for driver 2.

Seat Temp. Status - HVAC

The scan tool displays Off/High Heat/Low Heat/High Cool/Low Cool. When the heated/cool seat switch is pressed once, the scan tool will display High Heat, pressed a second time it displays Low Heat, pressed a third time it displays High Cool. Pressed a fourth time it displays Low Cool, and after the switch is pressed a fifth time, the scan tool displays Off.

DTC B1336

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

Circuit Description

Battery positive voltage is supplied to the memory seat module (MSM)/driver position module (DPM) from the Seats Circuit Breaker located in the instrument panel (I/P) fuse block. When commanded, this voltage is used by the MSM/DPM to power the seat motors through the motor control circuits. During memory recall functions and manual seat functions, the driven motor current is monitored through the motor control circuits by the MSM/DPM. When an overcurrent condition is detected, the MSM/DPM disables the seat motors in order to protect the internal MSM/DPM circuitry.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B1336 Device Power 3 Circuit Range/Performance

Conditions for Running the DTC

The MSM/DPM monitors for overcurrent only when the seat motors are active.

Conditions for Setting the DTC

The MSM/DPM will set DTC B1336 when the measured current exceeds 81 amps for 100 milliseconds.

Action Taken When the DTC Sets

- All memory recalls in progress are aborted.
- The MSM/DPM will not respond to manual movements of the affected motor.

Conditions for Clearing the DTC

The MSM/DPM does not detect an overcurrent condition during seat movement.

Diagnostic Aids

The MSM is also known as the DPM for this vehicle.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

- 2:** This test determines which directional motor exhibits excessive current.
- 3:** This test determines if the suspect motor has an internal short to ground.
- 9:** This test verifies the repair.

DTC B1336

Step	Action	Yes	No

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

Schematic Reference: Driver Seat Schematics

Connector End View Reference: Power Seat Systems Connector End Views

1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	<ol style="list-style-type: none"> 1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, observe the Current Diagnostic Trouble Codes in the Driver Position Module Diagnostic Trouble Code list. 4. While observing the scan tool for DTCs, operate the seat switch in both directions for each directional motor. <p>Did the scan tool display DTC B1336 for any of the seat motors?</p>	Go to Step 3	Go to Testing for Intermittent Conditions and Poor Connections in Wiring Systems
3	<ol style="list-style-type: none"> 1. Disconnect the suspect motor harness connector. 2. While observing the scan tool for DTCs, operate the suspect motor switch in both directions. <p>Does the scan tool display DTC B1336?</p>	Go to Step 4	Go to Step 5
4	<p>Test the motor control circuits of the suspect motor for a short to ground. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 6
5	<p>Inspect for poor connections at the harness connector of the suspect seat motor. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 7
6	<p>Inspect for poor connections at the harness connector of the memory seat module (MSM)/driver position module (DPM). Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 8
7	<p>Replace the suspect seat motor. Refer to Seat Adjuster Replacement - Driver Side.</p> <p>Did you complete the replacement?</p>	Go to Step 9	-
8	<p>Replace the MSM/DPM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming.</p> <p>Did you complete the replacement?</p>	Go to Step 9	-

9	<ol style="list-style-type: none">1. Clear the DTCs using the scan tool.2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.		
	Does the DTC reset?	Go to Step 2	System OK

DTC B1420

Circuit Description

Battery positive voltage is supplied at all times to the seat adjuster switch and the memory seat module (MSM)/driver position module (DPM) through the same circuit. The MSM/DPM uses this battery voltage input to determine if battery positive voltage is applied to the seat adjuster switch.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B1420 Device Voltage

Conditions for Running the DTC

The MSM/DPM must be powered and cannot have B1327 - Battery Voltage Low as an active DTC for this DTC to set.

Conditions for Setting the DTC

This DTC will set only when the MSM/DPM detects less than 3 volts from the circuit.

Action Taken When the DTC Sets

- Current and history codes are set.
- The MSM/DPM ignores all memory recall commands.
- All manual seat functions will operate.

Conditions for Clearing the DTC

- The DTC will clear when the MSM/DPM detects that the voltage from the circuit is greater than 3 volts.
- The MSM/DPM will clear the history DTC after 50 fault free ignition cycles.

Diagnostic Aids

The MSM is also known as the DPM for this vehicle.

DTC B1420

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

Step	Action	Yes	No
Schematic Reference: <u>Driver Seat Schematics</u> Connector End View Reference: <u>Power Seat Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	Activate any one of the power seat adjuster switches. Does the seat move in the commanded direction?	Go to Step 3	Go to Step 4
3	Probe the battery positive voltage circuit of the memory seat module (MSM)/driver position module (DPM) connector C2 Pin-F11 with a test lamp that is connected to a good ground. Does the test lamp illuminate?	Go to Step 5	Go to Step 6
4	Test all of the power seat switch signal circuits between the seat adjuster switch and the MSM/DPM for a short to ground. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 9	Go to Step 7
5	Inspect for poor connections at the harness connector of the MSM/DPM. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 9	Go to Step 8
6	Repair the open in the battery positive voltage circuit of the MSM/DPM. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 9	-
7	Repair the short to ground or open in the battery positive voltage circuit of the MSM/DPM. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 9	-
8	Replace the MSM/DPM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 9	-
9	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	Go to Step 2	System OK

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

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

Circuit Description

When the power seat switches are pressed they send a 12-volt signal through the switch signal circuit to the memory seat module (MSM)/driver position module (DPM). The MSM/DPM then commands the driver seat to move in response to the switch inputs.

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B1735 Seat Front Up Switch Circuit
- DTC B1740 Seat Front Down Switch Circuit
- DTC B1745 Seat Rear Up Switch Circuit
- DTC B1750 Seat Rear Down Switch Circuit
- DTC B1755 Seat Assembly Horizontal Forward Switch Circuit
- DTC B1760 Seat Assembly Horizontal Rearward Switch Circuit
- DTC B1815 Seat Recline Forward Switch Circuit
- DTC B1820 Seat Recline Rearward Switch Circuit

Conditions for Running the DTC

The MSM/DPM must be powered and cannot have B1327 - Battery Voltage Low as an active DTC for this DTC to set.

Conditions for Setting the DTC

- If a seat switch continues to be active for 30 seconds after a motor controlled by that switch reaches the end of its travel, the switch will be considered shorted and the MSM/DPM will set a switch DTC.
- If a position sensor DTC is current and the associated switch is active for 30 continuous seconds, the switch will be considered shorted and the MSM/DPM will set a switch DTC.

Action Taken When the DTC Sets

- Current and history codes are set.
- A motor output driven in response to a switch considered failed, is deactivated for both directions.
- All memory recall commands and class 2 Driver Identifier are ignored.
- The MSM/DPM will respond to any other switch signal that has not set a DTC.

Conditions for Clearing the DTC

- The DTC automatically clears when the switch circuit setting the DTC is no longer active.
- The MSM/DPM will clear the history DTC after 50 fault free ignition cycles.

Diagnostic Aids

2005 Cadillac XLR**2005 ACCESSORIES & EQUIPMENT Seats - XLR**

The MSM is also known as the DPM for this vehicle.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: Checks the existing state of the driver's seat switch by using the current state of the seat switch parameter. If all of the seat switch parameters display active, possibly one of the seat switch signal circuits is shorted to voltage.

4: When the seat switch is disconnected, this step determines if the seat switch contacts are stuck closed, or if one of the switch signal circuits is possibly shorted to battery voltage.

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

Step	Action	Yes	No
Schematic Reference: <u>Driver Seat Schematics</u>			
Connector End View Reference: <u>Power Seat Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	<ol style="list-style-type: none">1. Install a scan tool.2. Turn ON the ignition, with the engine OFF.3. With a scan tool, observe the appropriate seat switch parameter in the Driver Position Module data list. Does the scan tool display Inactive?	Go to Step 3	Go to Step 4
3	<ol style="list-style-type: none">1. With a scan tool, observe the appropriate seat switch parameter.2. Activate the appropriate seat switch. Does the switch parameter change state?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u> in Wiring Systems	Go to Step 4
4	<ol style="list-style-type: none">1. Turn OFF the ignition.2. Disconnect the seat adjuster switch harness connector.3. Turn ON the ignition, with the engine OFF.4. With a scan tool, observe all of the switch parameters in the Driver Position Module data list. Does the scan tool display Inactive for all of the switch parameters?	Go to Step 7	Go to Step 5
	Test the switch signal circuit that displays active for a		

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

5	short to voltage. Refer to <u>Circuit Testing Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 10	Go to Step 6
6	Inspect for poor connections at the harness connector of the memory seat module (MSM)/driver position module (DPM). Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 10	Go to Step 8
7	Inspect for poor connections at the harness connector of the seat adjuster switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 10	Go to Step 9
8	Replace the MSM/DPM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 10	-
9	Replace the seat adjuster switch. Refer to <u>Seat Switch Replacement - Power - Driver Side</u> . Did you complete the replacement?	Go to Step 10	-
10	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	Go to Step 2	System OK

DTC B1825, B1850, B2355, B2365, OR B2375**Circuit Description**

The position sensor that sets this DTC is attached to the seat directional motor. It receives a 5-volt reference and low reference from the memory seat module (MSM)/driver position module (DPM). The sensor sends a voltage signal that varies with the movement of the seat through the signal circuit to the MSM/DPM. Then based on this voltage signal, the MSM/DPM determines the position of the seat.

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B1825 Seat Recline Position Sensor Circuit
- DTC B2355 Seat Front Vertical Position Sensor Circuit
- DTC B2365 Seat Rear Vertical Position Sensor Circuit
- DTC B2375 Seat Assembly Horizontal Position Sensor Circuit

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

Conditions for Running the DTC

The MSM/DPM must be powered and cannot have B1327 - Battery Voltage Low as an active DTC for this DTC to set.

Conditions for Setting the DTC

If the MSM/DPM sees the voltage signal from this sensor as either lower than 0.25 volts or higher than 4.75 volts, the sensor will be considered out of range and the MSM/DPM will set this DTC.

Action Taken When the DTC Sets

- Current and history codes are set.
- The MSM/DPM disables the affected motor during memory recall operations.
- The affected motor will respond to manual positioning commands.

Conditions for Clearing the DTC

- The MSM/DPM will clear the DTC when it detects that the voltage from the sensor signal circuit is between 0.25-4.75 volts.
- The MSM/DPM will clear the history DTC after 50 fault free ignition cycles.

Diagnostic Aids

- The MSM is also known as the DPM for this vehicle.
- All position sensors use common low reference 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 low reference circuit is open multiple codes will set.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

3: Tests for the proper operation of the circuit in the low voltage range.

4: Tests for the proper operation of the circuit in the high voltage range. If the fuse in the jumper opens when you perform this test, the signal circuit is shorted to ground.

5: Tests for a short to voltage in the 5-volt reference circuit.

6: Tests for a high resistance or an open in the sensor low reference circuit.

16: This step verifies the repair.

DTC B1825, B1850, B2355, B2365, or B2375

Step	Action	Value(s)	Yes	No
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Schematic Reference: Driver Seat Schematics

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

Connector End View Reference: Power Seat Systems Connector End Views

1	<p>Did you perform the Diagnostic System Check - Vehicle?</p>	-	Go to Step 2	<p>Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information</p>
2	<ol style="list-style-type: none"> 1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, observe the appropriate Sensor parameter in the Driver Position Module Sensor data list. <p>Does the scan tool indicate that the Sensor parameter is within the specified range?</p>	0.25-4.75 V	<p>Go to <u>Testing for Intermittent Conditions and Poor Connections</u> in Wiring Systems</p>	<p>Go to Step 3</p>
3	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the appropriate sensor harness connector. 3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, observe the Sensor parameter. <p>Does the scan tool indicate that the Sensor parameter is less than the specified value?</p>	2 V	Go to Step 4	<p>Go to Step 10</p>
4	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Connect a 3-amp fused jumper wire between the 5-volt reference circuit of the sensor connector and the signal circuit of the sensor connector. 3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, observe the appropriate Sensor parameter. <p>Does the scan tool indicate that the Sensor parameter is greater than the specified value?</p>	4.75 V	Go to Step 5	<p>Go to Step 8</p>
5	<ol style="list-style-type: none"> 1. Disconnect the fused jumper wire. 2. Measure the voltage between the 5-volt reference circuit of the sensor connector and the low reference circuit of the sensor connector. 	5.5 V		

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

	Does the voltage measure less than the specified value?		Go to Step 6	Go to Step 7
6	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the negative battery cable. 3. Measure the resistance from the low reference circuit of the sensor to a good ground. <p>Does the resistance measure less than the specified value?</p>	5 ohms	Go to Step 12	Go to Step 11
7	<p>Test the 5-volt reference circuit of the sensor for a short to voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 16	Go to Step 13
8	<p>Test the 5-volt reference circuit of the sensor for the following:</p> <ul style="list-style-type: none"> • A short to ground • An open • High resistance <p>Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 16	Go to Step 9
9	<p>Test the signal circuit of the sensor for the following:</p> <ul style="list-style-type: none"> • A short to ground • An open • High resistance <p>Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 16	Go to Step 13
10	<p>Test the signal circuit of the sensor for a short to voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 16	Go to Step 13
	<ol style="list-style-type: none"> 1. Disconnect the memory seat module (MSM)/driver position module (DPM) connector C2. 			

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

11	<p>2. Test the low reference circuit of the sensor for a high resistance or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 16	Go to Step 13
12	<p>Inspect for poor connections at the harness connector of the sensor. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 16	Go to Step 14
13	<p>Inspect for poor connections at the harness connector of the MSM/DPM. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 16	Go to Step 15
14	<p>Replace the appropriate seat position sensor. Refer to <u>Seat Adjuster Replacement - Driver Side</u>.</p> <p>Did you complete the replacement?</p>	-	Go to Step 16	-
15	<p>Replace the MSM/DPM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming.</p> <p>Did you complete the replacement?</p>	-	Go to Step 16	-
16	<p>1. Use the scan tool in order to clear the DTCs.</p> <p>2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.</p> <p>Does the DTC reset?</p>	-	Go to Step 2	System OK

DTC B1826, B1851, B1861, B2356, B2366, OR B2376

Circuit Description

The sensor that set this diagnostic trouble code (DTC) is attached to the seat directional motor it monitors. It receives a 5-volt reference and low reference from the memory seat module (MSM)/driver position module (DPM). The sensor sends a voltage signal that varies with the movement of the seat through the sensor signal circuit to the MSM/DPM. Then based on this voltage signal, the MSM/DPM determines the position of the seat.

DTC Descriptors

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

This diagnostic procedure supports the following DTCs:

- DTC B1826 Seat Recline Position Sensor Circuit Range/Performance
- DTC B2356 Seat Front Vertical Position Sensor Circuit Range/Performance
- DTC B2367 Seat Rear Vertical Position Sensor Circuit Range/Performance
- DTC B2376 Seat Assembly Horizontal Position Sensor Range/Performance

Conditions for Running the DTC

- The MSM/DPM must be powered and cannot have B1327 - Battery Voltage Low set as a current DTC for this DTC to set.
- This test will run only when the motors are active.

Conditions for Setting the DTC

If the sensor signal received by the MSM/DPM from a motor being driven in a commanded direction changes by more than 10 counts or 0.2 volts in the wrong direction, the MSM/DPM will set this DTC.

Action Taken When the DTC Sets

- Current and History codes are set.
- The MSM/DPM disables the affected motor during memory recall operations.
- The affected motor will respond to manual positioning commands.

Conditions for Clearing the DTC

- The MSM/DPM will clear the DTC as an active DTC, whenever a manual switch is activated and the MSM/DPM senses that the voltage from the sensor signal changes by more than 2 counts or 0.04 volts in the correct direction.
- The MSM/DPM will clear the history DTC after 50 fault free ignition cycles.

Diagnostic Aids

- The MSM is also known as the DPM for this vehicle.
- All position sensors use common 5-volt reference and low reference circuits.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

- 2:** This step checks the direction in which the volts change as the switch is activated. The voltage should increase for the forward or up position and decrease for the rearward or down position.
- 4:** This step checks the polarity of the seat position sensor wiring.
- 5:** This step checks the polarity of the seat motor wiring.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

6: This step checks the polarity of the seat switch wiring.

DTC B1826, B1851, B1861, B2356, B2366, or B2376

Step	Action	Yes	No
Schematic Reference: Driver Seat Schematics			
Connector End View Reference: Power Seat Systems Connector End Views			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	<ol style="list-style-type: none"> 1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, observe the appropriate Sensor parameter in the Driver Position Module data list. 4. Activate the appropriate seat switch in the FORWARD or UP direction. <p>Does the voltage increase?</p>	Go to Step 9	Go to Step 3
3	Does the seat move in the commanded direction?	Go to Step 4	Go to Step 5
4	<p>Verify that the seat position sensor wiring circuits are in the correct harness connector cavities.</p> <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 7
5	<p>Verify that the seat motor wiring circuits are in the correct harness connector cavities.</p> <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 6
6	<p>Verify that the seat switch wiring circuits are in the correct harness connector cavities.</p> <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 7
7	<p>Inspect for poor connection at the harness connector of the memory seat module (MSM)/driver position module (DPM). Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 8
8	<p>Replace the MSM/DPM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming.</p> <p>Did you complete the replacement?</p>	Go to Step 9	-
9	<ol style="list-style-type: none"> 1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. 		

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

Does the DTC reset?

Go to **Step 2**

System OK

DTC B2757, B2762, B2767, OR B2772

Circuit Description

When the memory recall switches are pressed they send a 12-volt signal to the memory seat module (MSM)/driver position module (DPM). The MSM/DPM then commands the driver seat to move in response to the switch inputs.

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B2757 Memory 1 Select Switch Circuit Low
- DTC B2762 Memory 2 Select Switch Circuit Low
- DTC B2767 Memory Set Switch Circuit Low
- DTC B2772 Memory Exit Switch Circuit Low

Conditions for Running the DTC

The MSM/DPM must be powered and cannot have B1327 - Battery Voltage Low as an active DTC for this DTC to set.

Conditions for Setting the DTC

- If a memory switch continues to be active for 30 seconds after the last motor controlled by MSM/DPM reaches the end of its travel, the switch will be considered shorted and the MSM/DPM will set a switch DTC.
- If a position sensor DTC is current and the associated switch is active for 30 continuous seconds, the switch will be considered shorted and the MSM/DPM will set a switch DTC.

Action Taken When the DTC Sets

- Current and history codes are set.
- All memory recall commands and class 2 Driver Identifier are ignored.
- The MSM/DPM will respond to any other switch signal that has not set a DTC.

Conditions for Clearing the DTC

- The DTC automatically clears when the switch circuit setting the DTC is no longer active.
- The MSM/DPM will clear the history DTC after 50 fault free ignition cycles.

Diagnostic Aids

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

The MSM is also known as the DPM for this vehicle.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: Checks the existing state of the memory switch by using the current state of the switch parameter.

10: This step verifies the repair.

DTC B2757, B2762, B2767, or B2772

Step	Action	Yes	No
Schematic Reference: Driver Seat Schematics			
Connector End View Reference: Power Seat Systems Connector End Views			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	<ol style="list-style-type: none">1. Install a scan tool.2. Turn ON the ignition, with the engine OFF.3. With a scan tool, observe the appropriate memory switch parameter in the Driver Position Module data list. Does the scan tool display Inactive?	Go to Step 3	Go to Step 4
3	<ol style="list-style-type: none">1. With a scan tool, observe the appropriate memory switch parameter.2. Activate the appropriate memory switch. Does the switch parameter change state?	Go to Testing for Intermittent Conditions and Poor Connections in Wiring Systems	Go to Step 4
4	<ol style="list-style-type: none">1. Turn OFF the ignition.2. Disconnect the memory function switch harness connector.3. Turn ON the ignition, with the engine OFF.4. With a scan tool, observe the appropriate switch parameter in the Driver Position Module data list. Does the scan tool display Inactive for the switch parameter?	Go to Step 7	Go to Step 5
5	Test the switch signal circuit that displays active for a short to voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 10	Go to Step 6

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

6	Inspect for poor connections at the harness connector of the memory seat module (MSM)/driver position module (DPM). Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 10	Go to Step 8
7	Inspect for poor connections at the harness connector of the memory function switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 10	Go to Step 9
8	Replace the MSM/DPM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 10	-
9	Replace the memory function switch. Refer to <u>Seat Switch Replacement - Power - Driver Side</u> . Did you complete the replacement?	Go to Step 10	-
10	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	Go to Step 2	System OK

SYMPTOMS - SEATS

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

- Refer to the system description and operation from the following list in order to familiarize yourself with the system functions:
 - Power Seats System Description and Operation**
 - Lumbar Support Description and Operation**
 - Heated/Cooled Seats Description and Operation**
 - Memory Seats Description and Operation**
- If you are diagnosing a seat with memory (A45) perform the **Diagnostic System Check - Vehicle** in Vehicle DTC Information 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.

Visual/Physical Inspection

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

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

Intermittent

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

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- **Power Seat Inoperative (w/o A45)** or **Power Seat Inoperative (with A45)**
- **Memory Seat Feature Inoperative**
- **Lumbar Support Inoperative**
- **Heated/Cooled Seats Inoperative**

POWER SEAT INOPERATIVE (W/O A45)

Power Seat Inoperative (w/o A45)

Step	Action	Yes	No
Schematic Reference: <u>Driver Seat Schematics</u> or <u>Passenger Seat Schematics</u> Connector End View Reference: <u>Power Seat Systems Connector End Views</u> DEFINITION: One or more of the power seat functions are inoperative.			
1	Did you review the power seat system description and operation and perform the necessary inspections?	Go to Step 2	Go to <u>Symptoms - Seats</u>
2	1. Verify that the power seat inoperative complaint is present. 2. Attempt to operate all of the power seat motors through their full range of adjustment. Does the power seat system operate as described in the system description and operation?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u> in Wiring Systems	Go to Step 3
3	Are all of the power seat motors inoperative?	Go to Step 4	Go to Step 6
4	1. Disconnect the seat adjuster switch. 2. Connect a test lamp from the battery positive voltage circuit of the switch connector to a good ground.		

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

	Does the test lamp illuminate?	Go to Step 5	Go to Step 10
5	Connect a test lamp from the battery positive voltage circuit of the switch connector to the ground circuit of the switch connector. Does the test lamp illuminate?	Go to Step 9	Go to Step 11
6	<ol style="list-style-type: none"> 1. Disconnect the inoperative seat motor. 2. Connect a test lamp between the motor control circuits of the harness connector. 3. Operate the appropriate seat switch in both directions. Does the test lamp illuminate in both directions?	Go to Step 8	Go to Step 7
7	Test the motor control circuits for a short to ground or an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 14	Go to Step 9
8	Inspect for poor connections at harness connector of the inoperative seat motor. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 14	Go to Step 13
9	Inspect for poor connections at harness connector of the seat adjuster switch. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 14	Go to Step 12
10	Repair the short to ground or open in the battery positive voltage circuit of the seat adjuster switch. Refer to Wiring Repairs or Connector Repairs in Wiring Systems. Did you complete the repair?	Go to Step 14	-
11	Repair the open in the ground circuit of the seat adjuster switch. Refer to Wiring Repairs or Connector Repairs in Wiring Systems. Did you complete the repair?	Go to Step 14	-
12	Replace the seat adjuster switch. Refer to Seat Switch Replacement - Power - Driver Side or Seat Switch Replacement - Power - Passenger Side . Did you complete the replacement?	Go to Step 14	-
13	Replace the seat motor. Refer to Seat Adjuster Replacement - Driver Side or Seat Adjuster Replacement - Passenger Side . Did you complete the replacement?	Go to Step 14	-
14	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

POWER SEAT INOPERATIVE (WITH A45)

Diagnostic Aids

The memory seat module (MSM) is also referenced as the driver position module (DPM) for this vehicle.

Test Description

The number below refer to the step numbers on the diagnostic table.

8: This step tests the integrity of the signal circuits of the seat adjuster switch. If the fuse in the jumper wire opens when you perform this test, a short to ground may have occurred.

Power Seat Inoperative (with A45)

Step	Action	Yes	No
Schematic Reference: Driver Seat Schematics			
Connector End View Reference: Power Seat Systems Connector End Views			
DEFINITION: One or more of the power seat functions are inoperative.			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	<ol style="list-style-type: none">1. Verify that the power seat inoperative complaint is present.2. Attempt to operate all of the power seat motors through their full range of adjustment. Does the power seat system operate as described in the system description and operation?	Go to Testing for Intermittent Conditions and Poor Connections in Wiring Systems	Go to Step 3
3	Are all of the power seat motors inoperative?	Go to Step 4	Go to Step 7
4	<ol style="list-style-type: none">1. Install a scan tool.2. Turn ON the ignition, with the engine OFF.3. With a scan tool, observe any seat switch parameter in the Seats, DPM data list.4. Operate the seat switch in the direction of the observed parameter. Does the observed seat switch parameter change state?	Go to Step 14	Go to Step 5
5	Probe the battery positive voltage circuit of the seat adjuster switch with a test lamp that is connected to a good ground. Does the test lamp illuminate?	Go to Step 6	Go to Step 15
	<ol style="list-style-type: none">1. Probe any one of the seat switch signal circuits of the seat adjuster switch with a test lamp that is		

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

6	<p>connected to a good ground.</p> <p>2. Operate the appropriate seat switch.</p> <p>Does the test lamp illuminate?</p>	Go to Step 14	Go to Step 13
7	<p>1. Install a scan tool.</p> <p>2. Turn ON the ignition, with the engine OFF.</p> <p>3. With a scan tool, observe the inoperative seat switch parameter in the Seats, DPM data list.</p> <p>4. Operate the appropriate seat switch in both directions.</p> <p>Does the seat switch parameter change state in both directions?</p>	Go to Step 9	Go to Step 8
8	<p>1. Disconnect the seat adjuster switch.</p> <p>2. Connect a 3-amp fused jumper wire between the battery voltage circuit of the harness connector and the suspect switch signal circuit of the harness connector.</p> <p>3. With a scan tool, observe the appropriate seat switch parameter.</p> <p>Does the seat switch parameter change state?</p>	Go to Step 13	Go to Step 10
9	<p>1. Disconnect the inoperative seat motor.</p> <p>2. Connect a test lamp between the motor control circuits of the harness connector.</p> <p>3. Operate the appropriate seat switch in both directions.</p> <p>Does the test lamp illuminate in both directions?</p>	Go to Step 12	Go to Step 11
10	<p>Test the suspect switch signal circuit between the seat adjuster switch and memory seat module (MSM)/driver position module (DPM) for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 19	Go to Step 14
11	<p>Test the motor control circuits between the MSM/DPM and the inoperative seat motor for a short to ground or an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 19	Go to Step 14
12	<p>Inspect for poor connections at the harness connector of the inoperative seat motor. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems.</p>		

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

	Did you find and correct the condition?	Go to Step 19	Go to Step 17
13	Inspect for poor connections at the harness connector of the seat adjuster switch. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 19	Go to Step 16
14	Inspect for poor connections at the harness connector of the MSM/DPM. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 19	Go to Step 18
15	Repair the short to ground or open in the battery positive circuit of the seat adjuster switch. Refer to Wiring Repairs or Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 19	-
16	Replace the seat adjuster switch. Refer to Seat Switch Replacement - Power - Driver Side . Did you complete the replacement?	Go to Step 19	-
17	Replace the inoperative seat motor. Refer to Seat Adjuster Replacement - Driver Side . Did you complete the replacement?	Go to Step 19	-
18	Replace the MSM/DPM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 19	-
19	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

MEMORY SEAT FEATURE INOPERATIVE**Diagnostic Aids**

The memory seat module (MSM) is also known as the driver position module (DPM) for this vehicle.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

7: If the fuse in the jumper wire opens when you perform this test, the signal circuit is shorted to ground.

8: If the fuse in the jumper wire opens when you perform this test, the signal circuit is shorted to ground.

Memory Seat Feature Inoperative

Step	Action	Yes	No
Schematic Reference: Driver Seat Schematics			

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

Connector End View Reference: Power Seat Systems Connector End Views

1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	Verify that the Memory Seat Feature Inoperative complaint is present. Does the memory seat system operate as described in the system description and operation?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u> in Wiring Systems	Go to Step 3
3	1. With a scan tool, observe the Memory Switch parameter in the Driver Position Module data list. 2. Press the memory 1 button. Does the scan tool display Memory 1?	Go to Step 4	Go to Step 6
4	1. With a scan tool, observe the Memory Switch parameter. 2. Press the memory 2 button. Does the scan tool display Memory 2?	Go to Step 5	Go to Step 8
5	1. With a scan tool, observe the Memory Switch parameter. 2. Press the Exit button. Does the scan tool display Exit?	Go to Step 12	Go to Step 11
6	Connect a test lamp from the battery positive voltage circuit of the memory function switch to a good ground. Does the test lamp illuminate?	Go to Step 7	Go to Step 13
7	1. Disconnect the memory function switch harness connector. 2. Connect a 3-amp fused jumper wire between the battery positive voltage circuit of the switch harness connector and the memory 1 switch signal circuit of the harness connector. 3. With a scan tool, observe the Memory Switch parameter. Does the scan tool display Memory 1?	Go to Step 11	Go to Step 9
	1. Disconnect the memory function switch harness connector. 2. Connect a 3-amp fused jumper wire between the		

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

8	<p>battery positive voltage circuit of the switch harness connector and the memory 2 switch signal circuit of the switch harness connector.</p> <p>3. With a scan tool, observe the Memory Switch parameter.</p> <p>Does the scan tool display Memory 2?</p>	Go to Step 11	Go to Step 10
9	<p>Test the memory 1 switch signal circuit between the memory function switch and the driver position module (DPM) for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 16	Go to Step 12
10	<p>Test the memory 2 switch signal circuit between the memory function switch and the DPM for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 16	Go to Step 12
11	<p>Inspect for poor connections at the harness connector of the memory function switch. Refer to Testing for Intermittent Conditions and Poor Connections and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 16	Go to Step 14
12	<p>Inspect for poor connections at the harness connector of the memory seat module (MSM)/DPM. Refer to Testing for Intermittent Conditions and Poor Connections and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 16	Go to Step 15
13	<p>Repair the open in the battery positive voltage circuit of the memory function switch. Refer to Wiring Repairs in Wiring Systems.</p> <p>Did you complete the repair?</p>	Go to Step 16	-
14	<p>Replace the memory function switch. Refer to Seat Switch Replacement - Power - Driver Side.</p> <p>Did you complete the replacement?</p>	Go to Step 16	-
15	<p>Replace the MSM/DPM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming.</p> <p>Did you complete the replacement?</p>	Go to Step 16	-
16	<p>Operate the system in order to verify the repair.</p> <p>Did you correct the condition?</p>	System OK	Go to Step 2

LUMBAR SUPPORT INOPERATIVE

Diagnostic Aids

The lumbar pump and control module are separate units that are attached to each other by a wire harness and a

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

hose. They are serviced as an assembly.

Lumbar Support Inoperative

Step	Action	Yes	No
Schematic Reference: <u>Driver Seat Schematics</u> or <u>Passenger Seat Schematics</u> Connector End View Reference: <u>Power Seat Systems Connector End Views</u>			
1	Did you review the lumbar Support Description and Operation and perform the necessary inspections?	Go to Step 2	Go to <u>Symptoms - Seats</u>
2	Attempt to inflate and deflate the upper and lower lumbar support bladders. Does the lumbar support system operate as described in the system description and operation?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u> in Wiring Systems	Go to Step 3
3	Is the lumbar pump motor always ON?	Go to Step 8	Go to Step 4
4	Are all of the lumbar support functions inoperative?	Go to Step 9	Go to Step 5
5	Press the lumbar INFLATE switch for the inoperative lumbar support function. Does the lumbar pump motor run?	Go to Step 6	Go to Step 12
6	Does the lumbar bladder inflate and stay inflated?	Go to Step 7	Go to Step 13
7	1. Disconnect the lumbar pump/control module assembly. 2. Probe the appropriate lumbar deflate control circuit of the lumbar control module with a test lamp that is connected to a good ground. 3. Press the appropriate lumbar DEFLATE switch. Does the test lamp illuminate?	Go to Step 17	Go to Step 14
8	1. Disconnect the lumbar pump/control module assembly. 2. Probe the upper and lower lumbar inflate control circuits of the lumbar control module with a test lamp that is connected to a good ground. Does the test lamp illuminate for either circuit?	Go to Step 18	Go to Step 21
9	1. Disconnect the lumbar pump/control module assembly. 2. Probe the battery positive voltage circuit of the lumbar control module with a test lamp that is connected to a good ground. Does the test lamp illuminate?	Go to Step 10	Go to Step 24
10	Connect a test lamp between the battery positive voltage circuit of the lumbar control module and the		

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

	ground circuit of the lumbar control module. Does the test lamp illuminate?	Go to Step 11	Go to Step 25
11	<ol style="list-style-type: none"> 1. Probe one of the lumbar control circuits of the lumbar control module with a test lamp that is connected to a good ground. 2. Press the appropriate lumbar switch. Does the test lamp illuminate?	Go to Step 20	Go to Step 23
12	<ol style="list-style-type: none"> 1. Disconnect the lumbar pump/control module assembly. 2. Probe the inoperative lumbar function inflate control circuit of the lumbar control module with a test lamp that is connected to a good ground. 3. Press the appropriate lumbar INFLATE switch. Does the test lamp illuminate?	Go to Step 17	Go to Step 15
13	<ol style="list-style-type: none"> 1. Disconnect the lumbar pump/control module assembly. 2. Probe the inoperative lumbar function deflate control circuit of the lumbar control module with a test lamp that is connected to a good ground. Does the test lamp illuminate?	Go to Step 19	Go to Step 17
14	Test the deflate control circuit of the inoperative lumbar function for a high resistance or an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 28	Go to Step 22
15	Test the inflate control circuit of the inoperative lumbar function for a high resistance or an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 28	Go to Step 16
16	Test the battery positive voltage circuit of the lumbar switch for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 28	Go to Step 22
17	Test the battery positive voltage circuit of the lumbar pump/control module assembly for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 28	Go to Step 20
	Test the appropriate lumbar inflate control circuit for a short to voltage. Refer to Circuit Testing and Wiring		

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

18	Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 28	Go to Step 22
19	Test the appropriate lumbar deflate control circuit for a short to voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 28	Go to Step 20
20	Perform a mechanical inspection of the lumbar pump/control module assembly and bladders for air leaks, pinched air lines, and a blocked exhaust port. Refer to Lumbar Bladder Replacement . Did you find and correct the condition?	Go to Step 28	Go to Step 21
21	Inspect for poor connections at the harness connector of the lumbar pump/control module assembly. Refer to Testing for Intermittent Conditions and Poor Connections and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 28	Go to Step 26
22	Inspect for poor connections at the harness connector of the lumbar switch. Refer to Testing for Intermittent Conditions and Poor Connections and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 28	Go to Step 27
23	Repair the open in the battery positive voltage circuit of the lumbar switch. Refer to Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 28	-
24	Repair the short to ground or open in the battery positive voltage circuit of the lumbar pump/control module assembly. Refer to Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 28	-
25	Repair the high resistance or open in the ground circuit of the lumbar pump/control module assembly. Refer to Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 28	-
26	Replace the lumbar pump/control module assembly. Refer to Lumbar Pump Replacement . Did you complete the replacement?	Go to Step 28	-
27	Replace the lumbar switch. Refer to Lumbar Switch Replacement . Did you complete the replacement?	Go to Step 28	-
28	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

HEATED/COOLED SEATS INOPERATIVE

Diagnostic Aids

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

In order to perform valid tests when diagnosing the climate control seat system, the ignition must be cycled OFF then ON between each test in order to reset the climate control seat module.

A short to ground in the heated/cool ventilation module HEAT control circuit will open the HTDST fuse when the heat mode is selected, and the heat mode will be inoperative. However, when the COOL mode is selected, the system will operate normally.

A short to ground in the heated/cool ventilation module COOL control circuit will open the HTDST fuse when the cool mode is selected and the system will be inoperative. However, when the HEAT mode is selected, the system operate normally.

Test Description

The number below refer to the step numbers on the diagnostic table.

3: This step determines if the climate control seat module turns ON by using the current state of the blower motor. While performing this test, pay close attention to the blower motor because it may operate at a low RPM and for a short period of time. Listen for a low audible noise or feel for light air from the exhaust duct.

Heated/Cooled Seats Inoperative

Step	Action	Value(s)	Yes	No
Schematic Reference: <u>Driver Seat Schematics</u> or <u>Passenger Seat Schematics</u> Connector End View Reference: <u>Power Seat Systems Connector End Views</u> or <u>HVAC Connector End Views</u> in HVAC Systems - Automatic DEFINITION: This diagnostic table is used to diagnosis the heat and cool seat modes.				
1	Did you review the heated/cooled seat operation and perform the necessary inspections?	-	Go to Step 2	Go to Symptoms - Seats
2	Verify that the Heated/Cooled Seat Inoperative complaint is present. Does the heated/cool seat system operate as described in the system description and operation?	-	Go to Testing for Intermittent Conditions and Poor Connections in Wiring Systems	Go to Step 3
3	1. Turn ON the ignition, with the engine OFF. 2. Access the heated/cool seat blower motor in order to verify operation. 3. Press the heated/cool seat switch for the HEAT mode. Does the blower motor operate for approximately 4-60 seconds then shut down?	-	Go to Step 12	Go to Step 4

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

4	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the climate control seat module connector C1. 3. Measure the voltage from the battery positive voltage circuit of the climate control seat module to a good ground. <p>Does the voltage measure within the specified range?</p>	9-16 V	Go to Step 5	Go to Step 39
5	<p>Measure the voltage from the battery positive voltage circuit of the climate control seat module to the ground circuit of the climate control seat module.</p> <p>Does the voltage measure within the specified range?</p>	9-16 V	Go to Step 6	Go to Step 40
6	<ol style="list-style-type: none"> 1. Turn ON the ignition, with the engine OFF. 2. Measure the voltage from the ignition 1 voltage circuit of the climate control seat module to a good ground. <p>Does the voltage measure within the specified range?</p>	9-16 V	Go to Step 7	Go to Step 41
7	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Connect the climate control seat module connector C1. 3. Turn ON the ignition, with the engine OFF. 4. With the climate control seat system OFF, measure the voltage from the HVAC heated/cool seat mode signal circuit of the climate control seat module. <p>Does the voltage measure near the specified value?</p>	12 V	Go to Step 8	Go to Step 17
8	<p>While measuring the voltage from the HVAC heated/cool seat mode signal circuit of the climate control seat module, press the heated/cool seat switch.</p> <p>Does the measured voltage change state?</p>	-	Go to Step 9	Go to Step 18
	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the heated/cool seat blower motor connector. 			

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

9	<ol style="list-style-type: none"> 3. Turn ON the ignition, with the engine OFF. 4. Measure the voltage from the voltage reference circuit of the blower motor to a good ground. <p>Does the voltage measure within the specified range?</p>	6-12 V	Go to Step 10	Go to Step 22
10	<ol style="list-style-type: none"> 1. Turn the ignition OFF. 2. Turn the ignition ON, with the engine OFF. 3. Measure the voltage from the speed control circuit of the blower motor to a good ground. 4. Press the heated/cool seat switch. <p>Does the voltage measure within the specified range?</p>	1.5-12.0 V	Go to Step 11	Go to Step 20
11	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Turn ON the ignition, with the engine OFF. 3. Measure the voltage from the speed control circuit of the blower motor to the low reference circuit of the blower motor. 4. Press the heated/cool seat switch. <p>Does the voltage measure within the specified range?</p>	1.5-12.0 V	Go to Step 31	Go to Step 21
12	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Turn ON the ignition, with the engine OFF. <p>Measure the voltage from the tach signal circuit of the blower motor to a good ground. Does the voltage measure within the specified range?</p>	4-16 V	Go to Step 13	Go to Step 23
13	<ol style="list-style-type: none"> 1. Disconnect the climate control seat module connector C2. 2. Measure the resistance between the temperature sensor signal circuit and the low reference circuit of the seat cushion temperature sensor. 	63-18,000 ohms		

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

	Does the resistance measure within the specified range?		Go to Step 14	Go to Step 25
14	Measure the resistance between the ventilation module heat control circuit and the ventilation module cool control circuit of the seat cushion ventilation module. Does the resistance measure less than the specified value?	7.5 ohms	Go to Step 15	Go to Step 27
15	Measure the resistance between the temperature sensor signal circuit and the low reference circuit of the seat back temperature sensor. Does the resistance measure within the specified range?	63-18,000 ohms	Go to Step 16	Go to Step 26
16	Measure the resistance between the ventilation module heat control circuit and the ventilation module cool control circuit of the seat back ventilation module. Does the resistance measure less than the specified value?	7.5 ohms	Go to Step 24	Go to Step 28
17	Test the HVAC heated/cooled seat mode signal circuit between the HVAC control module and the climate control seat module for a short to ground. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 36
18	Test the HVAC heated/cool seat mode signal circuit between the HVAC control module and the climate control seat module for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 19
19	Test the HVAC heated/cooled seat mode signal circuit between the HVAC control module and the climate control seat module for a short to battery voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 38
20	Test the speed control circuit of the blower motor for a short to ground or an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 36
21	Test the low reference circuit of the blower motor for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 36

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

22	Test the voltage reference circuit of the blower motor for a short to ground or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 36
23	Test the tach signal circuit of the blower motor for a short to ground or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 36
24	Test the tach signal circuit of the blower motor for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 29
25	Test the temperature sensor signal circuit and the low reference circuit of the seat cushion temperature sensor for an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 32
26	Test the temperature sensor signal circuit and the low reference circuit of the seat back temperature sensor for an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 33
27	Test the ventilation module heat control circuit and the ventilation module cool control circuit of the seat cushion ventilation module for an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 34
28	Test the ventilation module heat control circuit and the ventilation module cool control circuit of the seat back ventilation module for an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 35
29	Test the temperature sensor signal circuit of the seat cushion temperature sensor for a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 30
30	Test the temperature sensor signal circuit of the seat back temperature sensor for a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 36

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

31	Test the speed control circuit of the blower motor for a short to battery voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 37
32	Test the temperature sensor signal circuit of the seat cushion temperature sensor for a short to battery voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 34
33	Test the temperature sensor signal circuit of the seat back temperature sensor for a short to battery voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 35
34	Inspect for poor connections at the harness connector of the seat cushion heated/cool ventilation module. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 42
35	Inspect for poor connections at the harness connector of the seat back heated/cool ventilation module. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 43
36	Inspect for poor connections at the harness connector of the climate control seat module. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 44
37	Inspect for poor connections at the harness connector of the heated/cool seat blower motor. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 47	Go to Step 45
38	Inspect for poor connections at the harness connector of the HVAC control module. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems.	-		

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

	Did you find and correct the condition?		Go to Step 47	Go to Step 46
39	Repair the short to ground or open in the battery positive voltage circuit of the climate control seat module. Refer to <u>Wiring Repairs</u> in Wiring Systems. Did you complete the repair?	-	Go to Step 47	-
40	Repair the open in the ground circuit of the climate control seat module. Refer to <u>Wiring Repairs</u> in Wiring Systems. Did you complete the repair?	-	Go to Step 47	-
41	Repair the open in the ignition 1 voltage circuit of the climate control seat module. Refer to <u>Wiring Repairs</u> in Wiring Systems. Did you complete the repair?	-	Go to Step 47	-
42	Replace the heated/cool seat cushion ventilation module. Refer to <u>Module Replacement - Ventilation Heat and Cool - Driver Seat Cushion</u> or <u>Module Replacement - Ventilation Heat and Cool - Passenger Seat Cushion</u> . Did you complete the replacement?	-	Go to Step 47	-
43	Replace the heated/cool seat back ventilation module. Refer to <u>Module Replacement - Ventilation Heat and Cool - Driver Seat Back</u> or <u>Module Replacement - Ventilation Heat and Cool - Passenger Seat Back</u> . Did you complete the replacement?	-	Go to Step 47	-
44	Replace the climate control seat module. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 47	-
45	Replace the heated/cooled seat blower motor. Refer to <u>Blower Replacement - Ventilation Heat and Cool - Driver Seat</u> or <u>Blower Replacement - Ventilation Heat and Cool - Passenger Seat</u> . Did you complete the replacement?	-	Go to Step 47	-
46	Replace the HVAC control module. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 47	-
47	Operate the system in order to verify the repair. Did you correct the condition?	-	System OK	Go to Step 2

REPAIR INSTRUCTIONS

SEAT REPLACEMENT

Removal Procedure

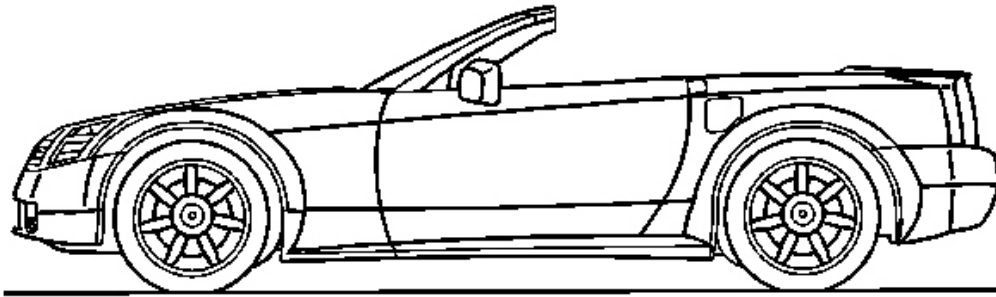


Fig. 13: View Of Folding Top Down
Courtesy of GENERAL MOTORS CORP.

1. Place a protective cover over the sill plate and door trim panel and lower the folding top to provide additional space for seat removal.
2. Tilt the steering wheel full up, if required.
3. Disable the SIR system. Refer to **SIR Disabling and Enabling Zone 7** or to **SIR Disabling and Enabling Zone 9** in SIR.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

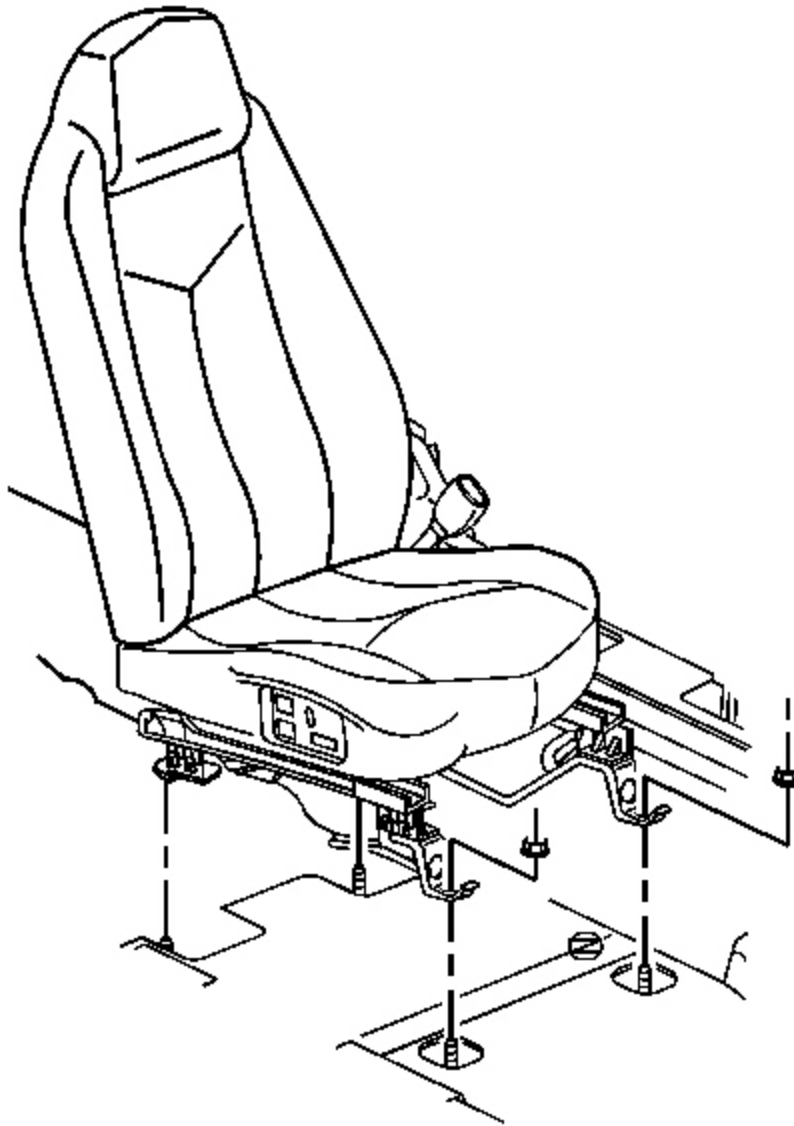


Fig. 14: View Of Seat & Components
Courtesy of GENERAL MOTORS CORP.

4. Position the seat rearward.
5. Remove the push pins and covers from the front of the adjuster legs.
6. Remove the nuts from the front of the adjuster legs.
7. Position the seat forward.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

8. Remove the nuts attaching the rear adjuster legs.
9. Disconnect the seat electrical connector.
10. Remove the seatbelt retaining nut and the seatbelt from the anchor stud.
11. Remove the seat.

Installation Procedure

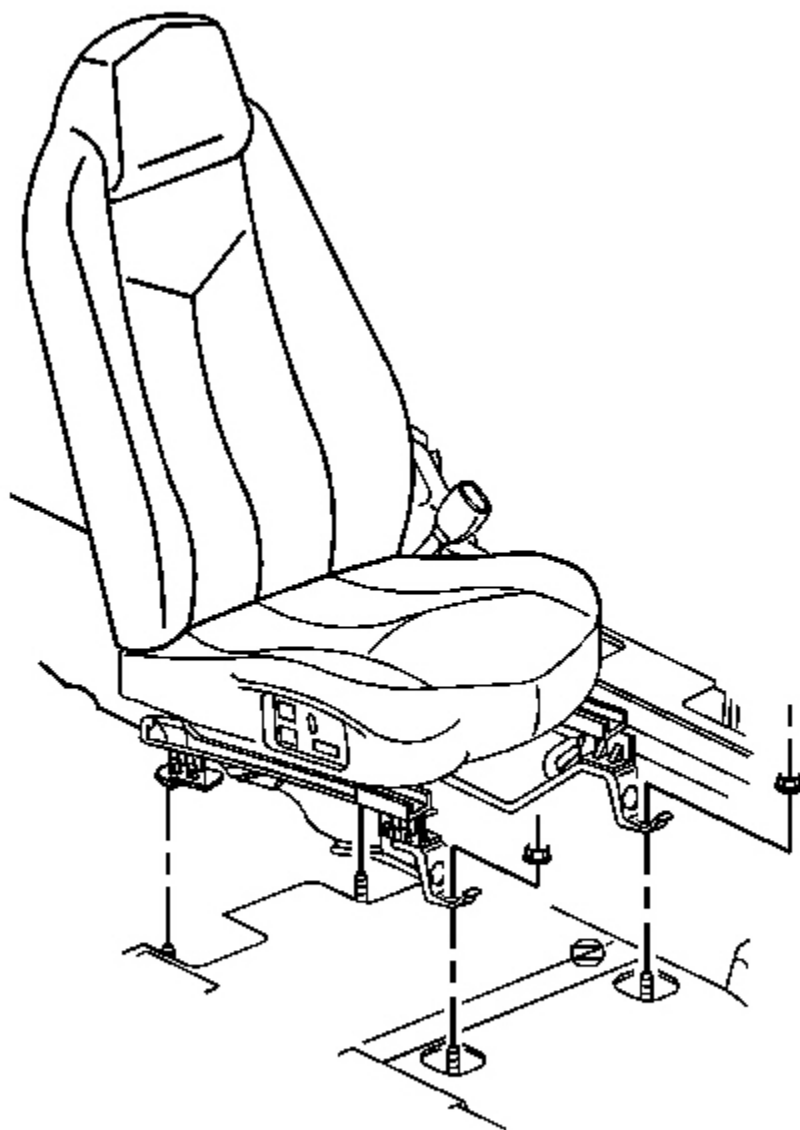


Fig. 15: View Of Seat & Components
Courtesy of GENERAL MOTORS CORP.

1. Position the seat on the rear studs.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the seatbelt and the retaining nut to the seat stud.

Tighten: Tighten the nut to 41 N.m (31 lb ft).

3. Lift the front of the seat and connect the electrical connector.
4. Install the nut to the rear inboard stud.
5. Install the nut to the rear outboard stud.

Tighten: Tighten the nuts to 50 N.m (37 lb ft).

6. Move the seat rearward.
7. Install the nuts to the front adjuster legs.

Tighten: Tighten the nuts to 50 N.m (37 lb ft).

8. Install the adjuster leg covers.
9. Secure the covers with push pins.
10. Enable the SIR system. Refer to SIR Disabling and Enabling Zone 7 or to SIR Disabling and Enabling Zone 9 in SIR.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

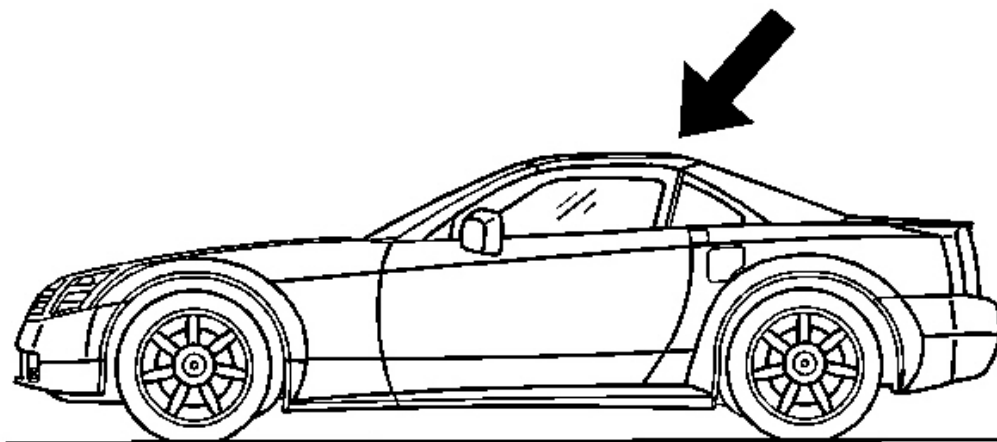


Fig. 16: View Of Folding Top

Courtesy of GENERAL MOTORS CORP.

11. Remove the protective cover and raise the folding top.

FINISH PANEL REPLACEMENT - DRIVER SEAT OUTER

Removal Procedure

1. Remove the seat from the vehicle. Refer to **Seat Replacement**.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

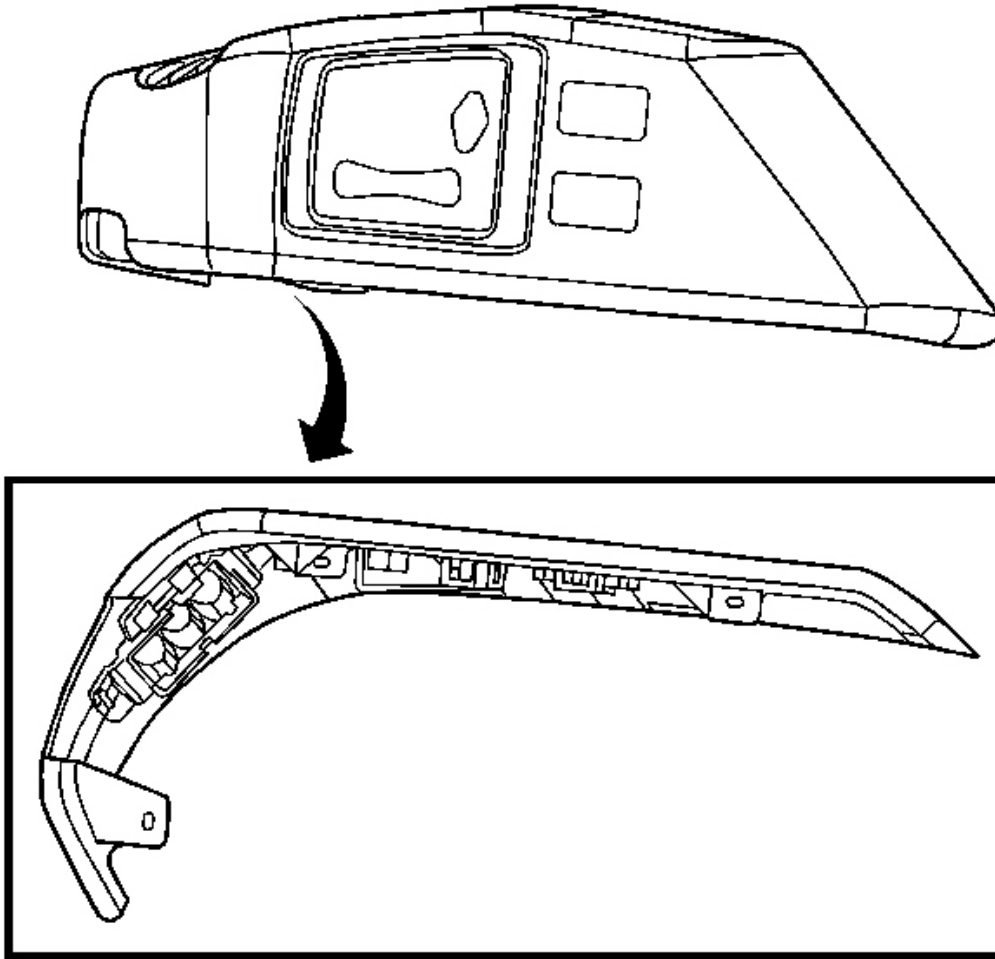


Fig. 17: View Of Finish Panel Bottom
Courtesy of GENERAL MOTORS CORP.

2. Remove the retaining screws at the bottom of the finish panel.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

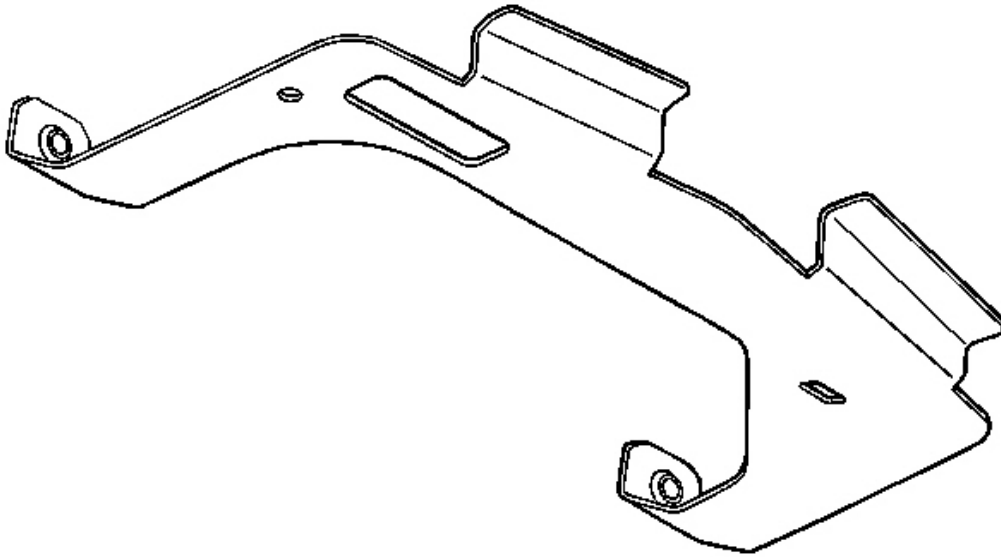


Fig. 18: View Of Bracket

Courtesy of GENERAL MOTORS CORP.

3. Remove the finish panel from the bracket by lifting upwards to disengage.

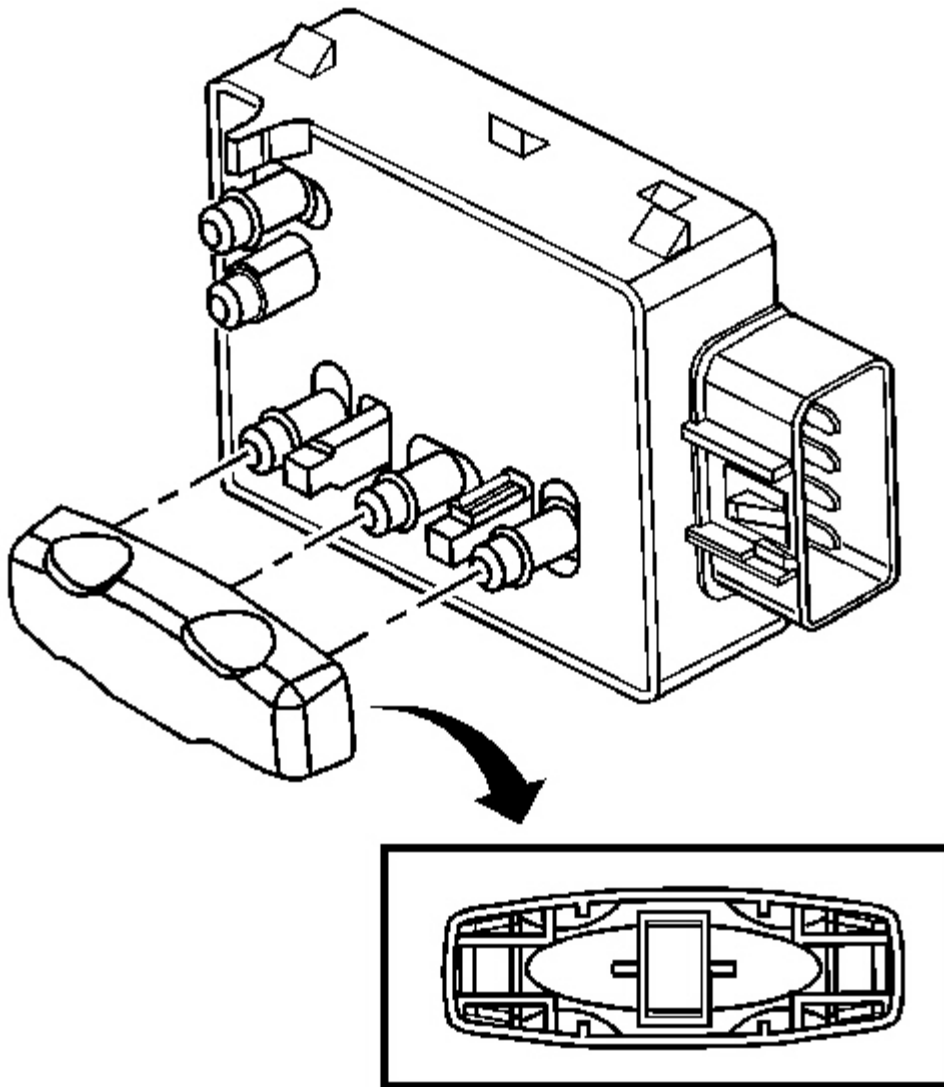


Fig. 19: View Of Seat Control Switch Knob
Courtesy of GENERAL MOTORS CORP.

4. Remove the seat control switch knob from the finish panel by pulling the knob outward.

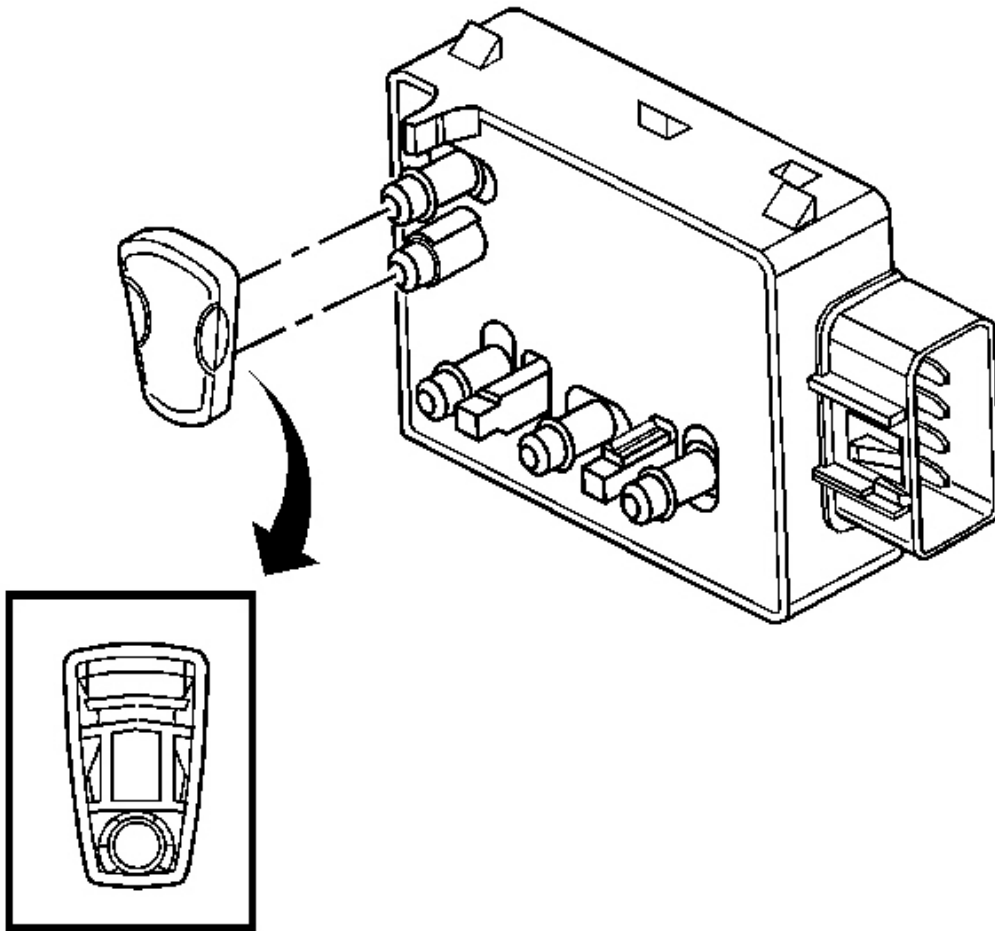


Fig. 20: View Of Seat Back Switch Knob
Courtesy of GENERAL MOTORS CORP.

5. Remove the seat back switch knob from the finish panel by pulling the knob outward.

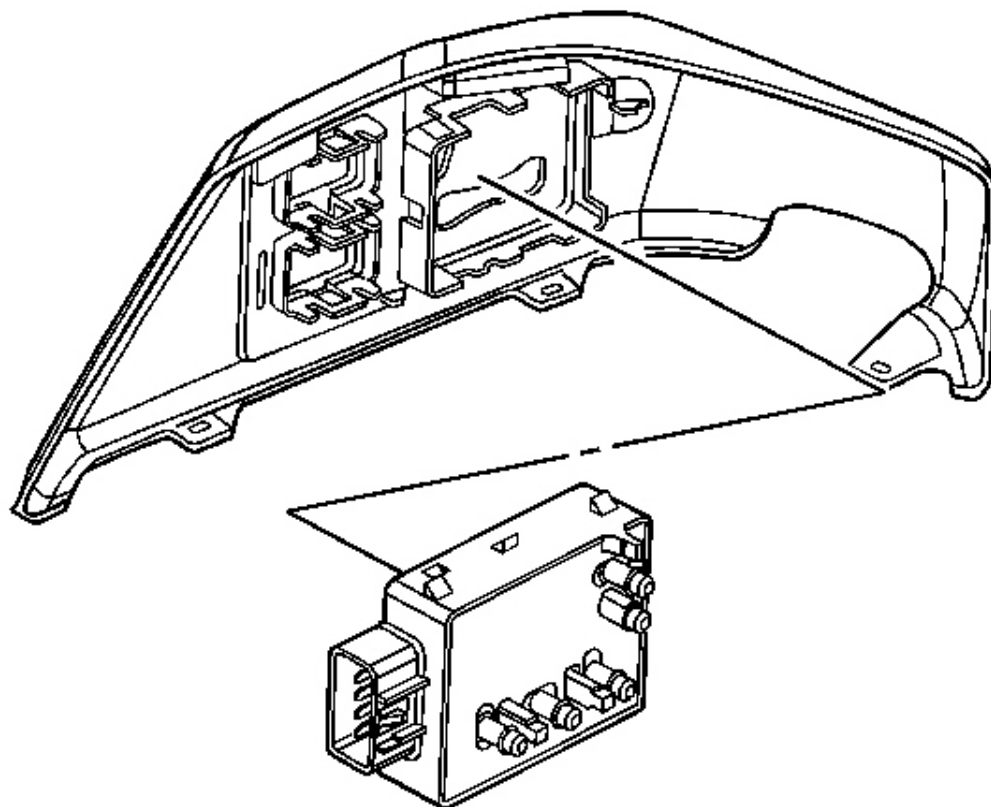


Fig. 21: View Of Seat Switches
Courtesy of GENERAL MOTORS CORP.

6. Using a flat-bladed tool, remove the following switches in order from the finish panel:
 1. The lumbar switch
 2. The seat control switch
 3. The memory switch
7. Remove the finish panel.

Installation Procedure

1. Position the finish panel to the seat.

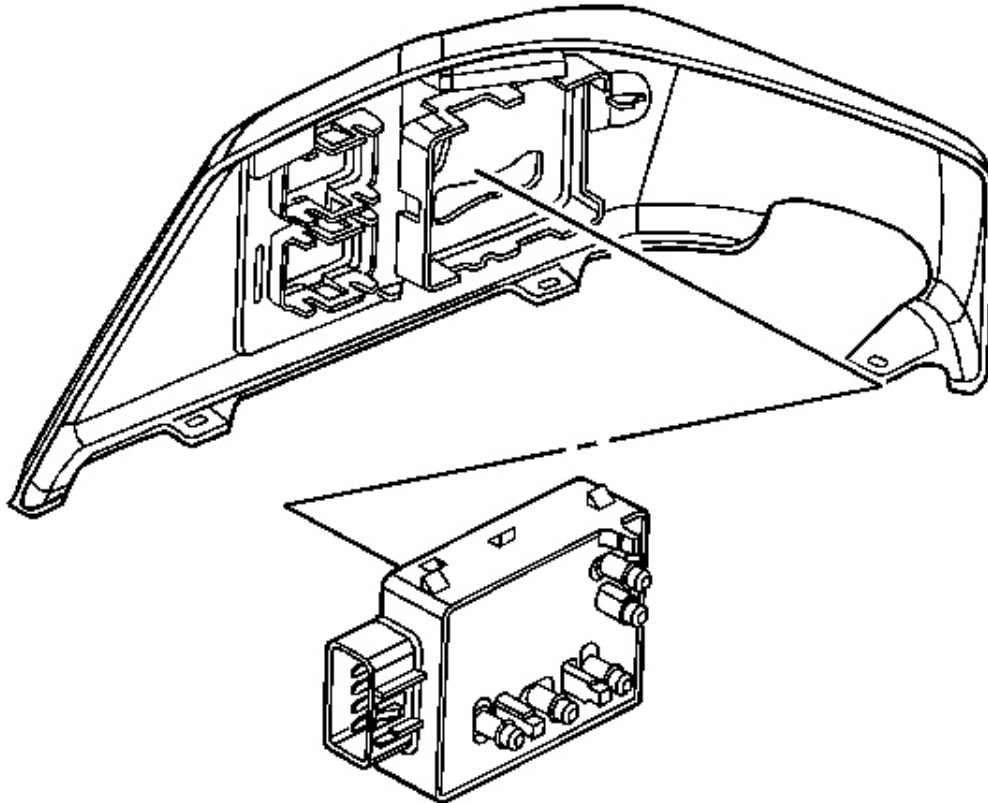


Fig. 22: View Of Seat Switches
Courtesy of GENERAL MOTORS CORP.

2. Install the following switches in order to the finish panel:
 1. The memory switch
 2. The seat control switch
 3. The lumbar switch

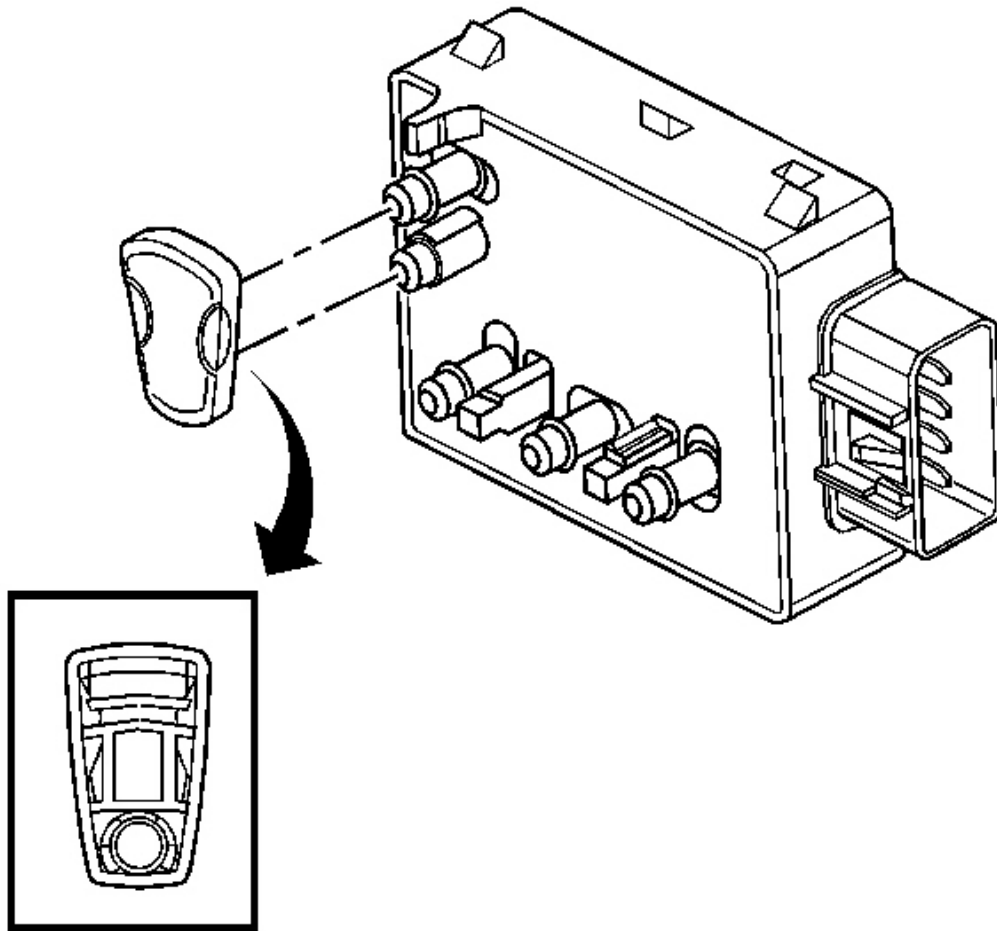


Fig. 23: View Of Seat Back Switch Knob
Courtesy of GENERAL MOTORS CORP.

3. Install the seat back switch knob to the finish panel by pushing the knob to engage the switch.

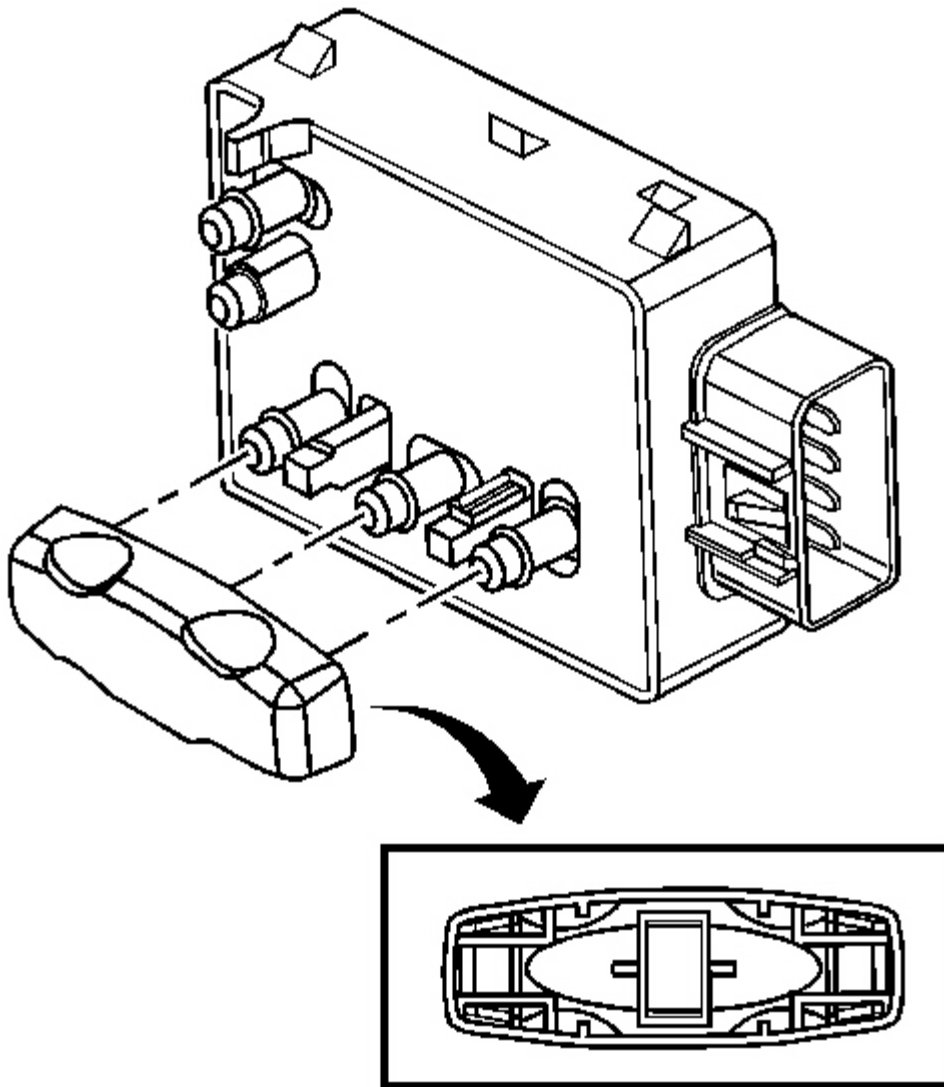


Fig. 24: View Of Seat Control Switch Knob
Courtesy of GENERAL MOTORS CORP.

4. Install the seat control switch knob to the finish panel by pushing the knob to engage the switch.

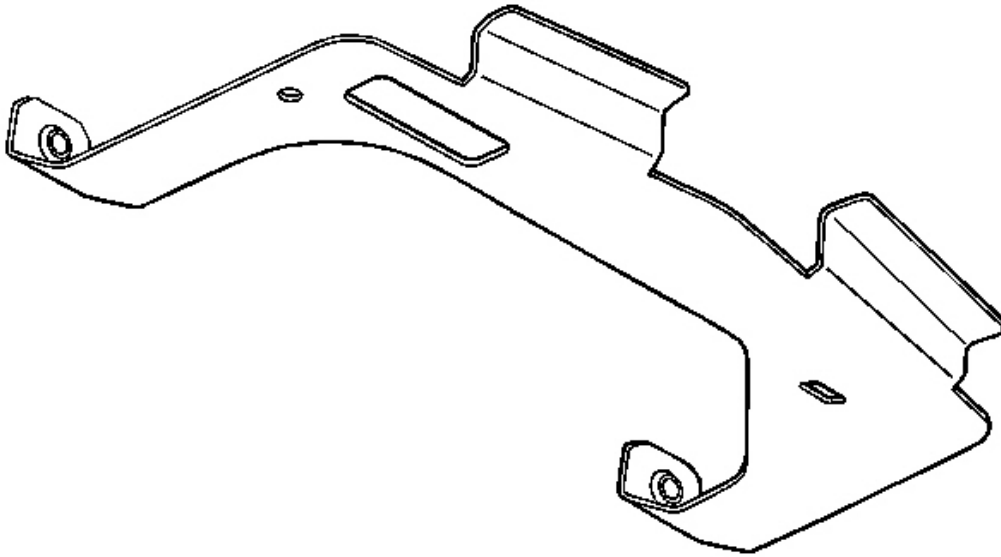


Fig. 25: View Of Bracket

Courtesy of GENERAL MOTORS CORP.

5. Install the upper edge of the finish panel to the bracket and swing the panel downward to engage.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

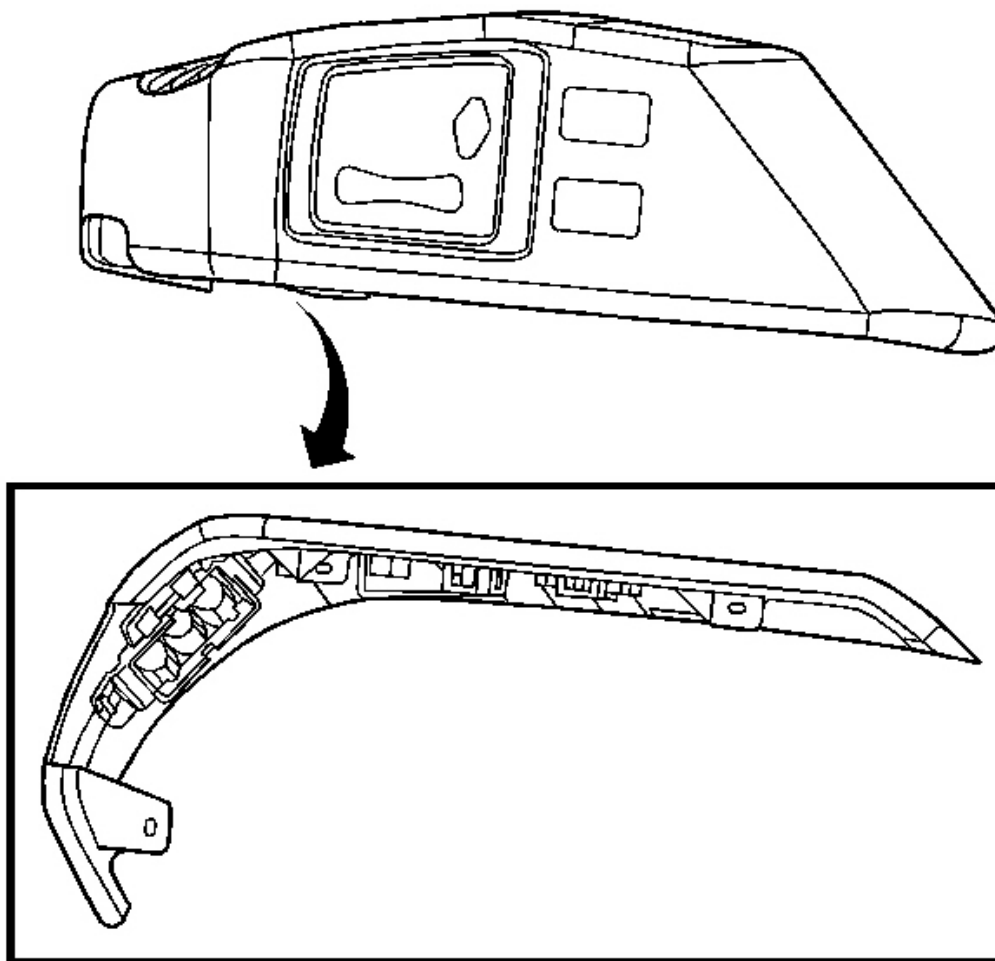


Fig. 26: View Of Finish Panel Bottom
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

6. Install the retaining screws at the bottom of the finish panel.

Tighten: Tighten the screws to 2.5 N.m (22 lb in).

7. Install the seat to the vehicle. Refer to Seat Replacement.

FINISH PANEL REPLACEMENT - PASSENGER SEAT OUTER

Removal Procedure

1. Remove the seat from the vehicle. Refer to **Seat Replacement**.

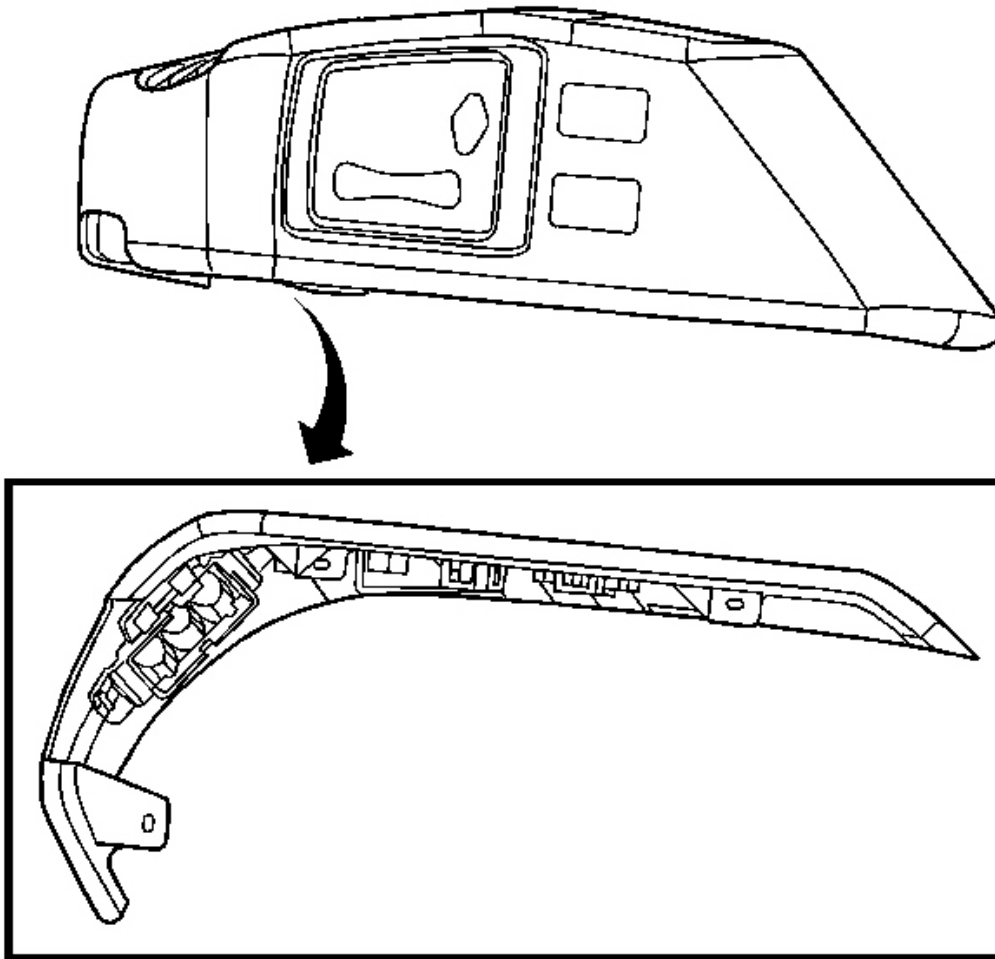


Fig. 27: View Of Finish Panel Bottom
Courtesy of GENERAL MOTORS CORP.

2. Remove the retaining screws at the bottom of the finish panel.

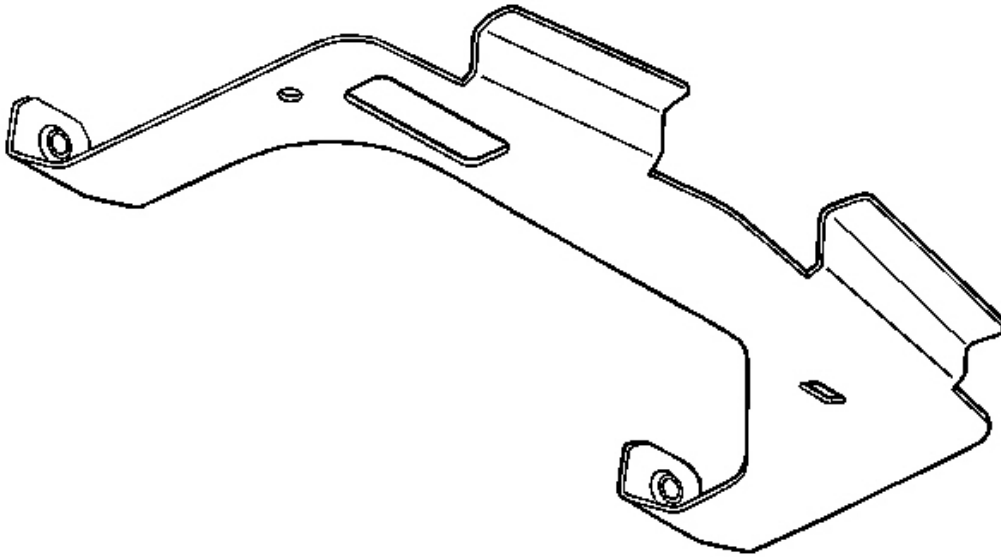


Fig. 28: View Of Bracket

Courtesy of GENERAL MOTORS CORP.

3. Remove the finish panel from the bracket by lifting upwards to disengage.

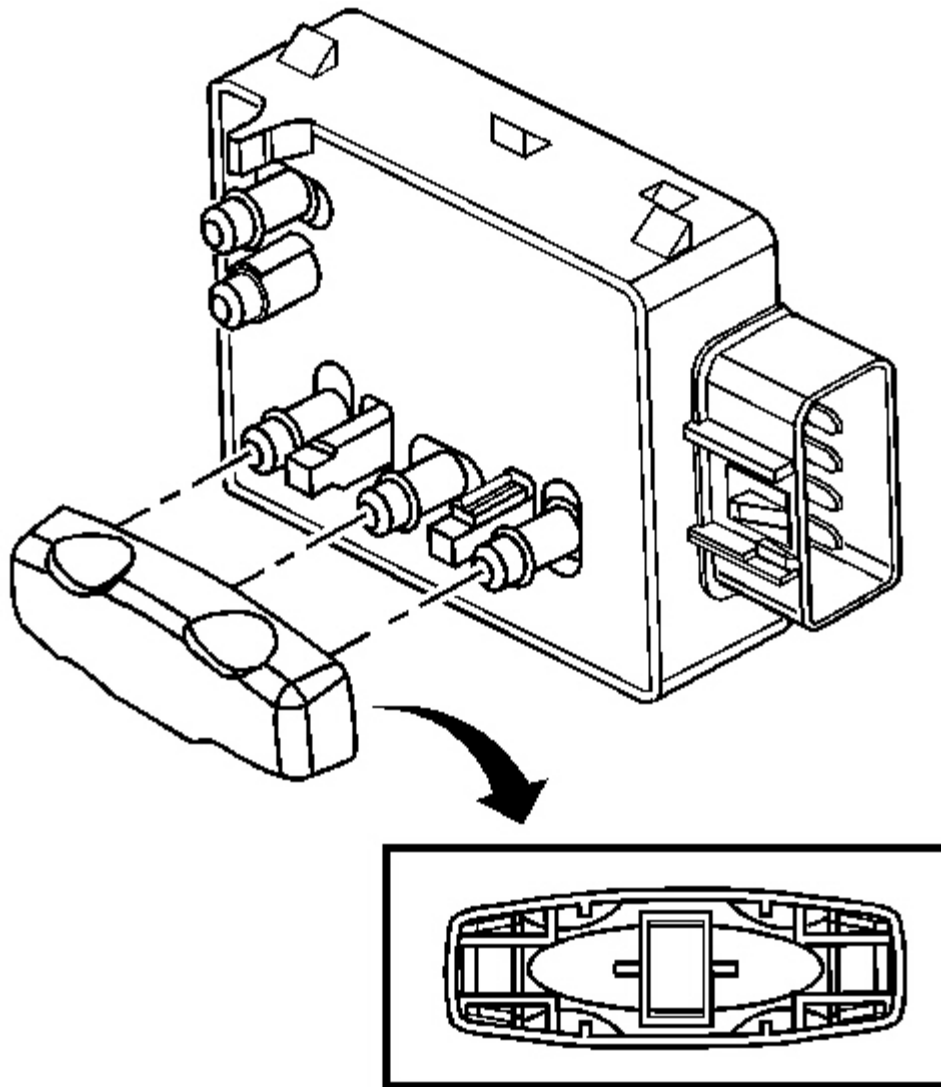


Fig. 29: View Of Seat Control Switch Knob
Courtesy of GENERAL MOTORS CORP.

4. Remove the seat control switch knob from the finish panel by pulling the knob outward.

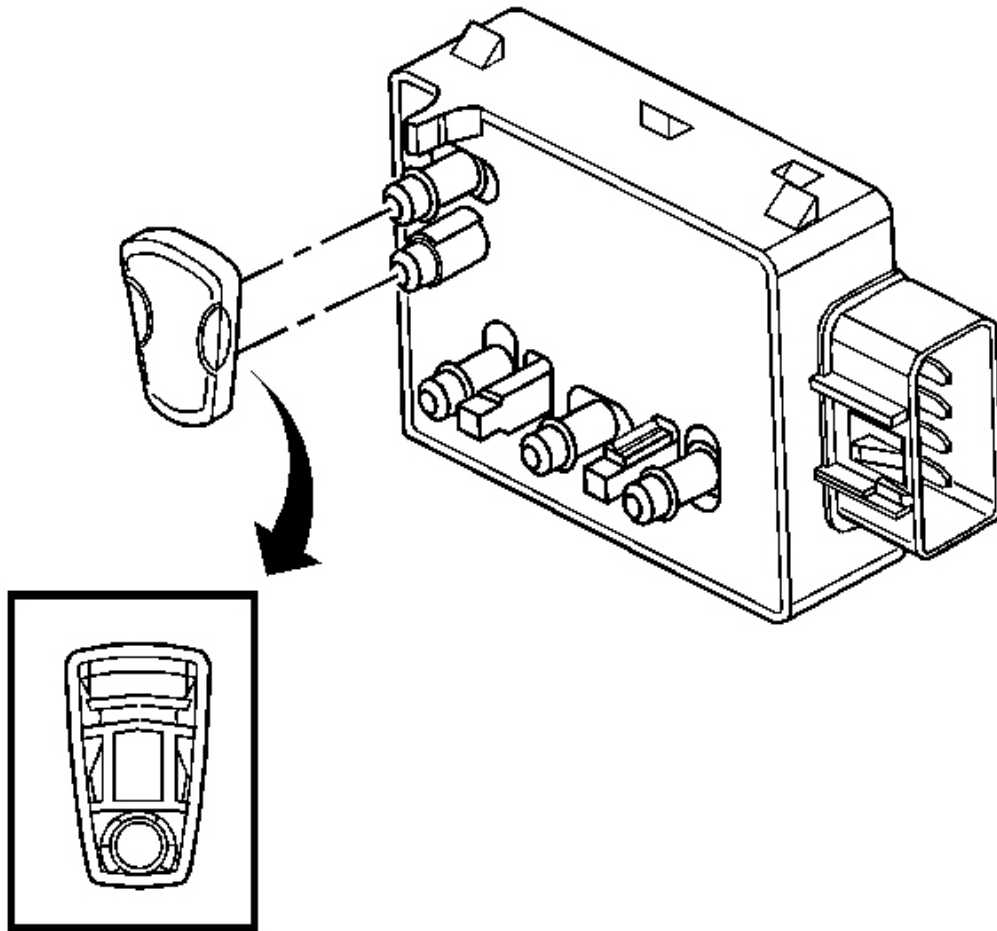


Fig. 30: View Of Seat Back Switch Knob
Courtesy of GENERAL MOTORS CORP.

5. Remove the seat back switch knob from the finish panel by pulling the knob outward.

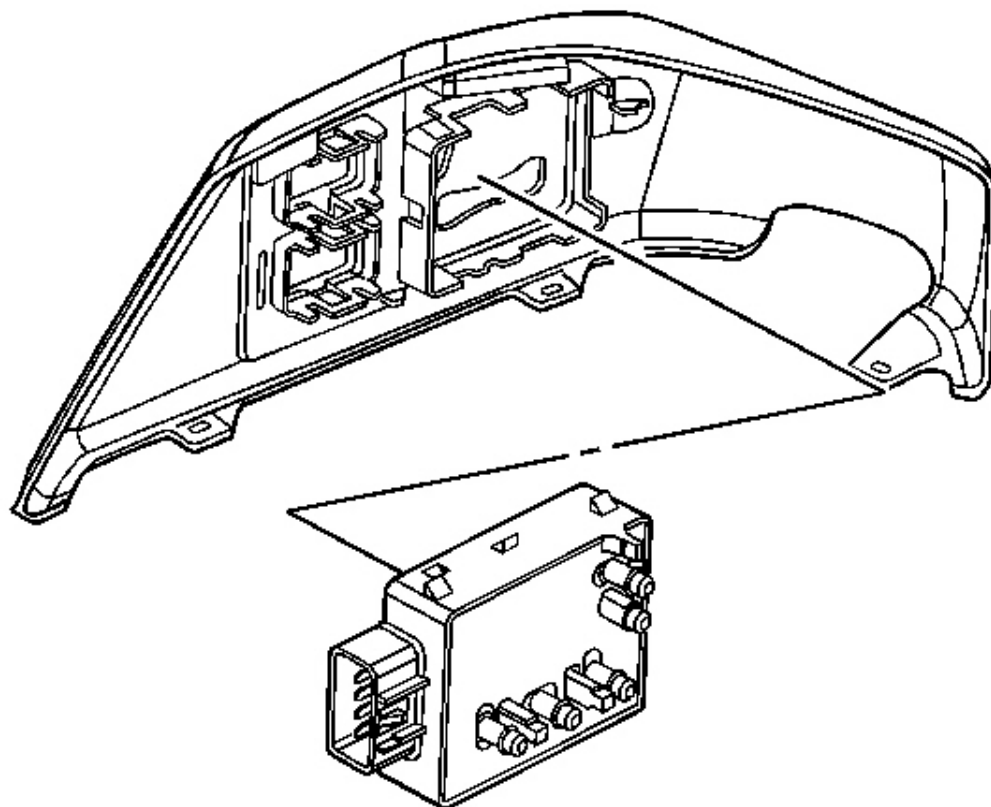


Fig. 31: View Of Seat Switches
Courtesy of GENERAL MOTORS CORP.

6. Using a flat-bladed tool, remove the following switches in order from the finish panel:
 1. The lumbar switch
 2. The seat control switch
 3. The memory switch
7. Remove the finish panel.

Installation Procedure

1. Position the finish panel to the seat.

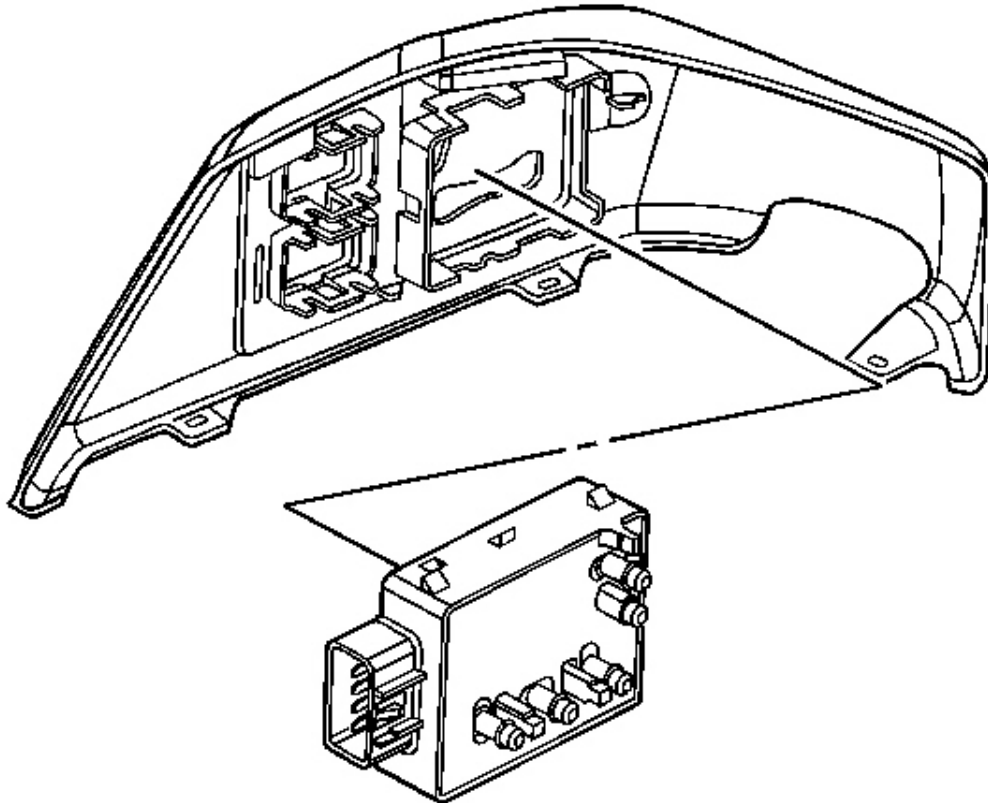


Fig. 32: View Of Seat Switches
Courtesy of GENERAL MOTORS CORP.

2. Install the following switches in order to the finish panel:
 1. The memory switch
 2. The seat control switch
 3. The lumbar switch

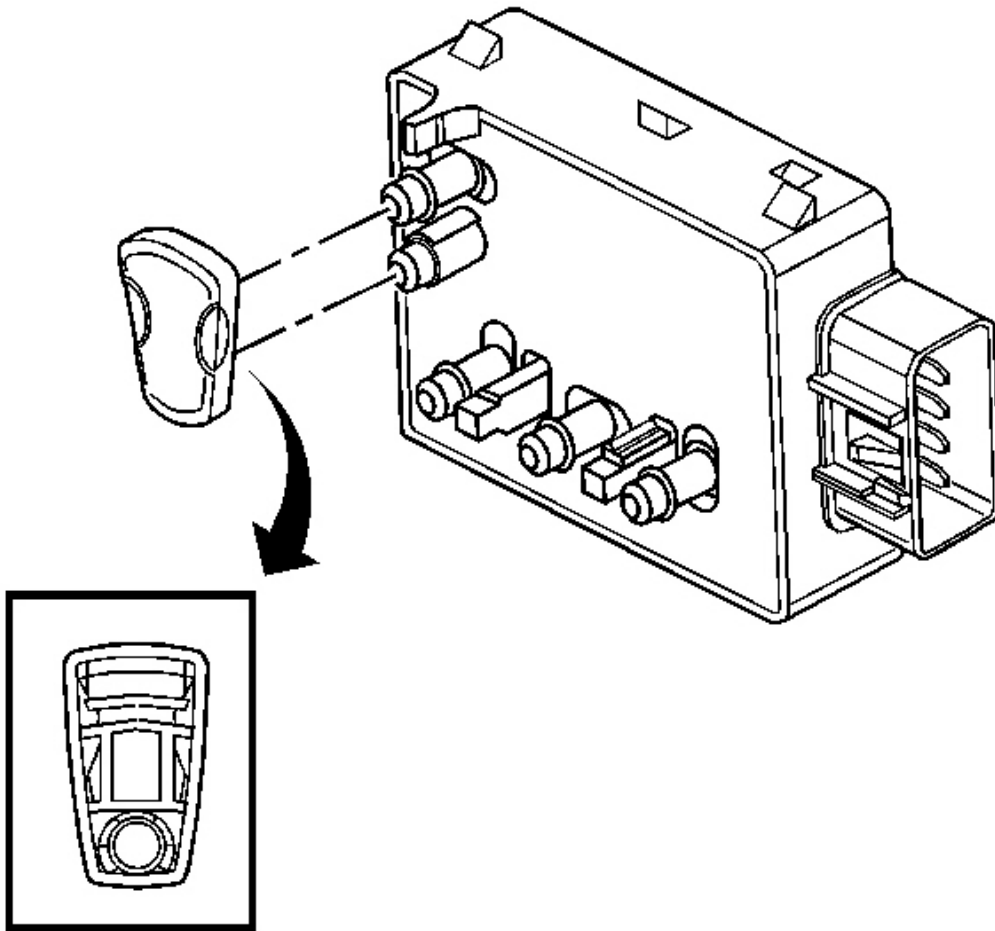


Fig. 33: View Of Seat Back Switch Knob
Courtesy of GENERAL MOTORS CORP.

3. Install the seat back switch knob to the finish panel by pushing the knob to engage the switch.

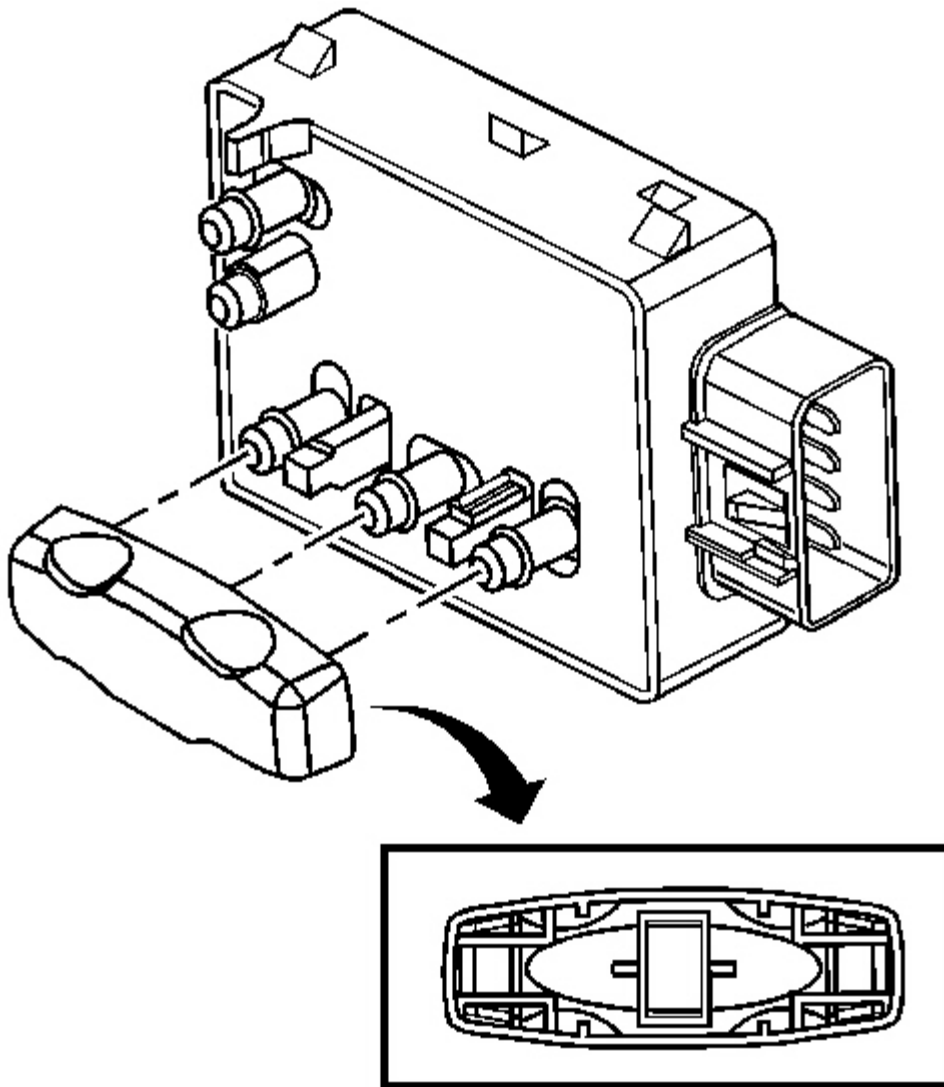


Fig. 34: View Of Seat Control Switch Knob
Courtesy of GENERAL MOTORS CORP.

4. Install the seat control switch knob to the finish panel by pushing the knob to engage the switch.

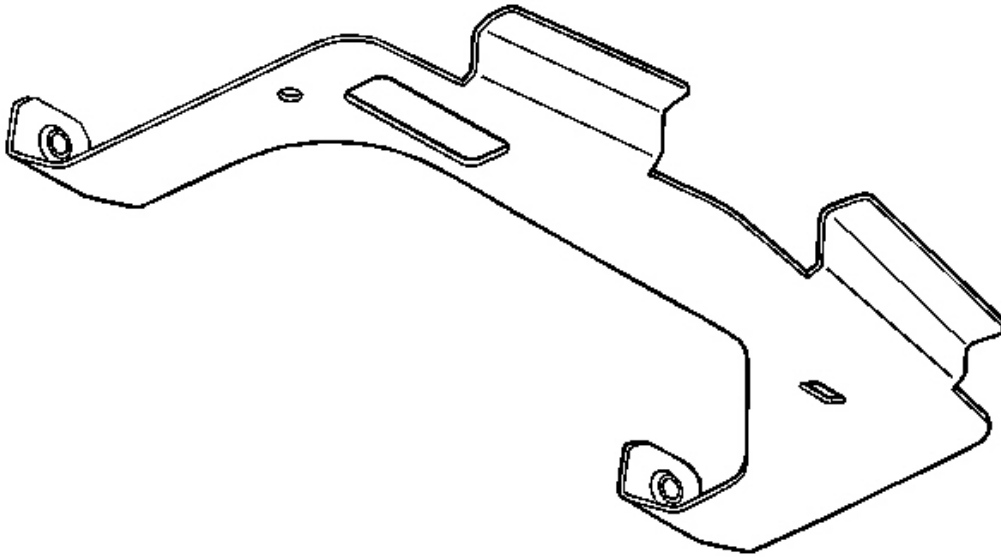


Fig. 35: View Of Bracket

Courtesy of GENERAL MOTORS CORP.

5. Install the upper edge of the finish panel to the bracket and swing the panel downward to engage.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

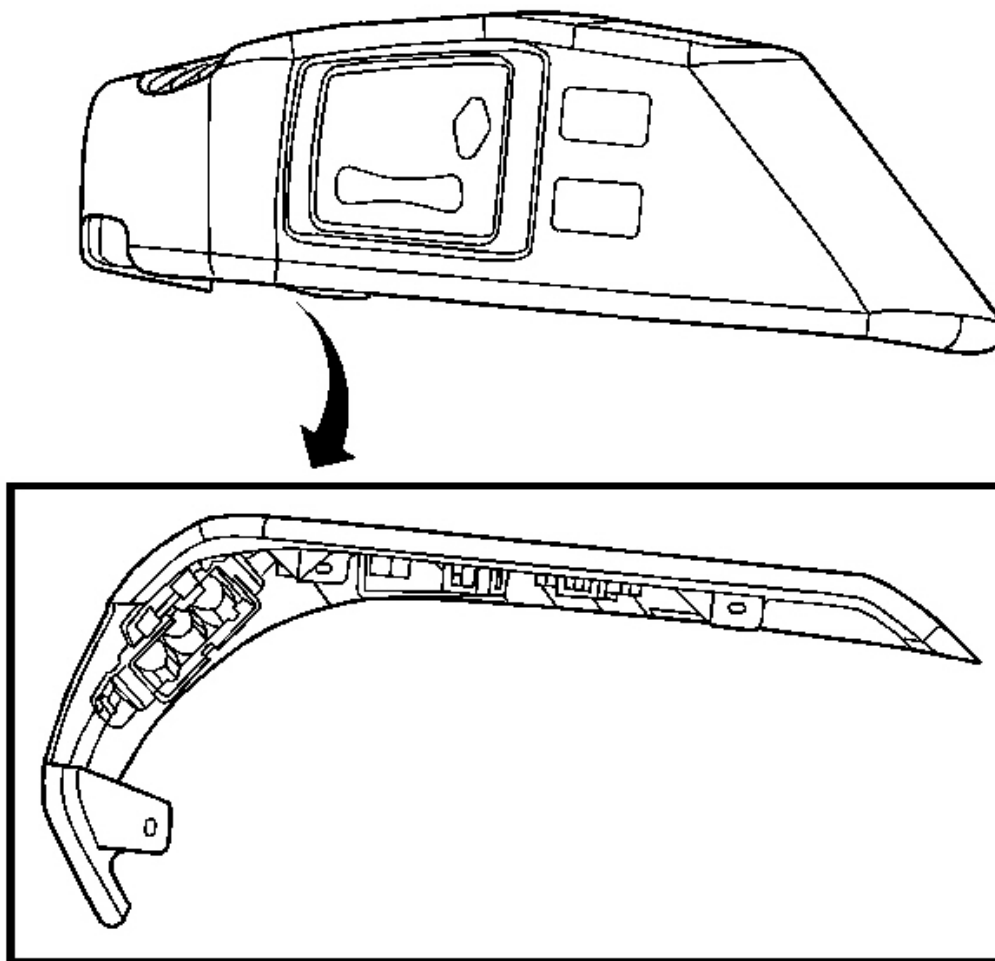


Fig. 36: View Of Finish Panel Bottom
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

6. Install the retaining screws at the bottom of the finish panel.

Tighten: Tighten the screws to 2.5 N.m (22 lb in).

7. Install the seat to the vehicle. Refer to Seat Replacement.

BRACKET REPLACEMENT - DRIVER SEAT REAR PANEL

Removal Procedure

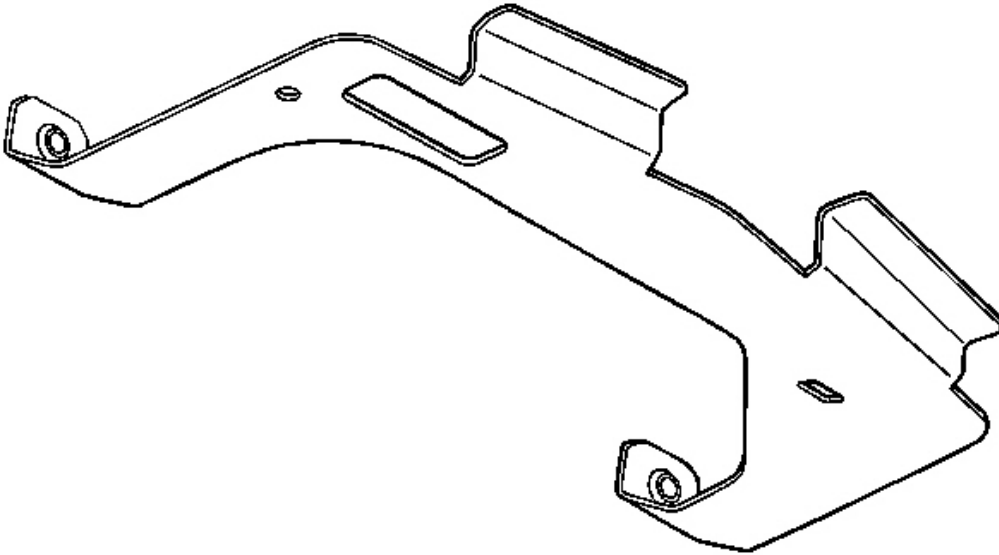


Fig. 37: View Of Bracket
Courtesy of GENERAL MOTORS CORP.

1. Remove the finish panel. Refer to **Finish Panel Replacement - Driver Seat Outer**.
2. Remove the retaining screws from the rear panel bracket and remove the bracket from the seat.

Installation Procedure

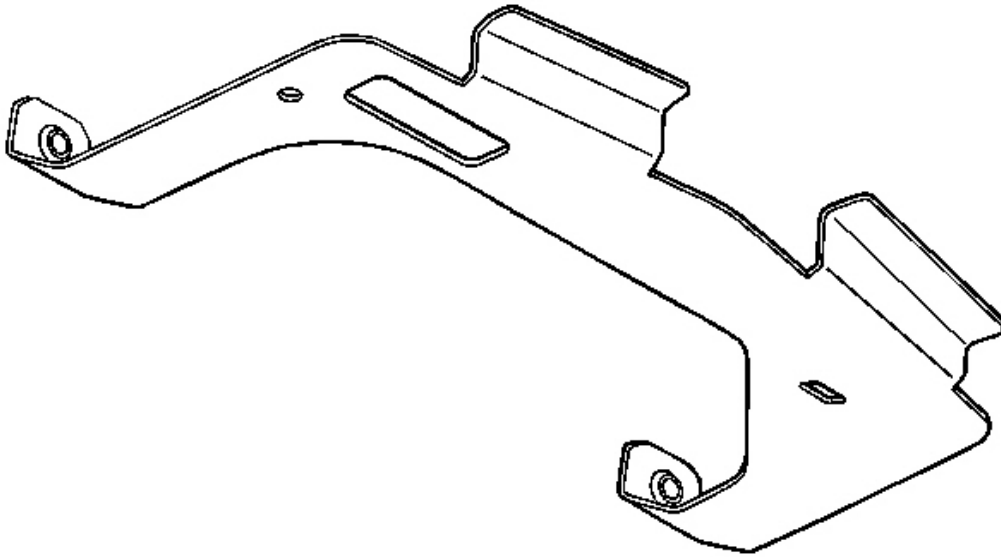


Fig. 38: View Of Bracket

Courtesy of GENERAL MOTORS CORP.

1. Position the rear panel bracket to the seat using 2 small punch tools to locate the bracket holes in the seat frame.
2. Remove 1 punch tool and install the retaining screw. Do NOT tighten.

NOTE: Refer to **Fastener Notice** in Cautions and Notices.

3. Repeat the procedure for the remaining screw.

Tighten: Tighten the screws to 2.5 N.m (22 lb in).

4. Install the finish panel. Refer to **Finish Panel Replacement - Driver Seat Outer**.

BRACKET REPLACEMENT - PASSENGER SEAT REAR PANEL

Removal Procedure

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

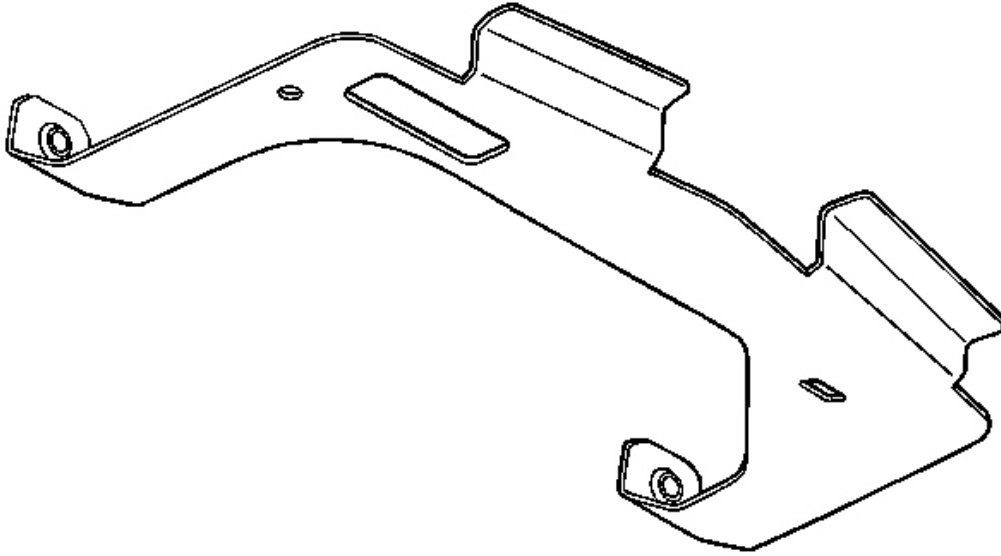


Fig. 39: View Of Bracket

Courtesy of GENERAL MOTORS CORP.

1. Remove the finish panel. Refer to **Finish Panel Replacement - Passenger Seat Outer**.
2. Remove the retaining screws from the rear panel bracket and remove the bracket from the seat.

Installation Procedure

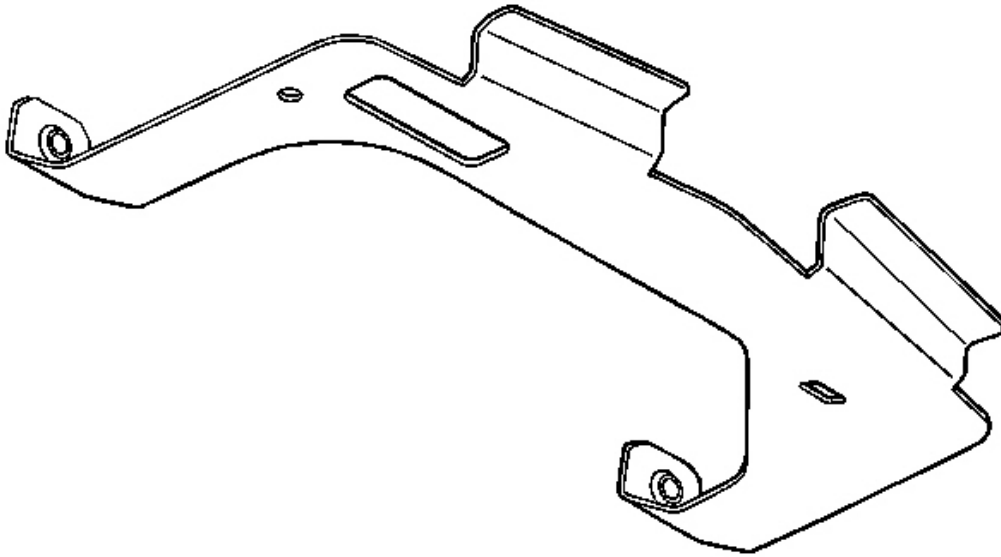


Fig. 40: View Of Bracket
Courtesy of GENERAL MOTORS CORP.

1. Position the rear panel bracket to the seat using 2 small punch tools to locate the bracket holes in the seat frame.
2. Remove 1 punch tool and install the retaining screw. Do NOT tighten.

NOTE: Refer to **Fastener Notice** in **Cautions and Notices**.

3. Repeat the procedure for the remaining screw.

Tighten: Tighten the screws to 2.5 N.m (22 lb in).

4. Install the finish panel. Refer to **Finish Panel Replacement - Passenger Seat Outer**.

SEAT CUSHION COVER REPLACEMENT - DRIVER SIDE

Removal Procedure

1. Remove the seat. Refer to **Seat Replacement**.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

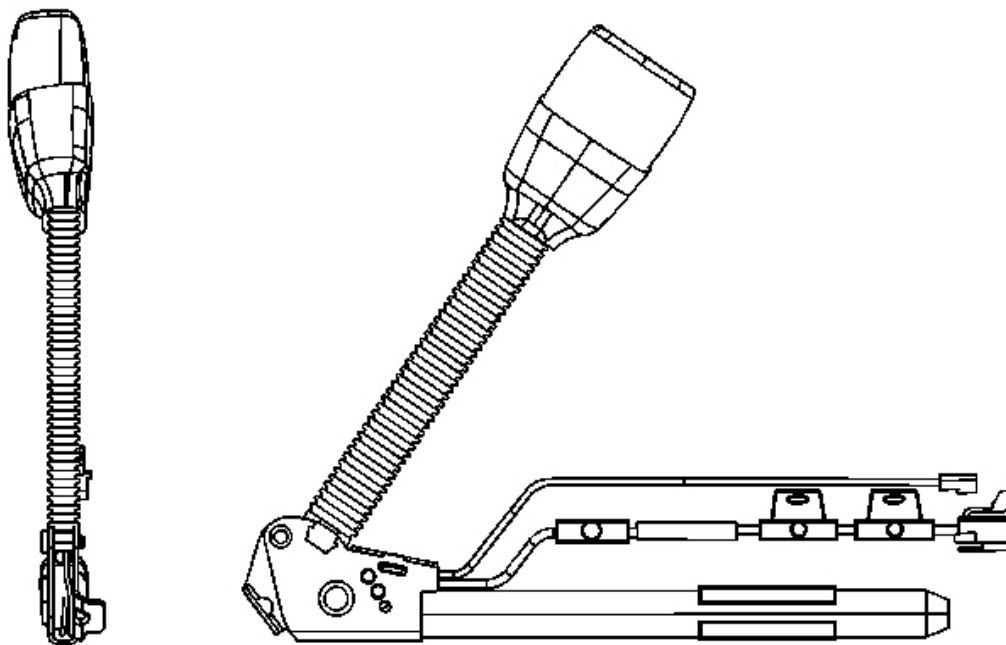


Fig. 41: View Of Seat Belt Buckle & Pretensioner
Courtesy of GENERAL MOTORS CORP.

2. Remove the seat belt buckle and pretensioner from the seat frame.
3. Remove the driver seat finish panel. Refer to **Finish Panel Replacement - Driver Seat Outer**.
4. Remove the driver seat rear panel bracket. Refer to **Bracket Replacement - Driver Seat Rear Panel**.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

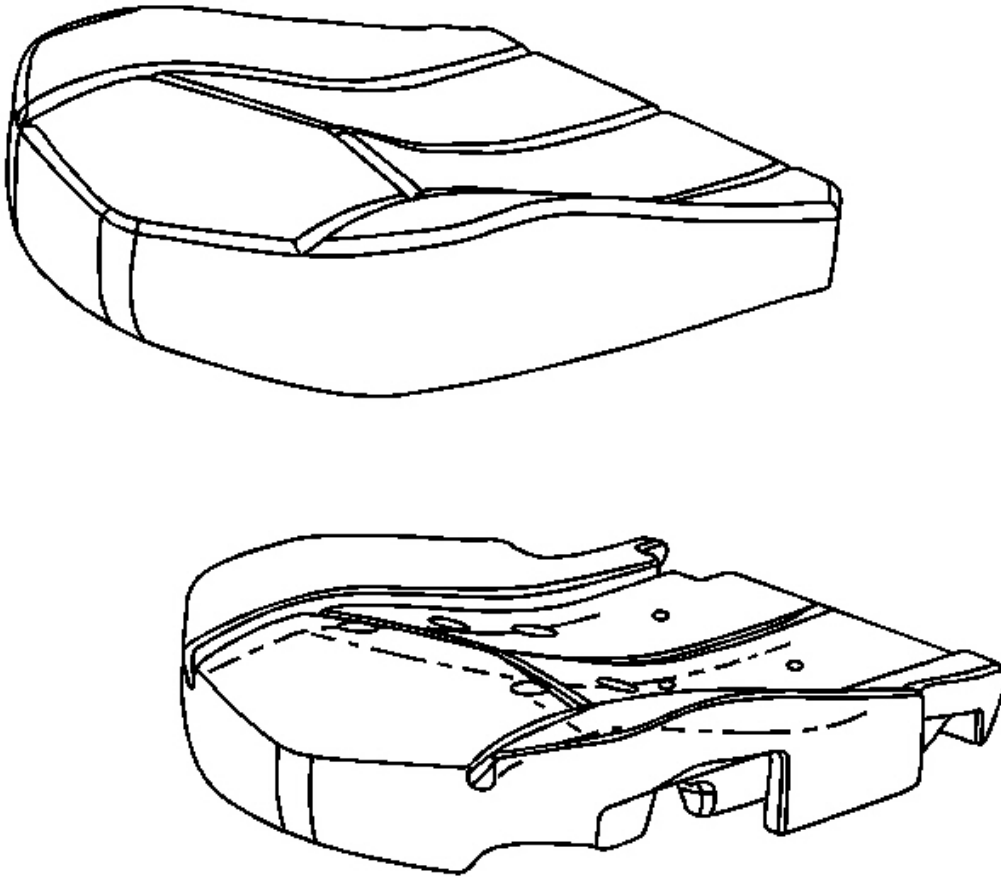


Fig. 42: View Of Cushion Cover & Seat Frame
Courtesy of GENERAL MOTORS CORP.

5. Remove the retaining clips which secure the cushion cover to the seat frame.
6. Remove the cover from the seat.

Installation Procedure

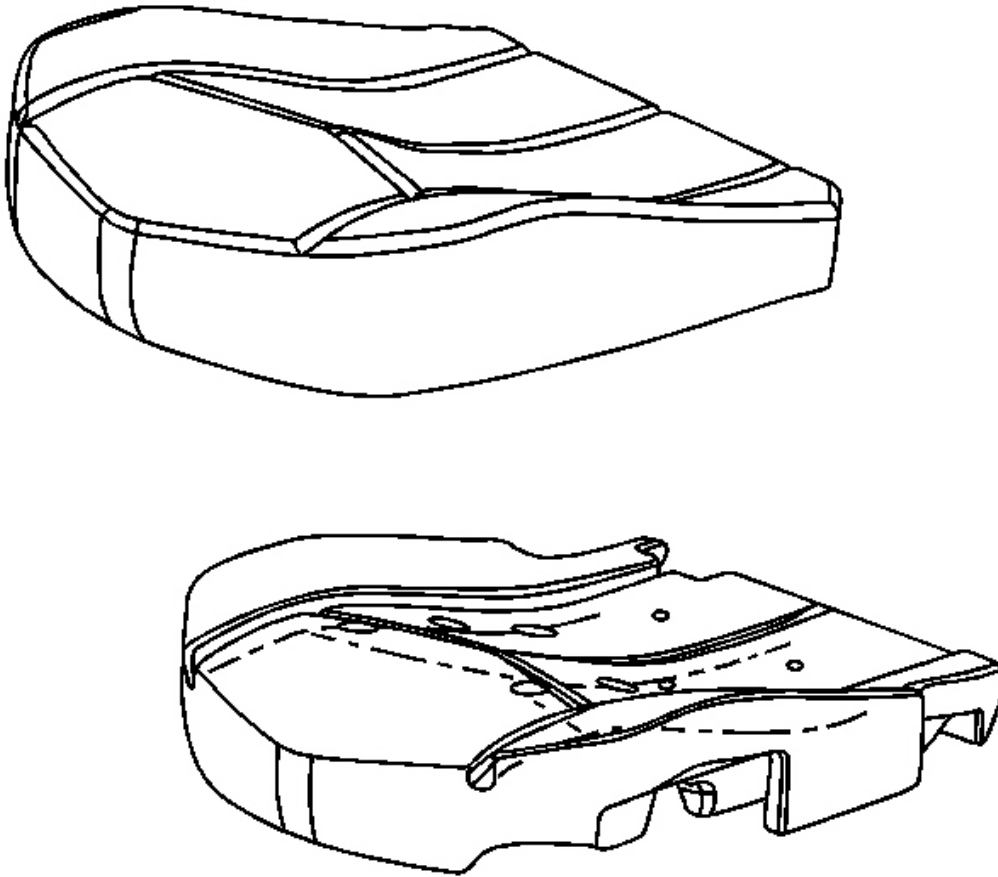


Fig. 43: View Of Cushion Cover & Seat Frame
Courtesy of GENERAL MOTORS CORP.

1. Position the trim cover over the seat cushion foam.
2. Install the cover to the seat frame.
3. Install the attaching retainers from the cover to the seat frame.
4. Install the rear flap ends together. Engage the hook and the loop.
5. Install the driver seat rear panel bracket. Refer to **Bracket Replacement - Driver Seat Rear Panel**.
6. Install the driver seat finish pane. Refer to **Finish Panel Replacement - Driver Seat Outer**.

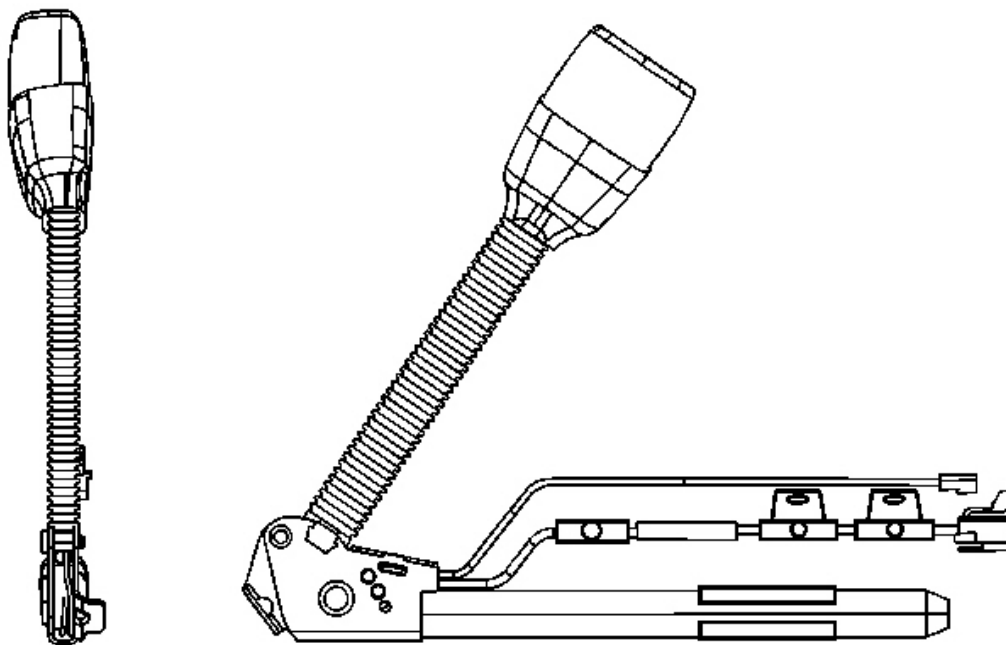


Fig. 44: View Of Seat Belt Buckle & Pretensioner
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

7. Install the seat belt buckle and the pretensioner to the seat frame.

Tighten: Tighten the mounting nut to 40 N.m (29 lb ft).

8. Install the seat. Refer to Seat Replacement.

SEAT CUSHION COVER REPLACEMENT - PASSENGER SIDE

Removal Procedure

1. Remove the seat. Refer to Seat Replacement.

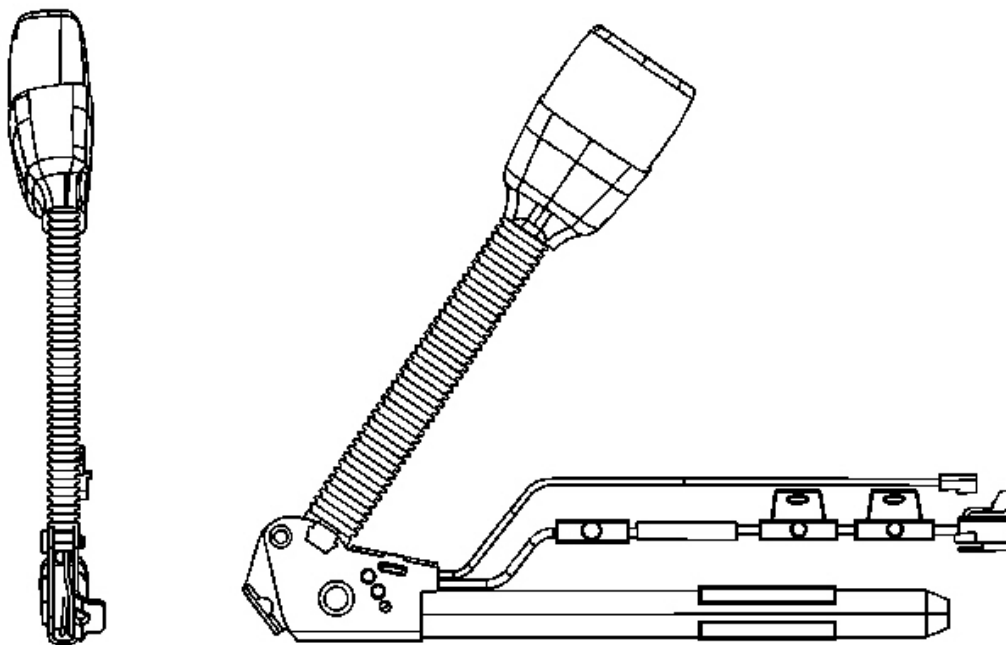


Fig. 45: View Of Seat Belt Buckle & Pretensioner
Courtesy of GENERAL MOTORS CORP.

2. Remove the seat belt buckle and pretensioner from the seat frame.
3. Remove the passenger seat finish panel. Refer to **Finish Panel Replacement - Passenger Seat Outer**.
4. Remove the passenger seat rear panel bracket. Refer to **Bracket Replacement - Passenger Seat Rear Panel**.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

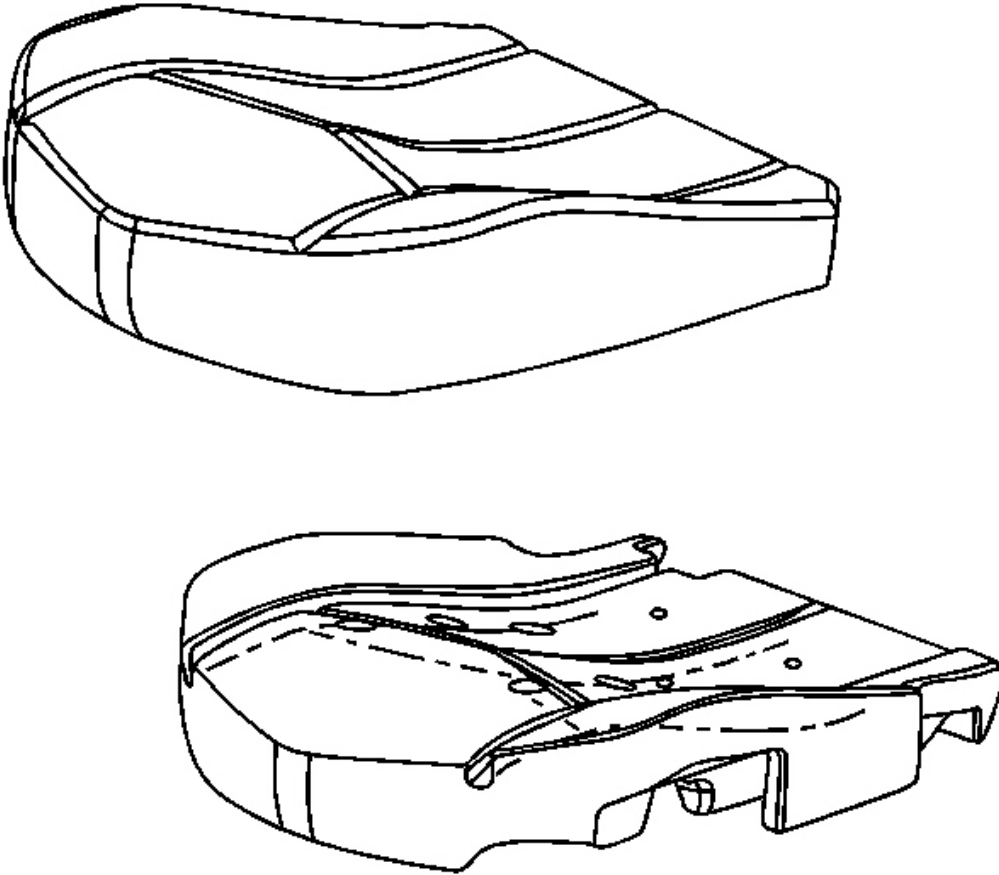


Fig. 46: View Of Cushion Cover & Seat Frame
Courtesy of GENERAL MOTORS CORP.

5. Remove the retaining clips which secure the cushion cover to the seat frame.
6. Remove the cover from the seat.

Installation Procedure

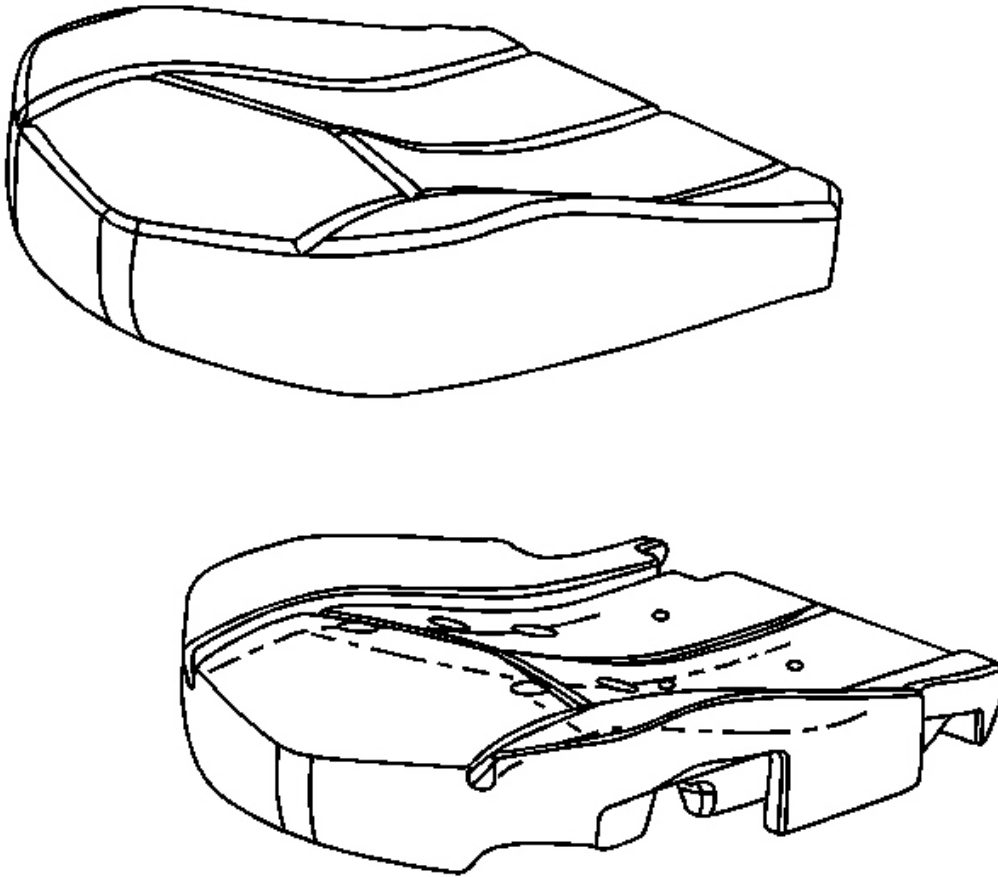


Fig. 47: View Of Cushion Cover & Seat Frame
Courtesy of GENERAL MOTORS CORP.

1. Position the trim cover over the seat cushion foam.
2. Install the cover to the seat frame.
3. Install the attaching retainers from the cover to the seat frame.
4. Install the rear flap ends together. Engage the hook and the loop.
5. Install the passenger seat rear panel bracket. Refer to **Bracket Replacement - Passenger Seat Rear Panel**.
6. Install the passenger seat finish panel. Refer to **Finish Panel Replacement - Passenger Seat Outer**.

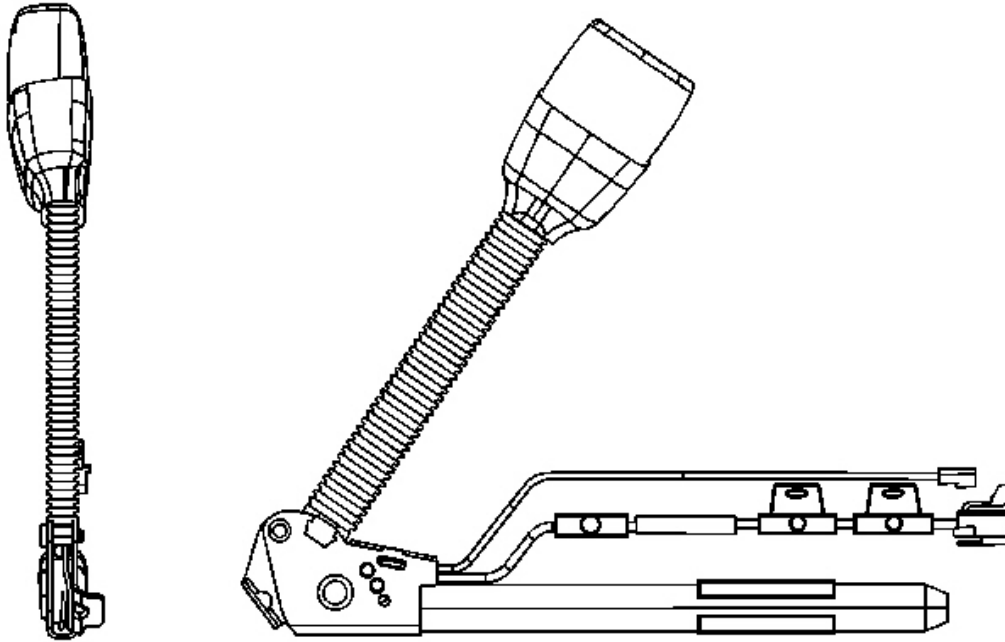


Fig. 48: View Of Seat Belt Buckle & Pretensioner
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

7. Install the seat belt buckle and the pretensioner to the seat frame.

Tighten: Tighten the mounting nut to 40 N.m (29 lb ft).

8. Install the seat. Refer to Seat Replacement.

SEAT CUSHION PAD REPLACEMENT - DRIVER SIDE

Removal Procedure

1. Remove the seat cushion cover. Refer to Seat Cushion Cover Replacement - Driver Side.

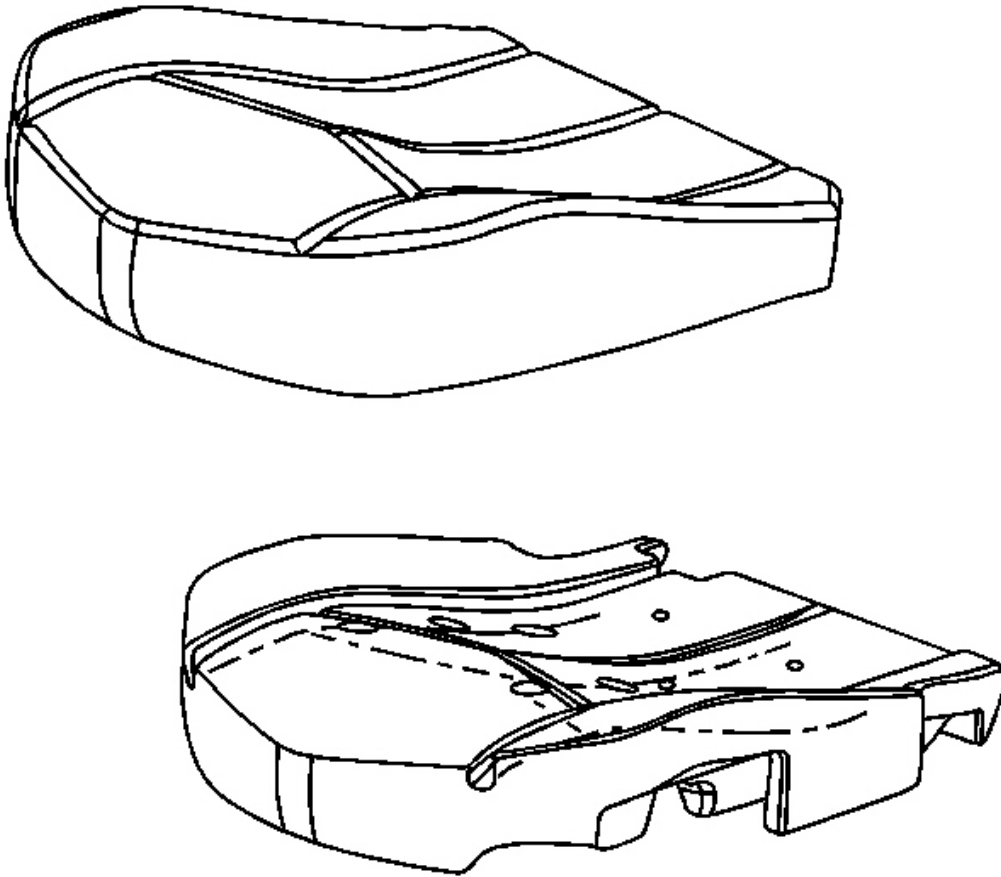


Fig. 49: View Of Cushion Cover & Seat Frame
Courtesy of GENERAL MOTORS CORP.

2. Remove the cushion pad from the seat frame.

Installation Procedure

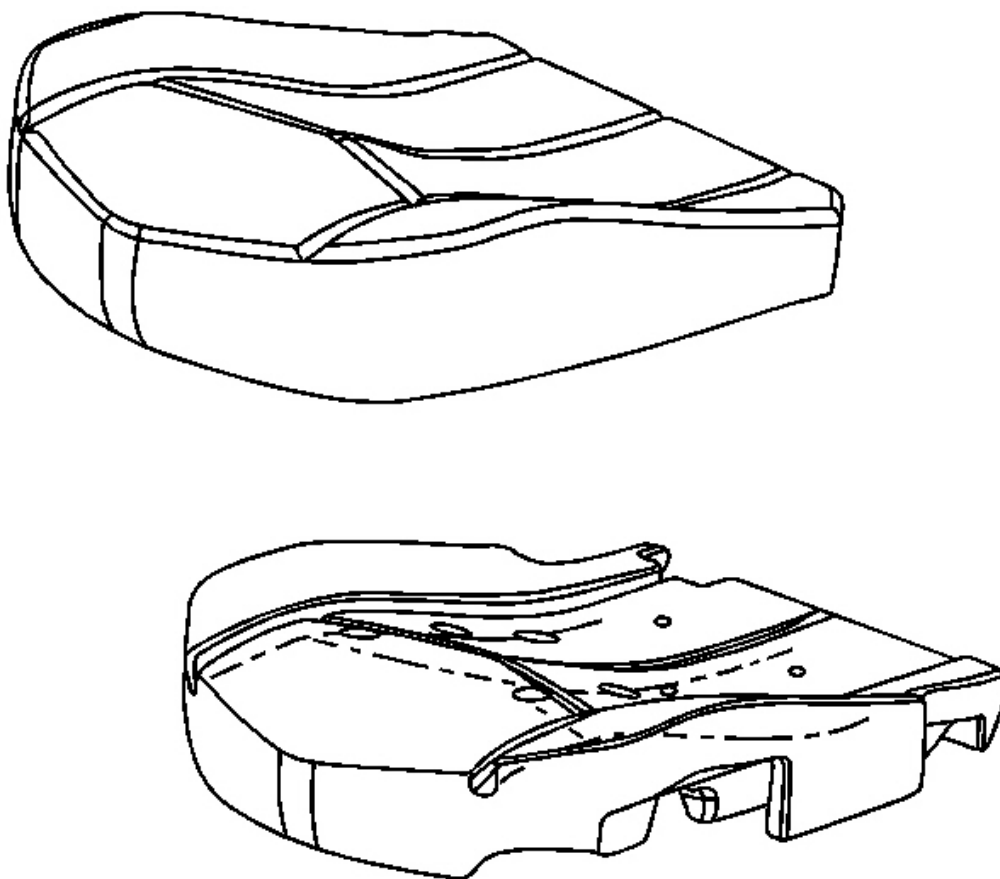


Fig. 50: View Of Cushion Cover & Seat Frame
Courtesy of GENERAL MOTORS CORP.

1. Install the cushion pad to the seat frame.
2. Install the seat cushion cover. Refer to **Seat Cushion Cover Replacement - Driver Side**.

SEAT CUSHION PAD REPLACEMENT - PASSENGER SIDE

Removal Procedure

1. Remove the seat cushion cover. Refer to **Seat Cushion Cover Replacement - Passenger Side**.

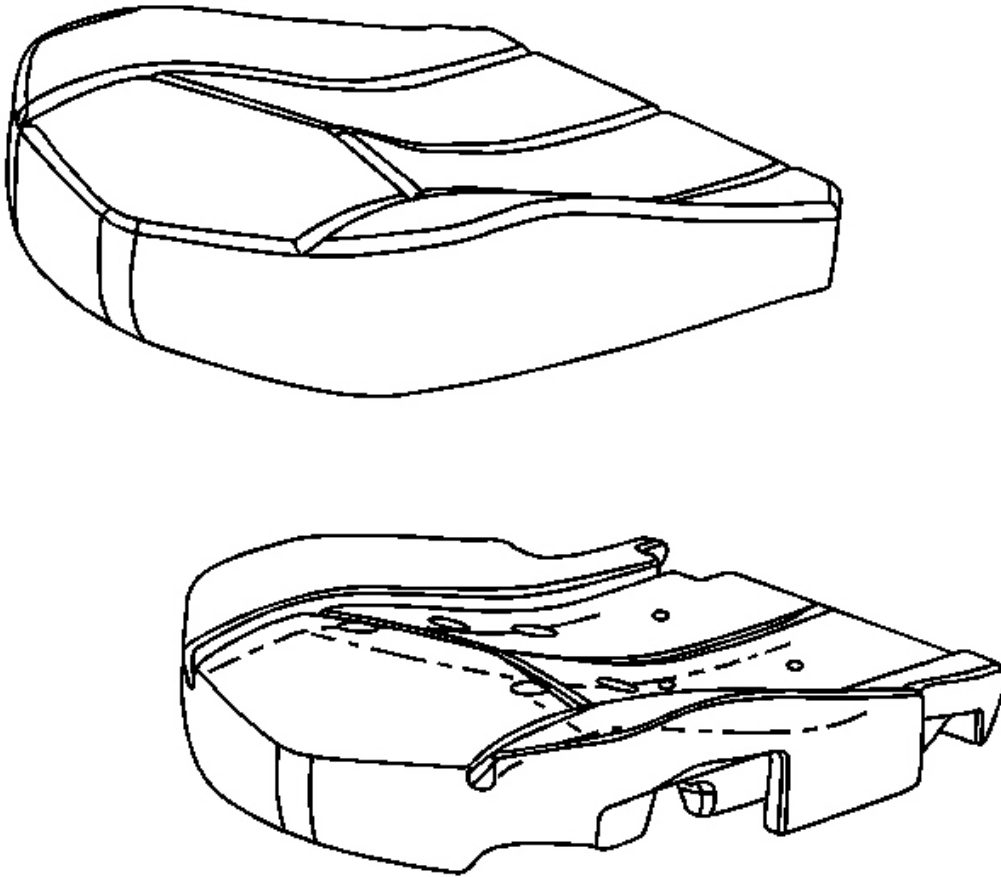


Fig. 51: View Of Cushion Cover & Seat Frame
Courtesy of GENERAL MOTORS CORP.

2. Remove the cushion pad from the seat frame.

Installation Procedure

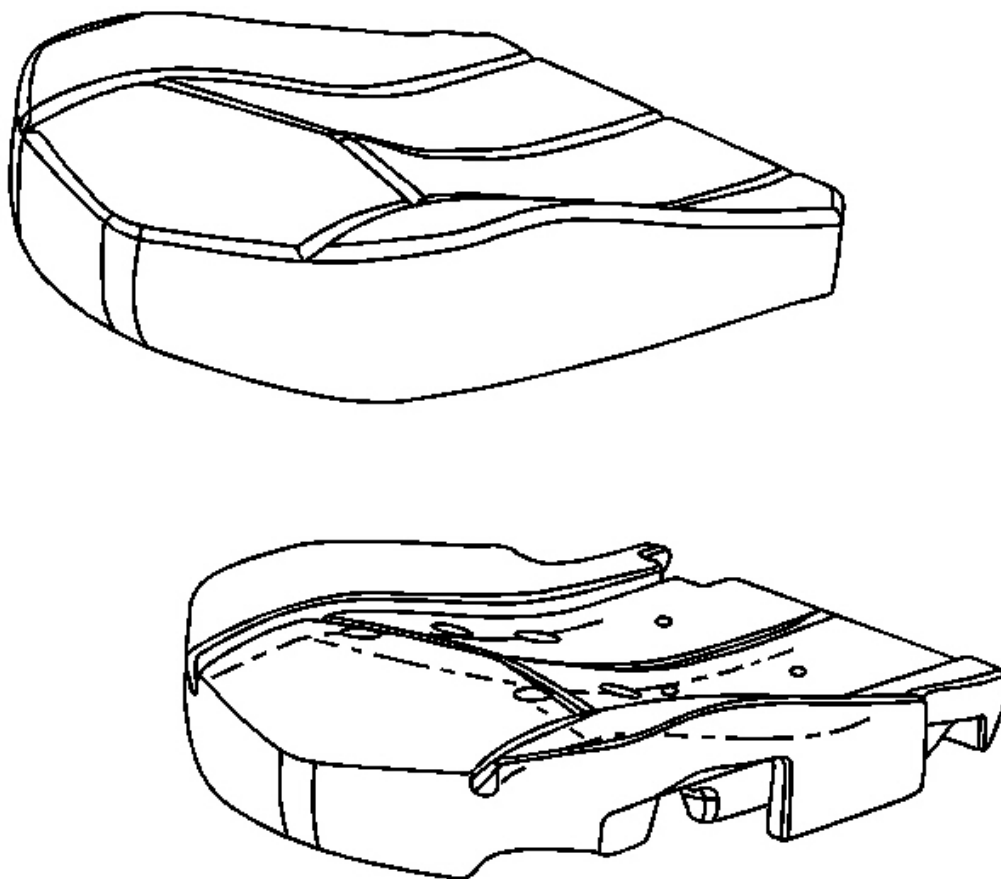


Fig. 52: View Of Cushion Cover & Seat Frame
Courtesy of GENERAL MOTORS CORP.

1. Install the cushion pad to the seat frame.
2. Install the seat cushion cover. Refer to **Seat Cushion Cover Replacement - Passenger Side**.

SEAT BACK COVER REPLACEMENT - FRONT

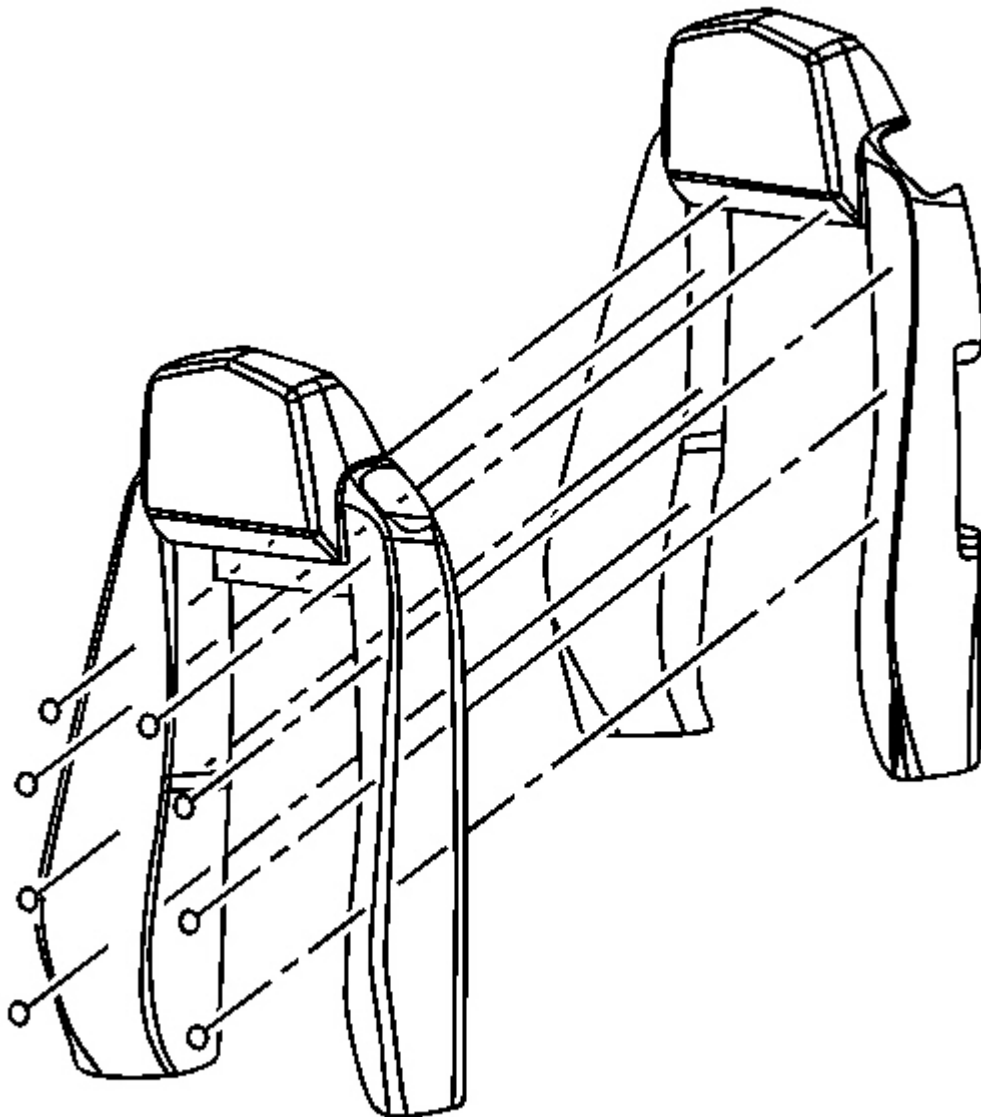
Removal Procedure

1. Remove the seat from the vehicle. Refer to **Seat Replacement**.
2. Remove the seat back insert. Refer to **Pad Replacement - Driver Seat Back Insert** or to **Pad Replacement - Passenger Seat Back Insert**.
3. Remove the seat speaker grilles. Refer to **Speaker Grille Replacement - Driver Seat** in Entertainment.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

4. Remove the seat speakers. Refer to **Speaker Replacement - Driver Seat** or to **Speaker Replacement - Passenger Seat** in Entertainment.
5. Remove the J-hooks that secure the seat back cover to the bottom of the seat back
6. Remove the fir tree retainers that secure the seat back cover to the seat back frame.
7. Remove the SIAB side inflatable restraint module. Refer to **Inflatable Restraint Side Impact Module Replacement - Front** in SIR.



2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

Fig. 53: View Of Seat Back Cover & Trim Cover
Courtesy of GENERAL MOTORS CORP.

8. Remove the seat back trim cover from the seat, starting at the lower inboard side of the seat back and working the cover up and over the foam.
9. Remove the seat back cover.

Installation Procedure

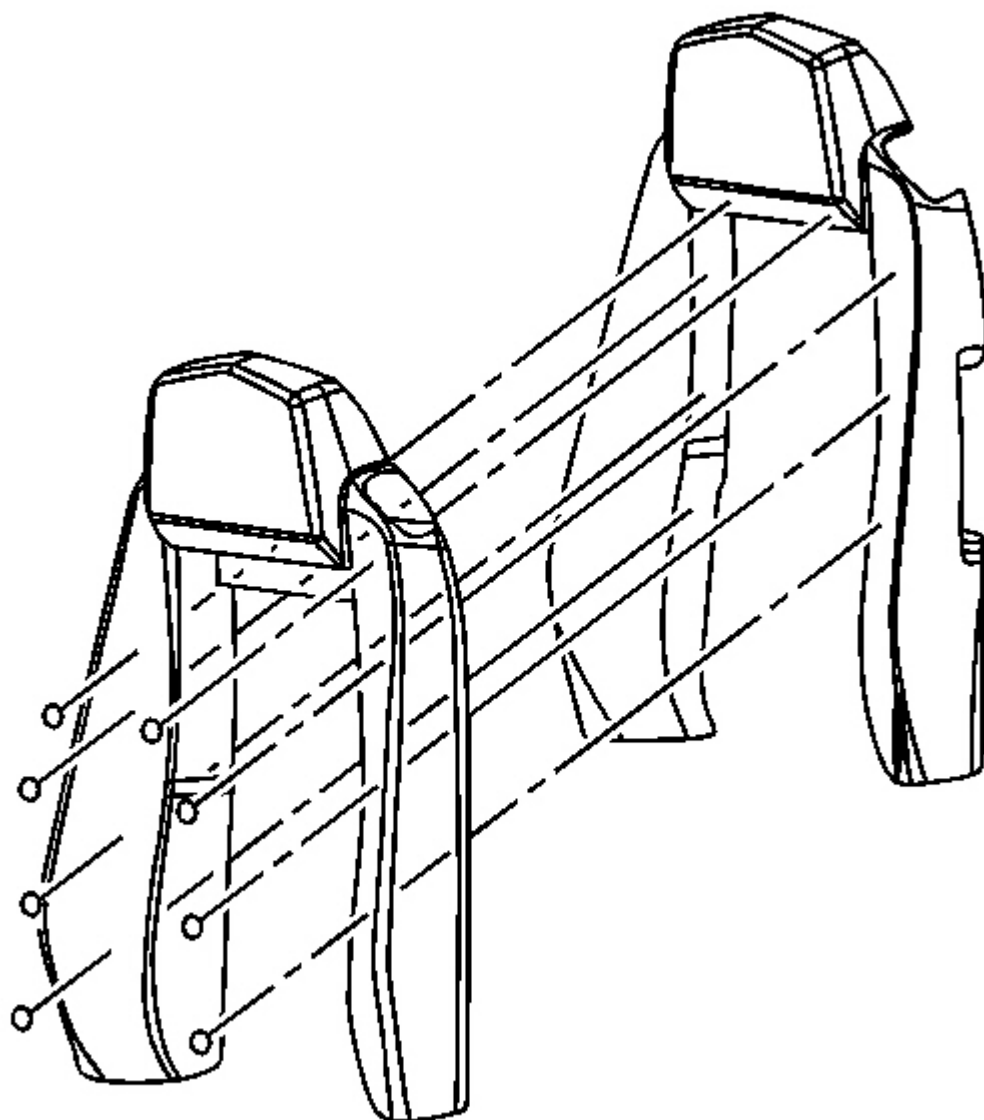


Fig. 54: View Of Seat Back Cover & Trim Cover
Courtesy of GENERAL MOTORS CORP.

1. Install the seat back cover.
2. Install the seat back trim cover over the seat back working the cover down and over the foam.
3. Install the SIAB side inflatable restraint module. Refer to **Inflatable Restraint Side Impact Module Replacement - Front** in SIR.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

4. Install the fir tree retainers that secure the seat back cover to the seat back frame.
5. Install the J-hooks that secure the seat back cover to the bottom of the seat back
6. Install the seat speakers. Refer to **Speaker Replacement - Driver Seat** or to **Speaker Replacement - Passenger Seat** in Entertainment.
7. Install the seat speaker grilles. Refer to **Speaker Grille Replacement - Driver Seat** in Entertainment.
8. Install the seat back insert. Refer to **Pad Replacement - Driver Seat Back Insert** or to **Pad Replacement - Passenger Seat Back Insert**.
9. Install the seat to the vehicle. Refer to **Seat Replacement**.

PAD REPLACEMENT - DRIVER SEAT BACK CUSHION

Removal Procedure

1. Remove the seat from the vehicle. Refer to **Seat Replacement**.
2. Remove the seat back insert. Refer to **Pad Replacement - Driver Seat Back Insert**.
3. Remove the seat speaker grilles. Refer to **Speaker Grille Replacement - Driver Seat** in Entertainment.
4. Remove the seat speakers. Refer to **Speaker Replacement - Driver Seat** in Entertainment.
5. Remove the J-hooks that secure the seat back cover to the bottom of the seat back
6. Remove the fir tree retainers that secure the seat back cover to the seat back frame.
7. Remove the SIAB side inflatable restraint module. Refer to **Inflatable Restraint Side Impact Module Replacement - Front** in SIR.

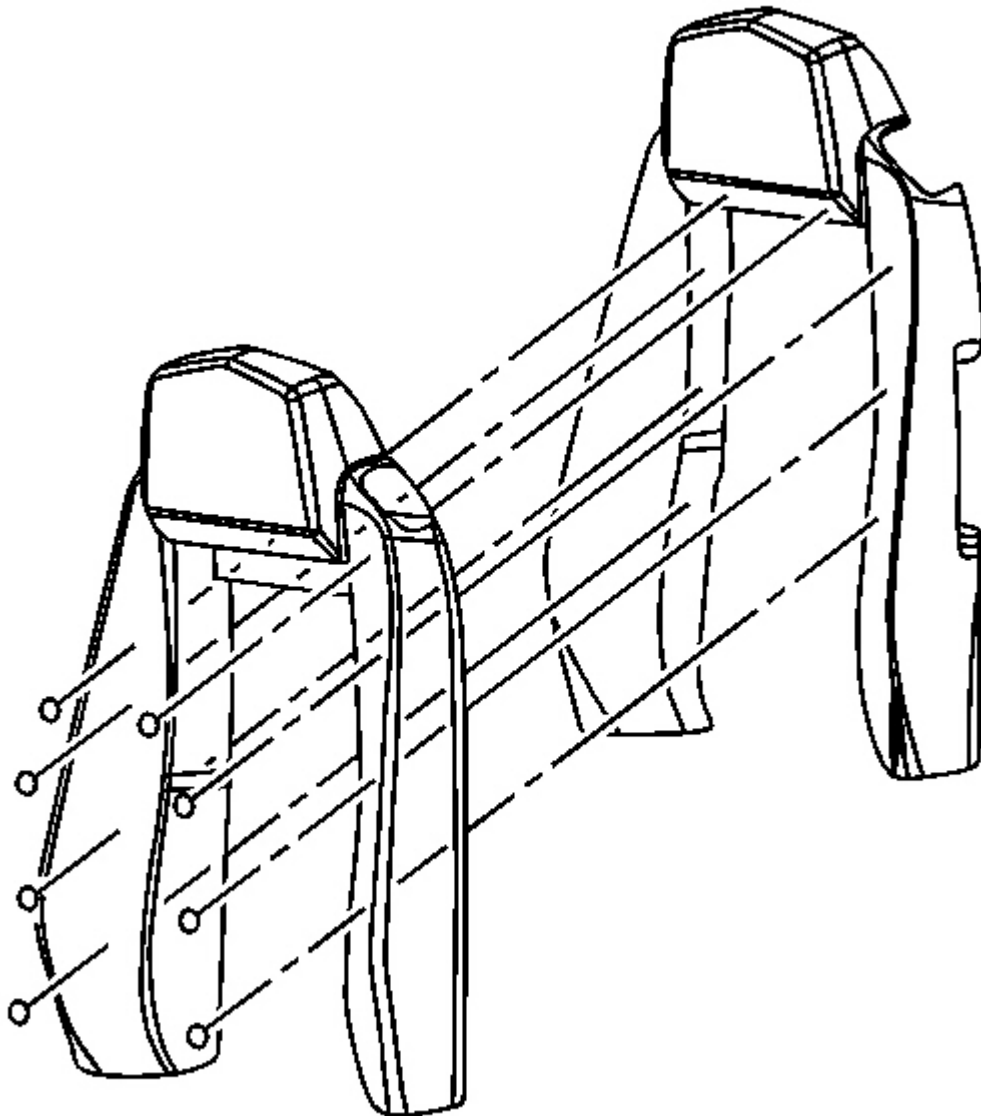


Fig. 55: View Of Seat Back Cover & Trim Cover
Courtesy of GENERAL MOTORS CORP.

8. Remove the seat back trim cover from the seat, starting at the lower inboard side of the seat back and working the cover up and over the foam.
9. Remove the cushion pad from the seat back.

Installation Procedure

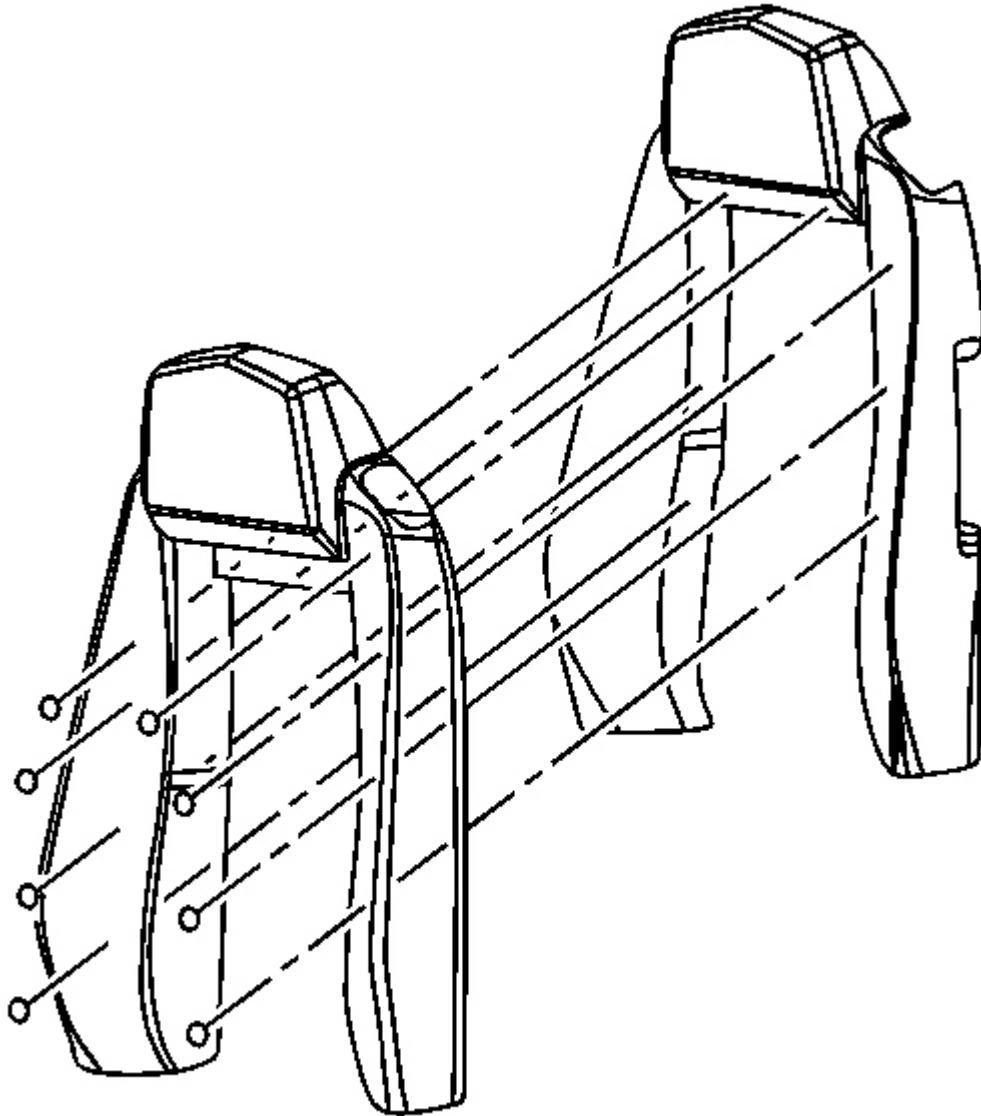


Fig. 56: View Of Seat Back Cover & Trim Cover
Courtesy of GENERAL MOTORS CORP.

1. Install the cushion pad to the seat back.
2. Install the seat back trim cover over the seat back working the cover down and over the foam.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

3. Install the SIAB side inflatable restraint module. Refer to **Inflatable Restraint Side Impact Module Replacement - Front** in SIR.
4. Install the fir tree retainers that secure the seat back cover to the seat back frame.
5. Install the J-hooks that secure the seat back cover to the bottom of the seat back
6. Install the seat speakers. Refer to **Speaker Replacement - Driver Seat** in Entertainment.
7. Install the seat speaker grilles. Refer to **Speaker Grille Replacement - Driver Seat** in Entertainment.
8. Install the seat back insert. Refer to **Pad Replacement - Driver Seat Back Insert**.
9. Install the seat to the vehicle. Refer to **Seat Replacement**.

PAD REPLACEMENT - PASSENGER SEAT BACK CUSHION

Removal Procedure

1. Remove the seat from the vehicle. Refer to **Seat Replacement**.
2. Remove the seat back insert. Refer to **Pad Replacement - Passenger Seat Back Insert**.
3. Remove the seat speaker grilles. Refer to **Speaker Grille Replacement - Passenger Seat** in Entertainment.
4. Remove the seat speakers. Refer to **Speaker Replacement - Passenger Seat** in Entertainment.
5. Remove the J-hooks that secure the seat back cover to the bottom of the seat back
6. Remove the fir tree retainers that secure the seat back cover to the seat back frame.
7. Remove the SIAB side inflatable restraint module. Refer to **Inflatable Restraint Side Impact Module Replacement - Front** in SIR.

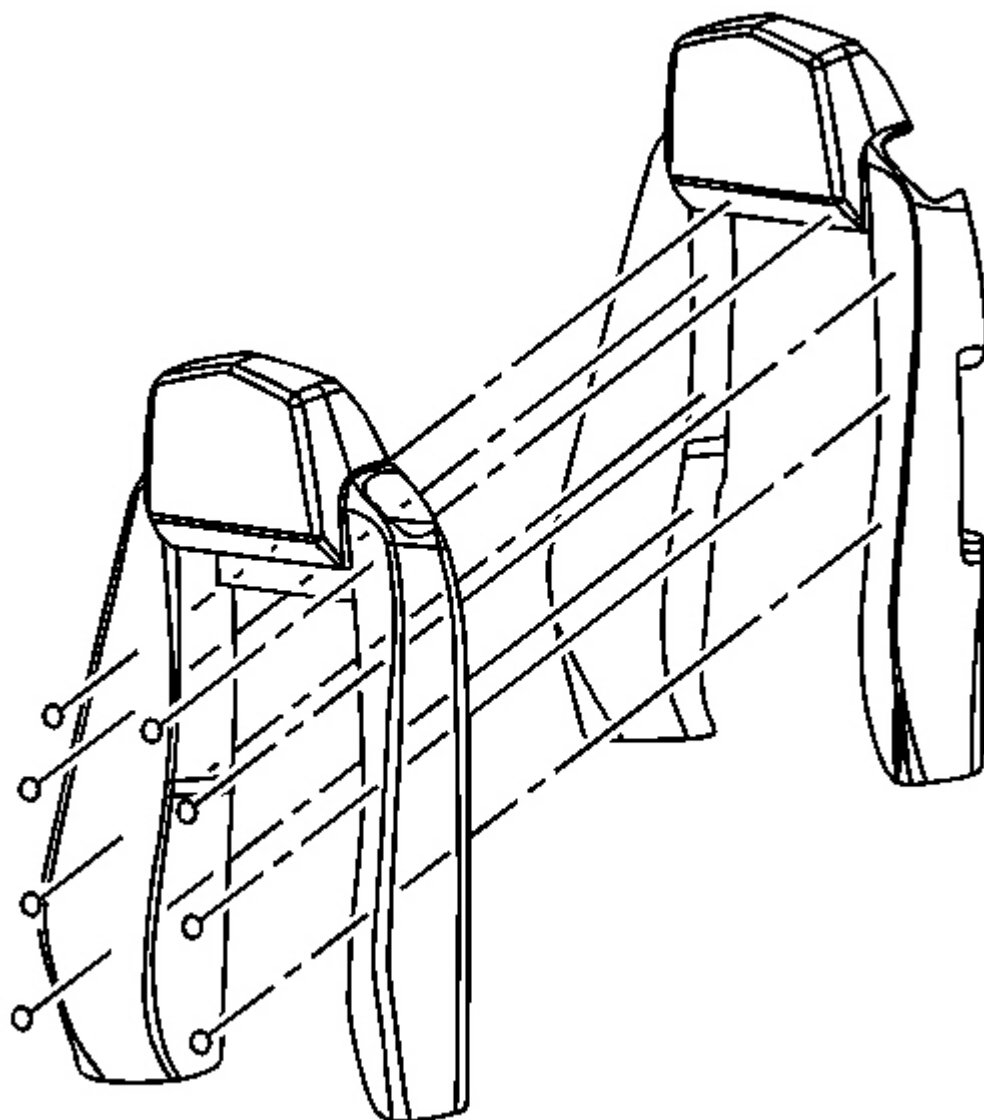


Fig. 57: View Of Seat Back Cover & Trim Cover
Courtesy of GENERAL MOTORS CORP.

8. Remove the seat back trim cover from the seat, starting at the lower inboard side of the seat back and working the cover up and over the foam.
9. Remove the cushion pad from the seat back.

Installation Procedure

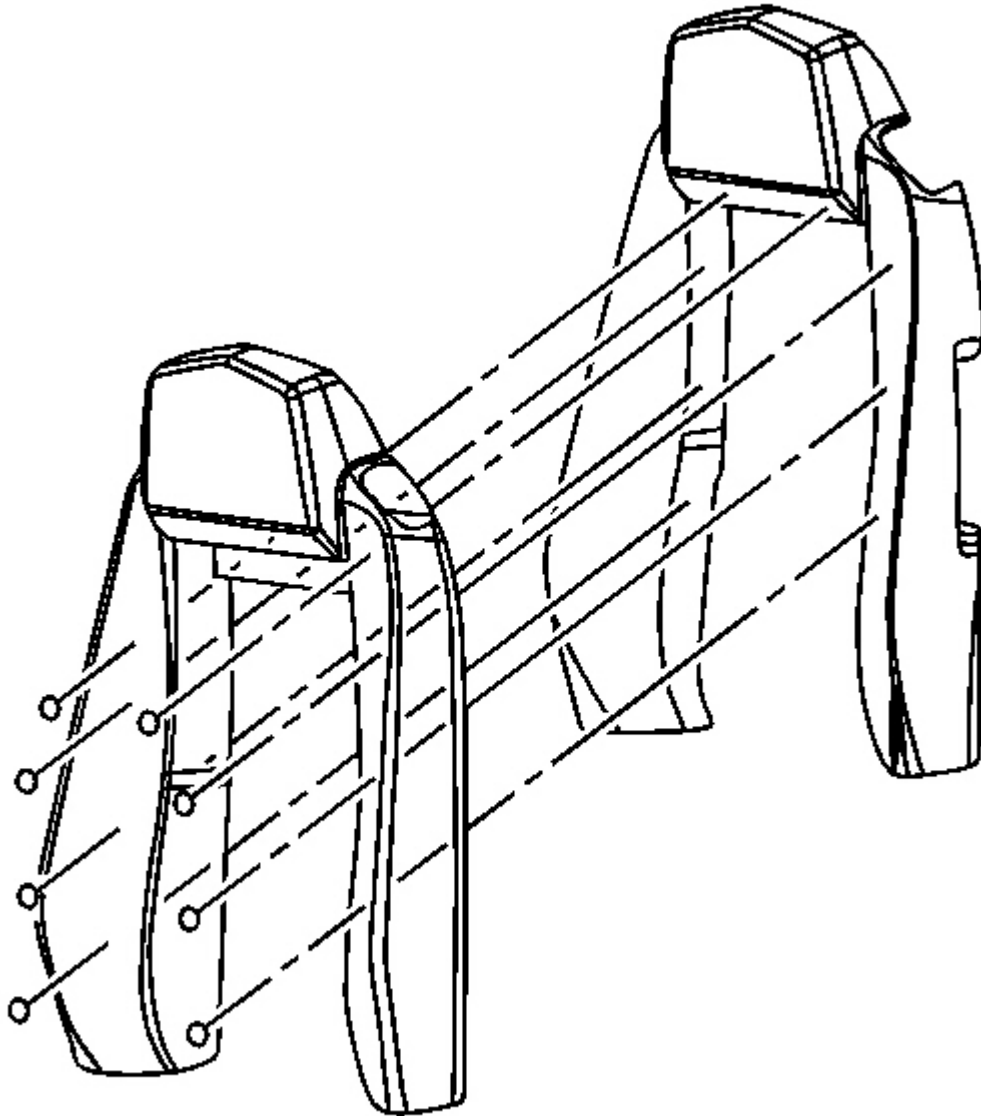


Fig. 58: View Of Seat Back Cover & Trim Cover
Courtesy of GENERAL MOTORS CORP.

1. Install the cushion pad to the seat back.
2. Install the seat back trim cover over the seat back working the cover down and over the foam.

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

3. Install the SIAB side inflatable restraint module. Refer to **Inflatable Restraint Side Impact Module Replacement - Front** in SIR.
4. Install the fir tree retainers that secure the seat back cover to the seat back frame.
5. Install the J-hooks that secure the seat back cover to the bottom of the seat back
6. Install the seat speakers. Refer to **Speaker Replacement - Passenger Seat** in Entertainment.
7. Install the seat speaker grilles. Refer to **Speaker Grille Replacement - Passenger Seat** in Entertainment.
8. Install the seat back insert. Refer to **Pad Replacement - Passenger Seat Back Insert**.
9. Install the seat to the vehicle. Refer to **Seat Replacement**.

SEAT BACK FRAME REPLACEMENT - FRONT

Removal Procedure

1. Remove the seat assembly. Refer to **Seat Replacement**.
2. Remove the seat back cushion. Refer to **Pad Replacement - Driver Seat Back Cushion** or to **Pad Replacement - Driver Seat Back Cushion**.
3. Remove the hook and loop at the end of the seat cushion cover.
4. Remove the seat belt buckle pretensioner. Refer to **Seat Belt Buckle Pretensioner Replacement** in SIR.
5. Disconnect the wire harness retainers from the seat back.

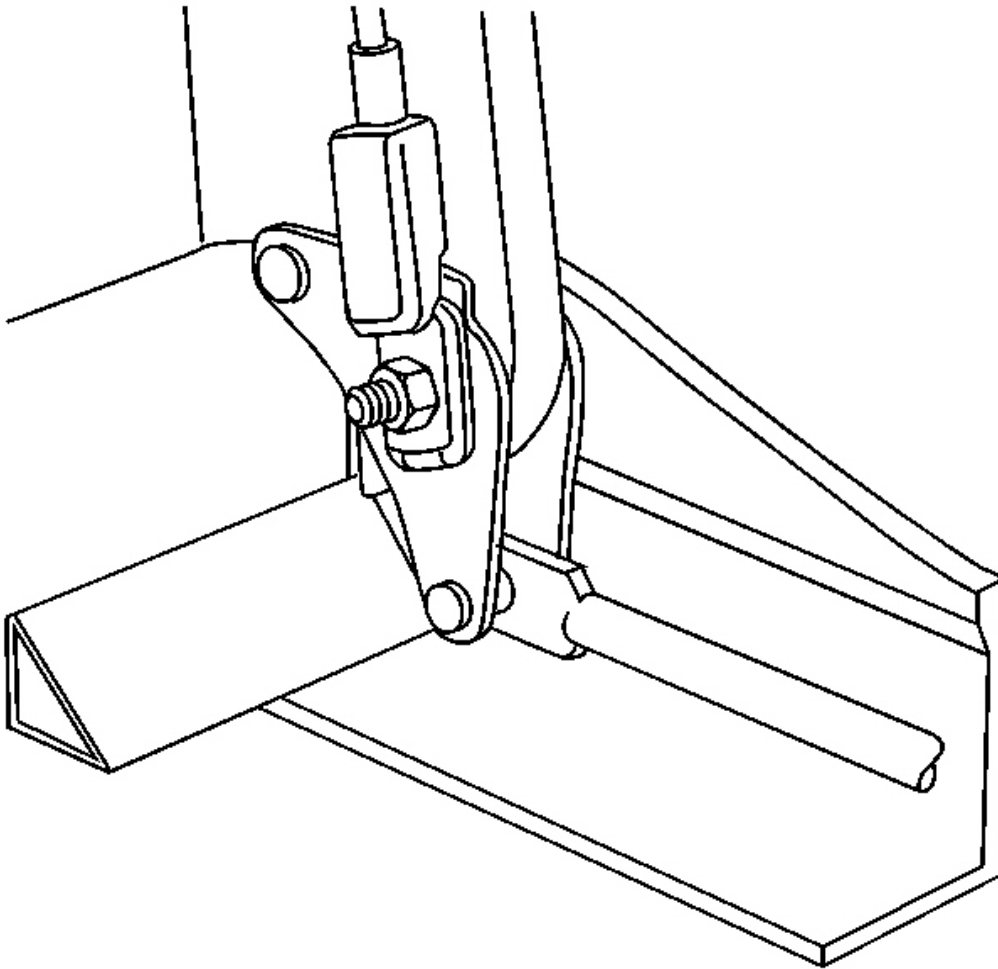


Fig. 59: View Of Seat Hinge Nuts & Bolts
Courtesy of GENERAL MOTORS CORP.

6. Remove the hinge nuts and bolts.

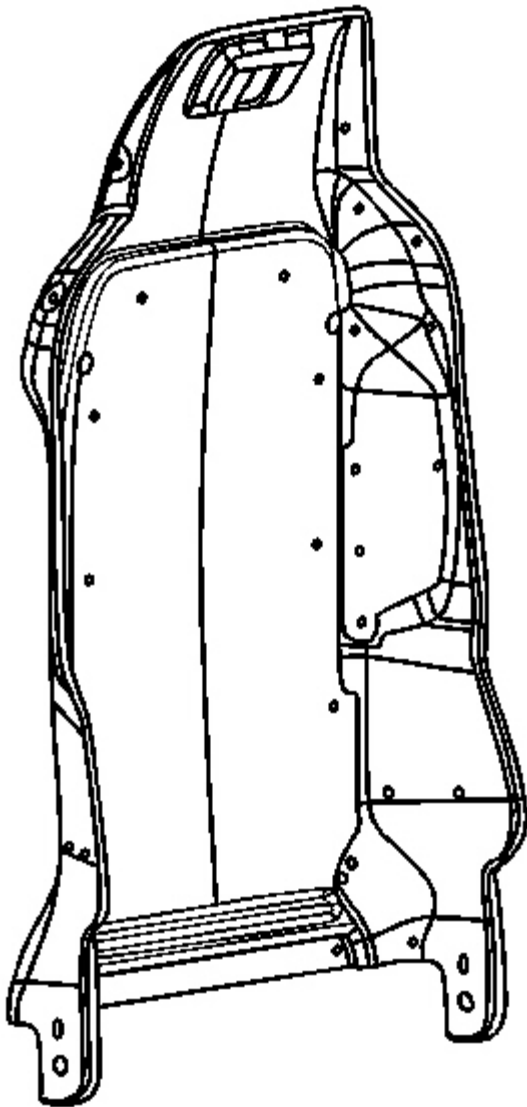


Fig. 60: View Of Seat Back Frame & Lower Seat Assembly
Courtesy of GENERAL MOTORS CORP.

7. Remove the seat back frame from the lower seat assembly.

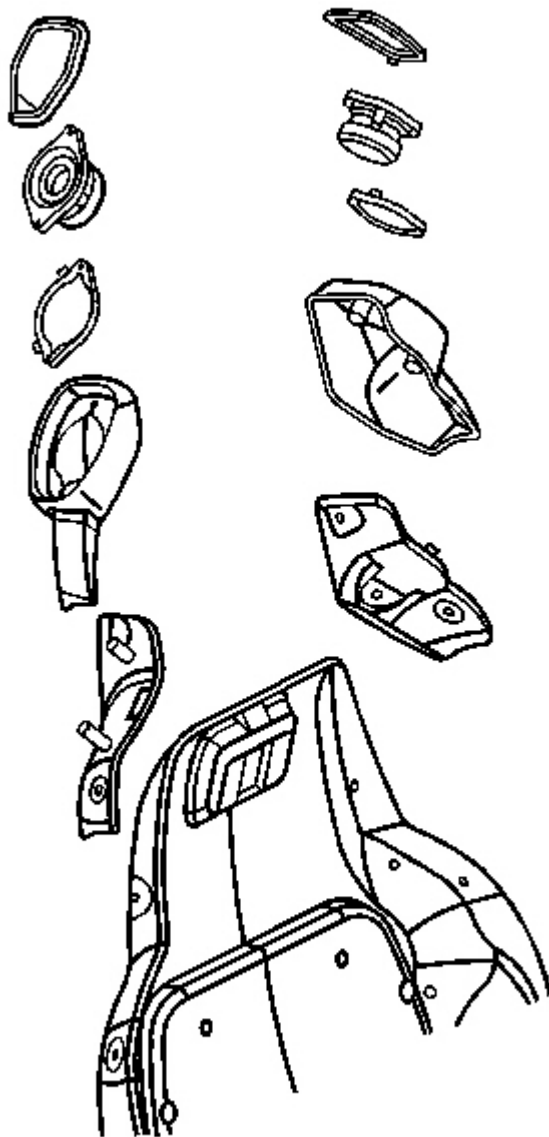


Fig. 61: View Of Driver Seat Speaker Components
Courtesy of GENERAL MOTORS CORP.

8. Transfer the seat speakers as required. Refer to **Speaker Replacement - Driver Seat** or to **Speaker Replacement - Passenger Seat** in Entertainment.

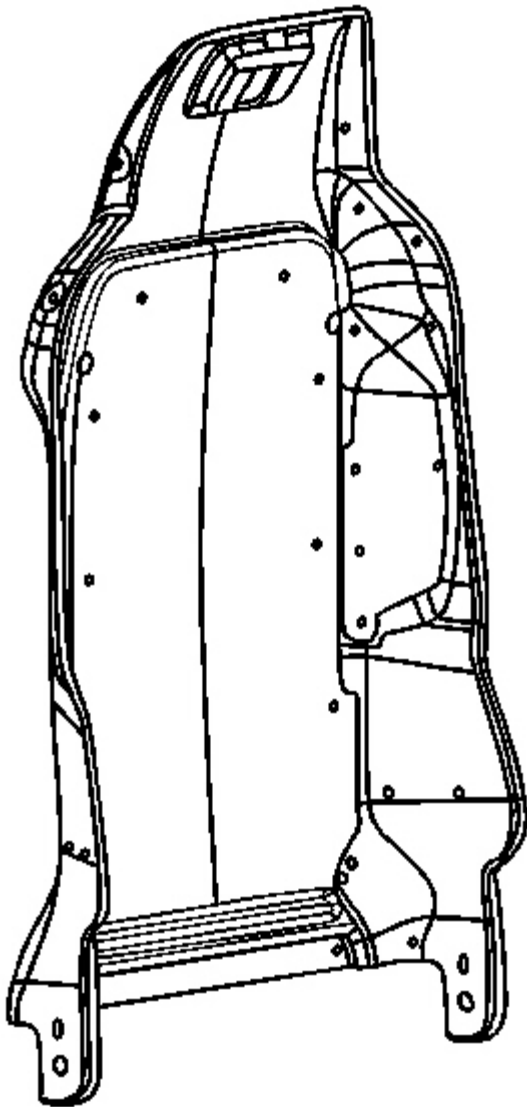


Fig. 62: View Of Seat Back Frame & Lower Seat Assembly
Courtesy of GENERAL MOTORS CORP.

1. Install the seat back frame to the lower seat assembly.

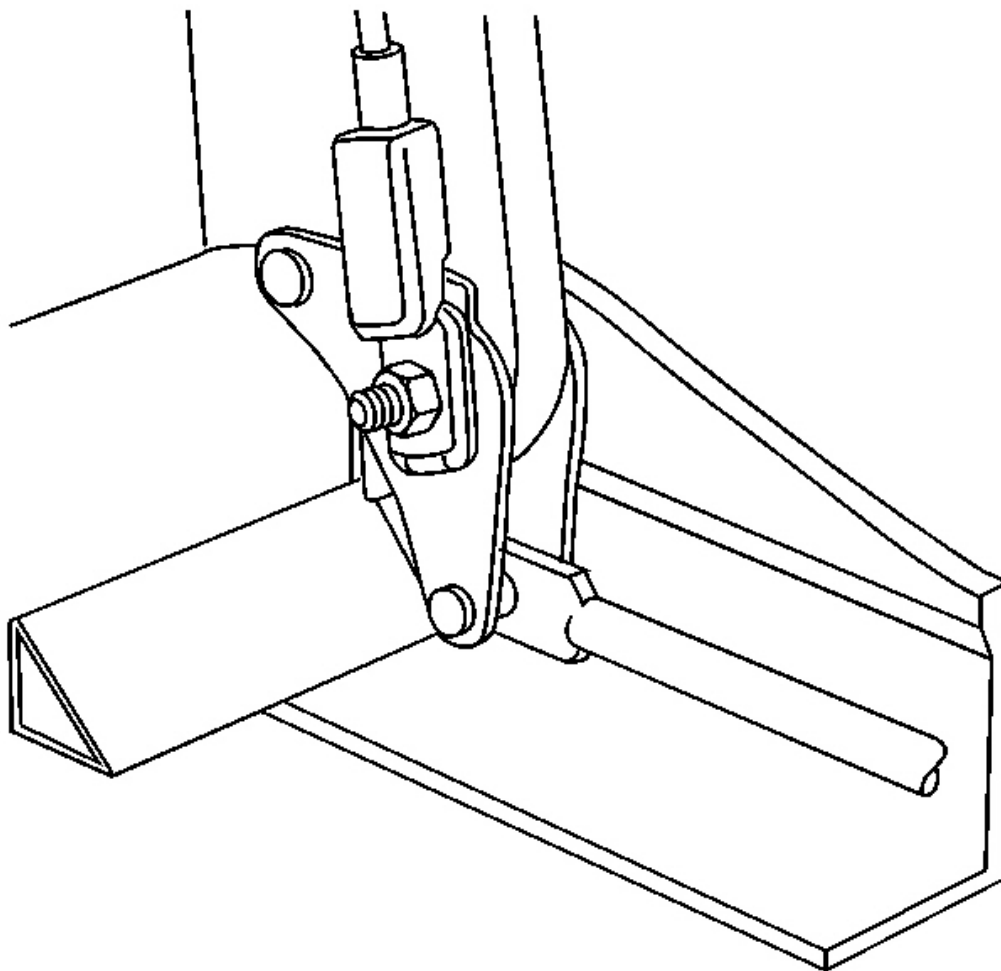


Fig. 63: View Of Seat Hinge Nuts & Bolts
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

IMPORTANT: Use a treat locking compound on the hinge bolts.

2. Install the hinge bolts and nuts.

Tighten: Tighten the nuts to 24 N.m (18 lb ft).

3. Connect the wire harness retainers to the seat back.

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

4. Install the seat belt buckle pretensioner. Refer to **Seat Belt Buckle Pretensioner Replacement** in SIR.
5. Install the hook and loop at the end of the seat cushion cover.
6. Install the seat back cushion. Refer to **Pad Replacement - Driver Seat Back Cushion** or to **Pad Replacement - Driver Seat Back Cushion**.
7. Install the seat assembly. Refer to **Seat Replacement**.

SEAT BACK RECLINER REPLACEMENT - FRONT

Removal Procedure

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

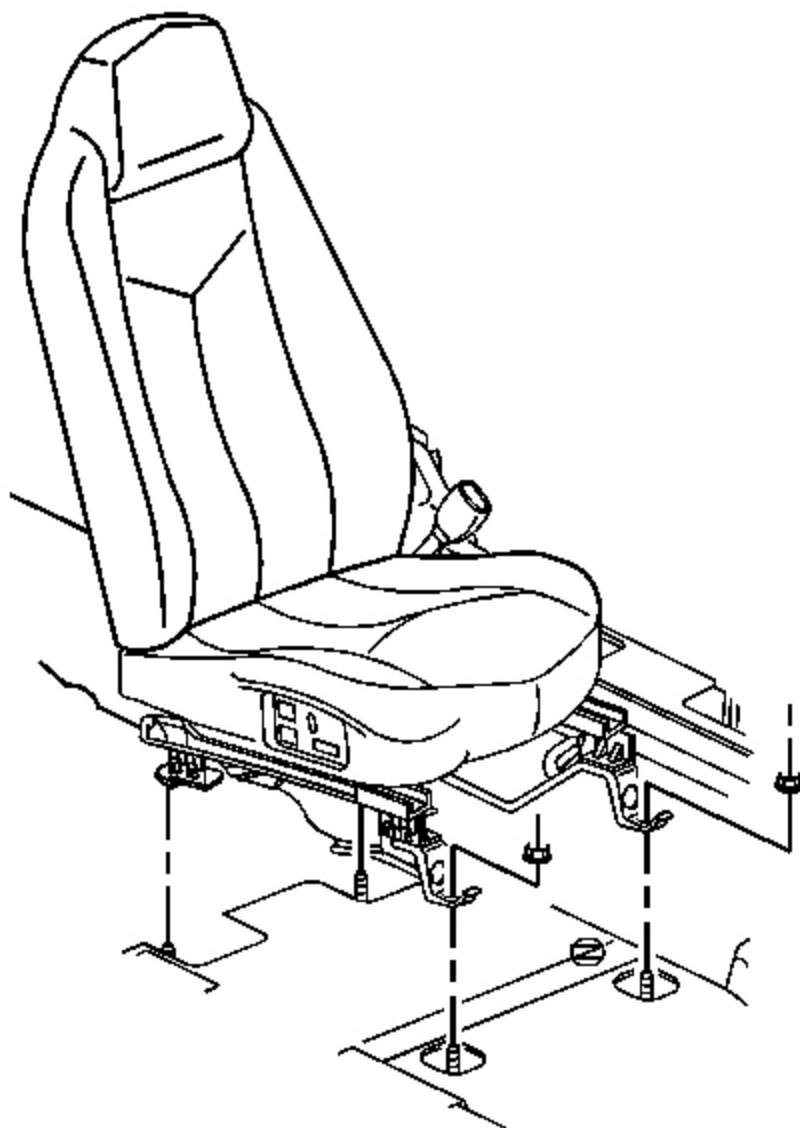


Fig. 64: View Of Seat & Components
Courtesy of GENERAL MOTORS CORP.

1. Raise the seat to the full up position.
2. Remove the seat. Refer to **Seat Replacement**.
3. Remove the finish panel. Refer to **Finish Panel Replacement - Driver Seat Outer** or to **Finish Panel Replacement - Passenger Seat Outer**.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

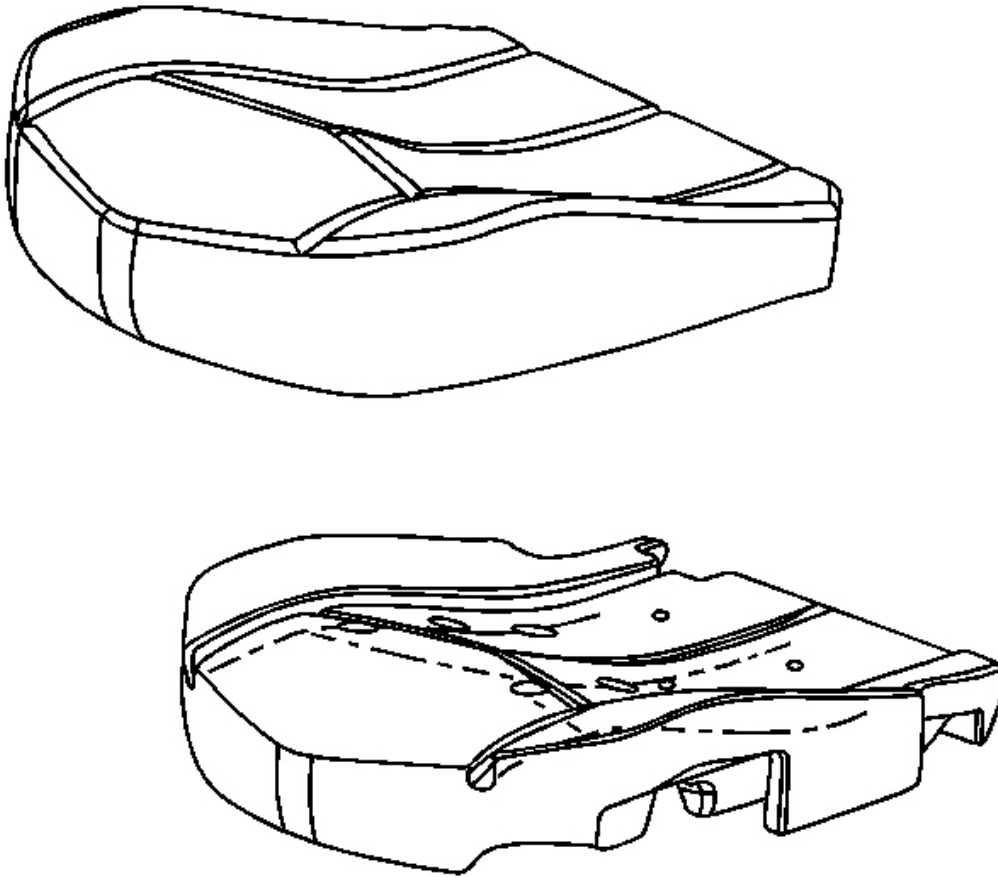


Fig. 65: View Of Cushion Cover & Seat Frame
Courtesy of GENERAL MOTORS CORP.

4. Remove the seat cushion cover. Refer to **Seat Cushion Cover Replacement - Driver Side** or to **Seat Cushion Cover Replacement - Passenger Side**.

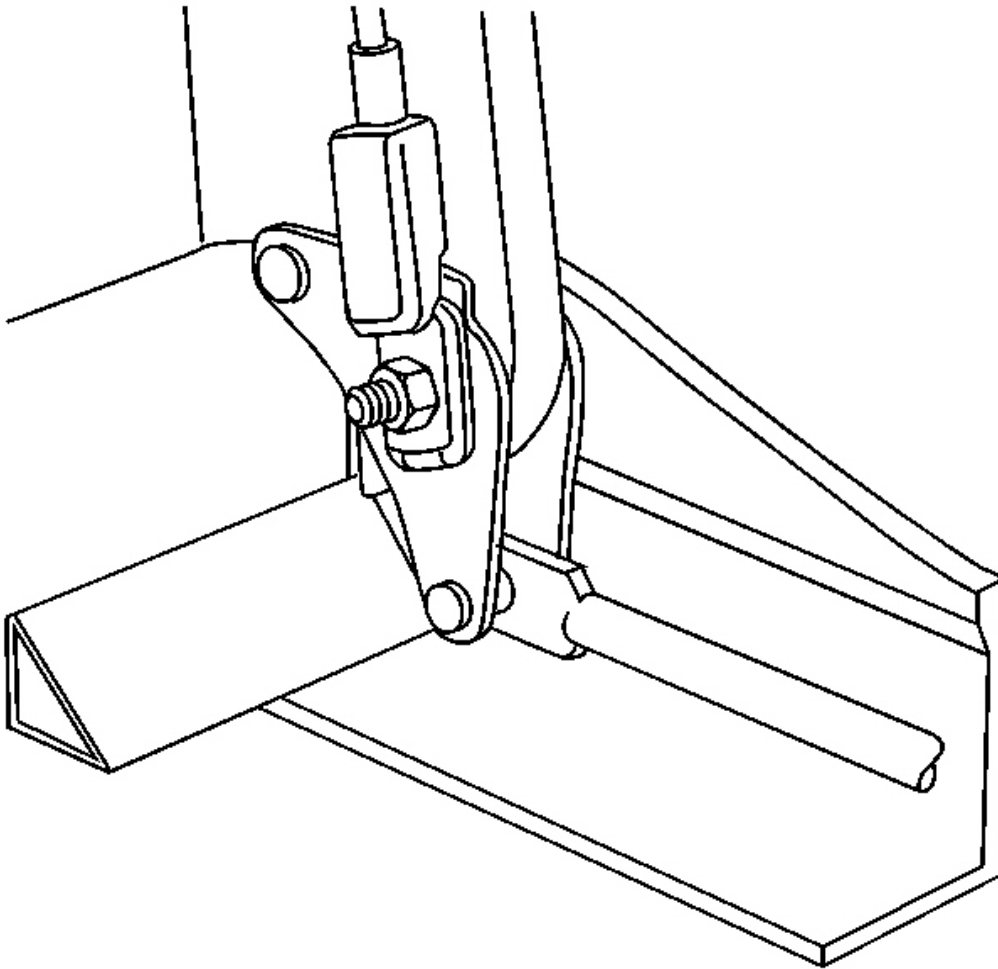


Fig. 66: View Of Seat Hinge Nuts & Bolts
Courtesy of GENERAL MOTORS CORP.

5. Remove the hinge pin nuts and the hinge pins.
6. Lay the seatback down

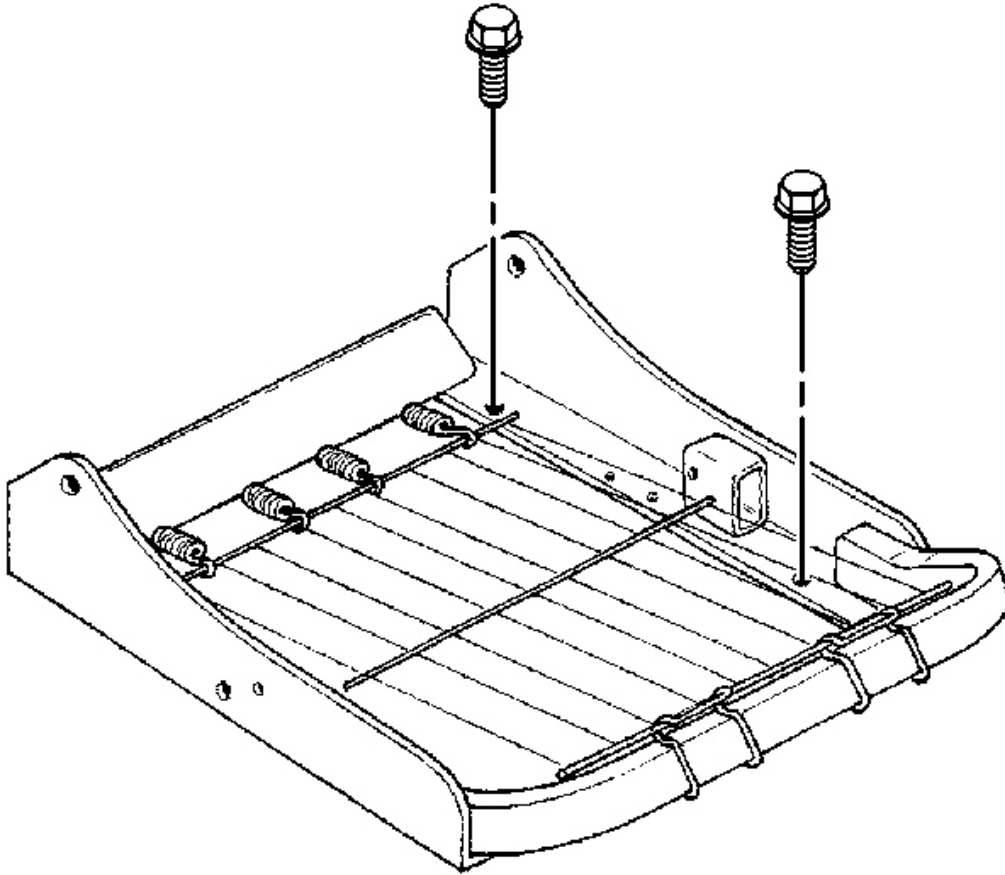


Fig. 67: View Of Seat Cushion Frame
Courtesy of GENERAL MOTORS CORP.

7. Remove the seat from the adjuster attaching screws.

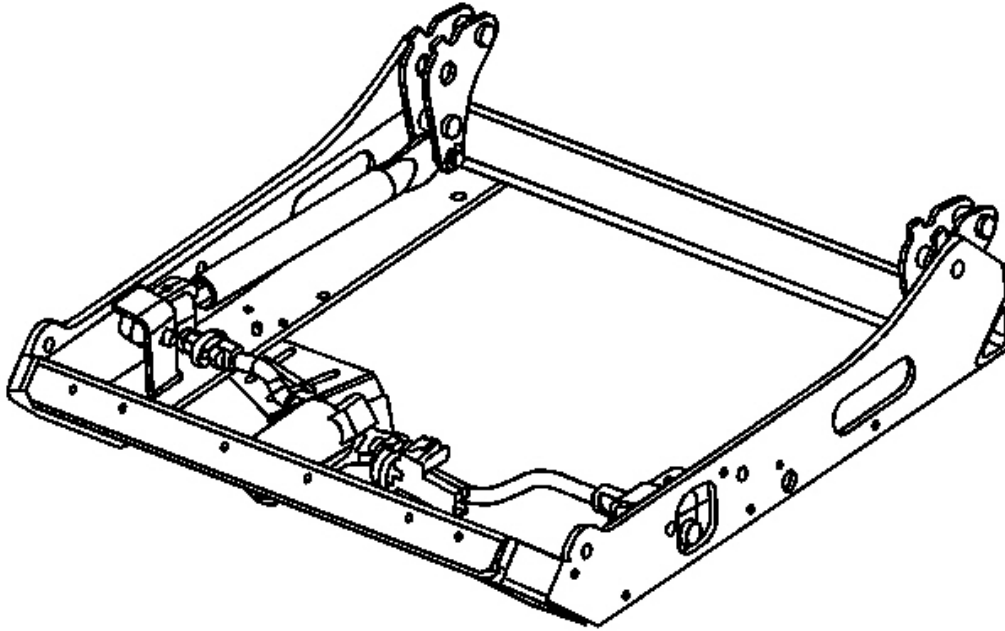


Fig. 68: View Of Seat Frame & Recliner Mechanism
Courtesy of GENERAL MOTORS CORP.

8. Remove the screws attaching the recliner mechanism to the seat frame.
9. Remove the recliner mechanism.

Installation Procedure

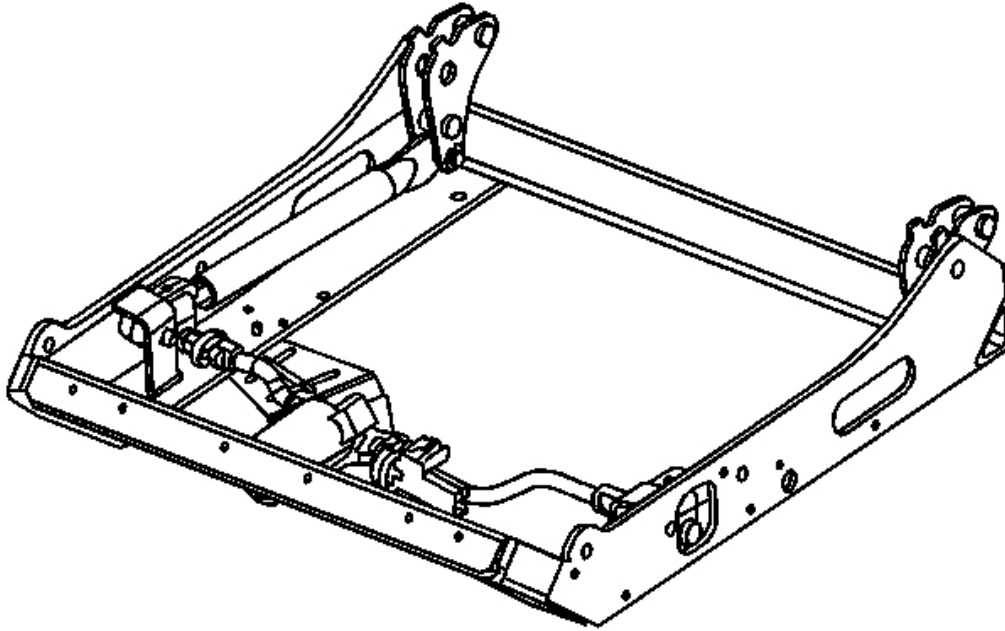


Fig. 69: View Of Seat Frame & Recliner Mechanism
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Do not lubricate the seatback recliner mechanism.

1. Install the recliner mechanism to the seat frame.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

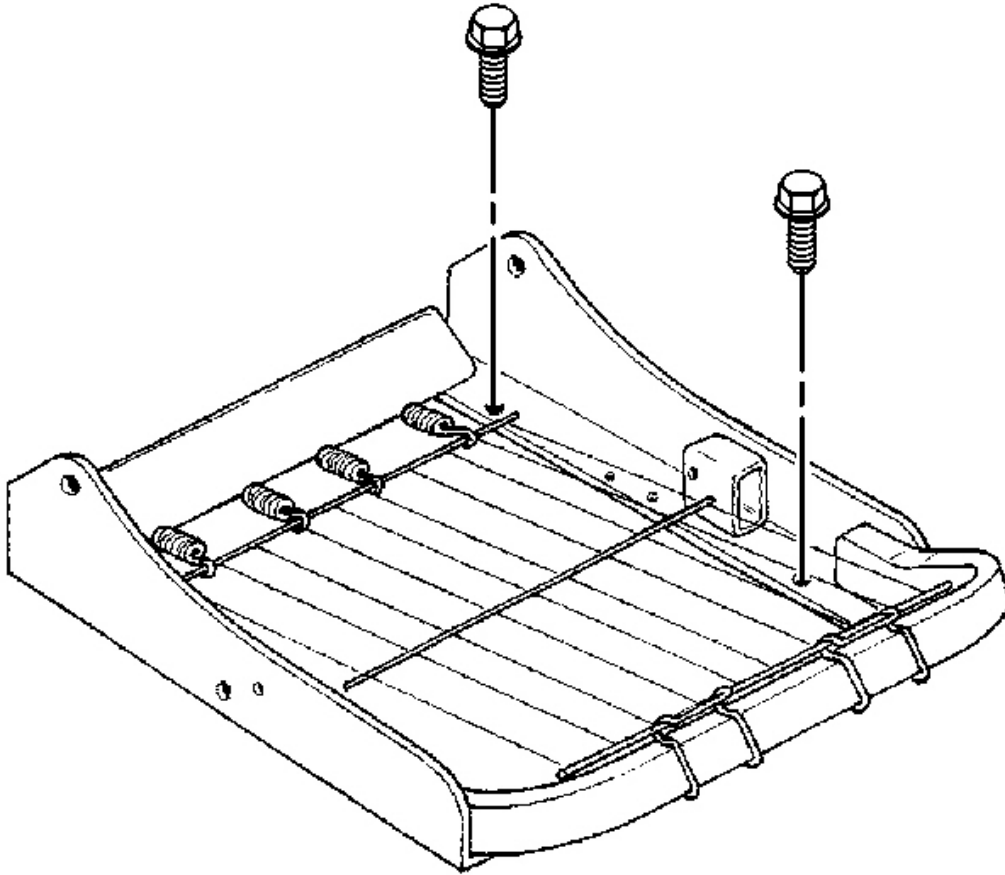


Fig. 70: View Of Seat Cushion Frame
Courtesy of GENERAL MOTORS CORP.

2. Install the seat adjusters to the seat.

NOTE: Refer to Fastener Notice in Cautions and Notices.

3. Apply Loctite™ 271 to the bolts and secure the adjuster to the seat.

Tighten: Tighten the bolts to 24 N.m (18 lb ft).

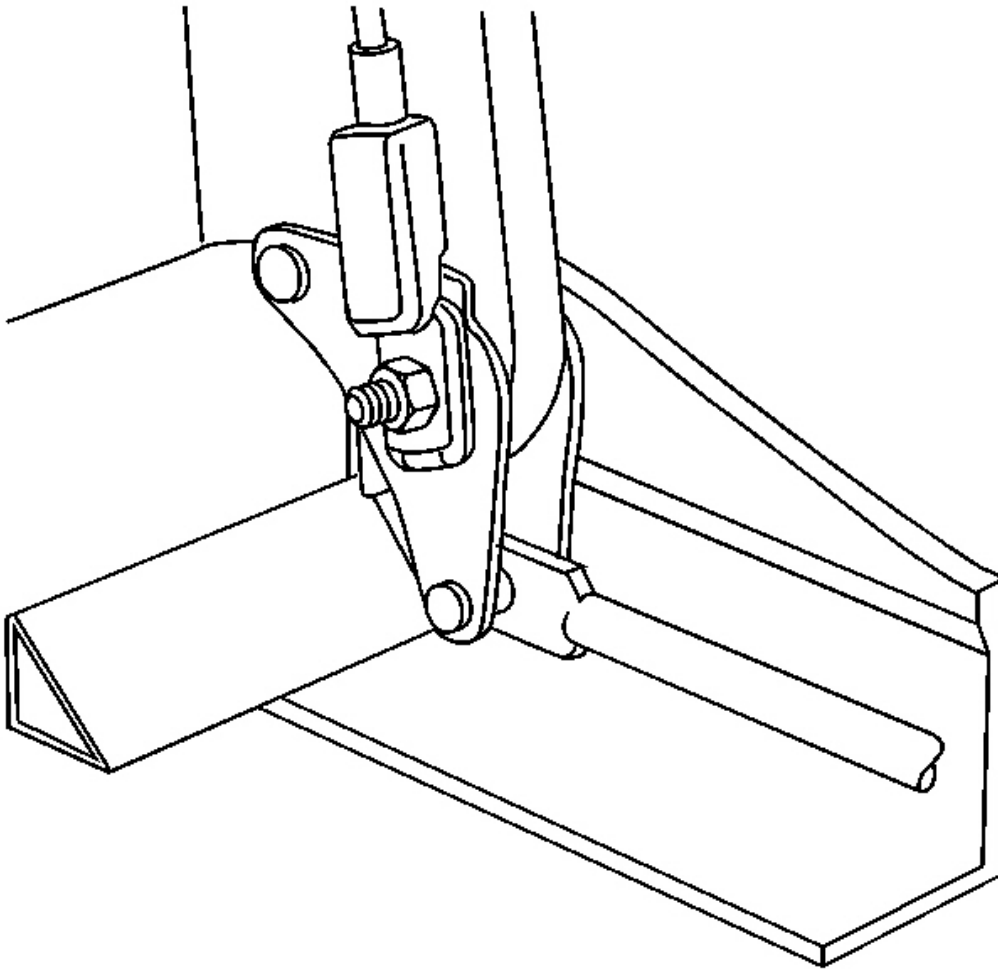


Fig. 71: View Of Seat Hinge Nuts & Bolts
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Use a tread locking compound on the hinge bolts.

4. Install the hinge bolts, seatback release cables, and nuts.

Tighten: Tighten the nuts to 24 N.m (18 lb ft).

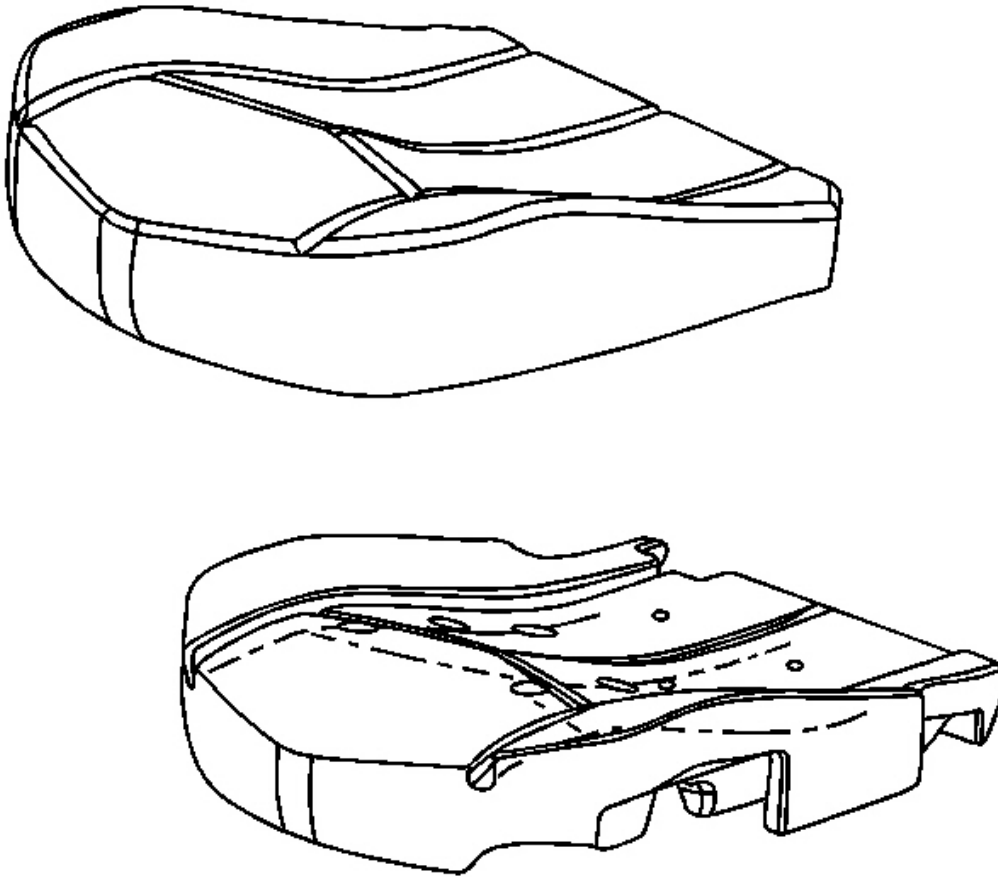


Fig. 72: View Of Cushion Cover & Seat Frame
Courtesy of GENERAL MOTORS CORP.

5. Install the seat cushion cover. Refer to **Seat Cushion Cover Replacement - Driver Side** or to **Seat Cushion Cover Replacement - Passenger Side**.
6. Install the finish panel. Refer to **Finish Panel Replacement - Driver Seat Outer** or to **Finish Panel Replacement - Passenger Seat Outer**.
7. Install the seat. Refer to **Seat Replacement**.

PAD REPLACEMENT - DRIVER SEAT BACK INSERT

Removal Procedure

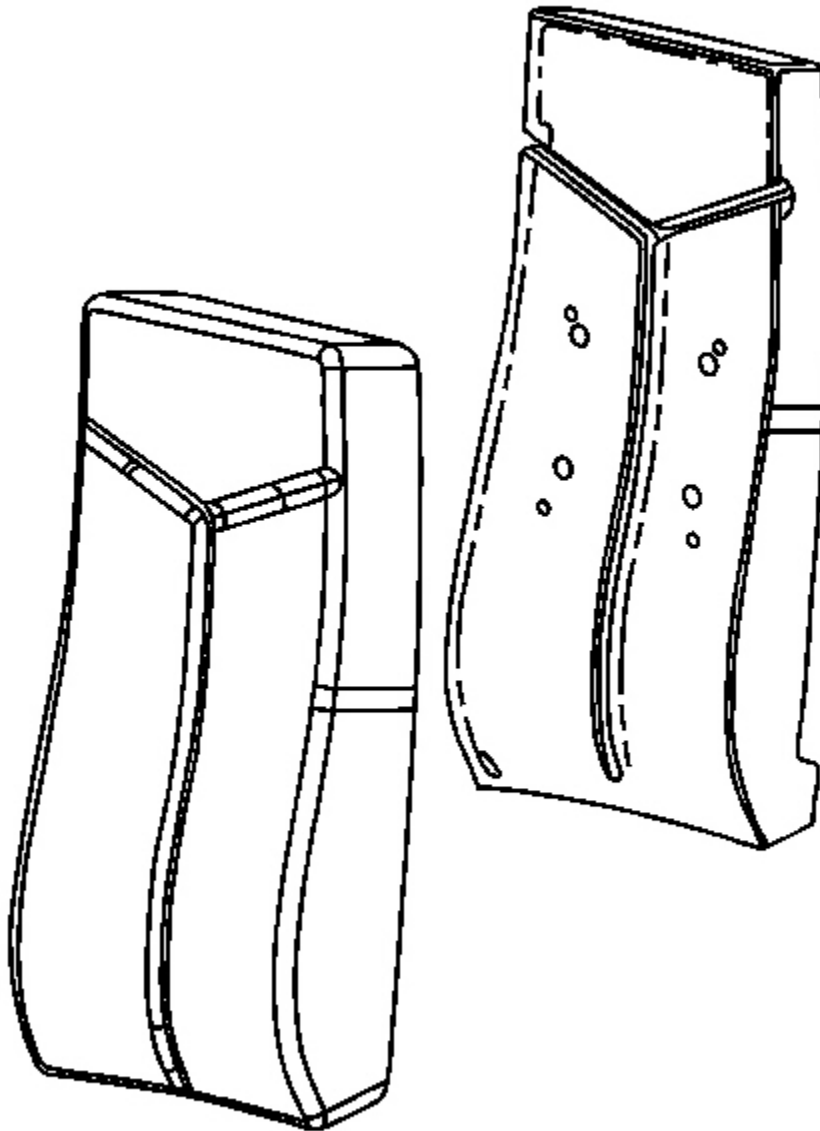


Fig. 73: View Of Seat Cover & Pad
Courtesy of GENERAL MOTORS CORP.

1. Remove the insert at the seat back. Push down on the insert to disengage the insert from the ventilation duct.
2. Remove the lower fir tree retainers at the bottom of the insert.
3. Remove the insert from the seat.

4. Open the insert cover hook and the loop flaps.
5. Remove the cover from the pad.

Installation Procedure

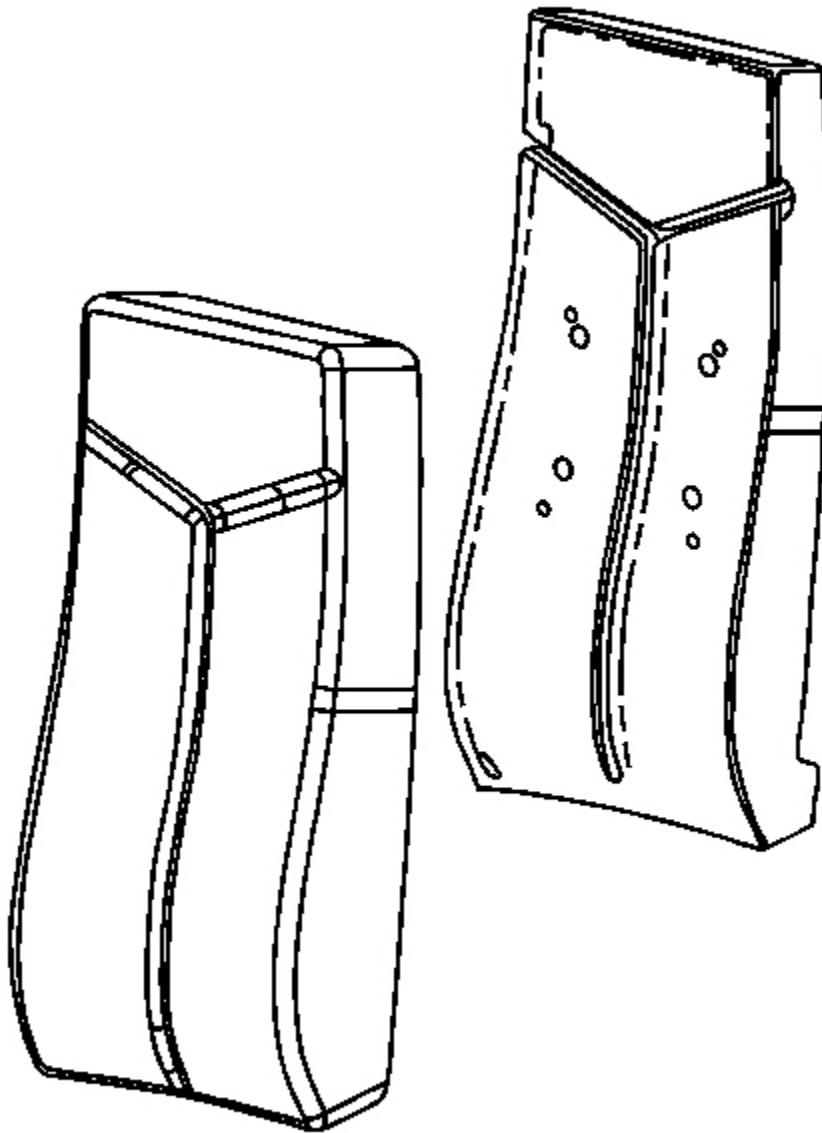


Fig. 74: View Of Seat Cover & Pad
Courtesy of GENERAL MOTORS CORP.

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

1. Install the cover onto the pad.
2. Close the cover flaps and engage the hook and the loop.
3. Install the insert to the seat back.
4. Install the fir tree retainers at the bottom of the insert.
5. Install the insert to the ventilation duct at the top. Push down and under the duct. Then pull up to engage the insert.

PAD REPLACEMENT - PASSENGER SEAT BACK INSERT

Removal Procedure

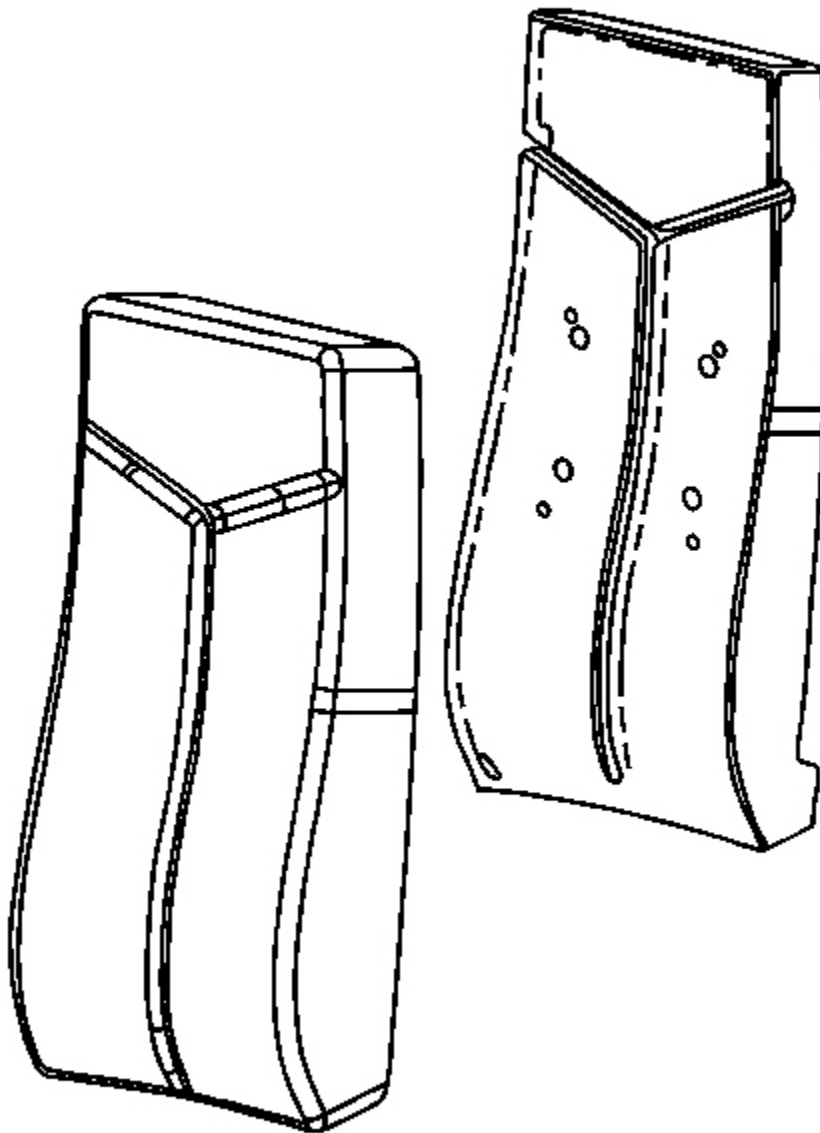


Fig. 75: View Of Seat Cover & Pad
Courtesy of GENERAL MOTORS CORP.

1. Remove the insert at the seat back. Push down on the insert to disengage the insert from the ventilation duct.
2. Remove the lower fir tree retainers at the bottom of the insert.
3. Remove the insert from the seat.

4. Open the insert cover hook and the loop flaps.
5. Remove the cover from the pad.

Installation Procedure

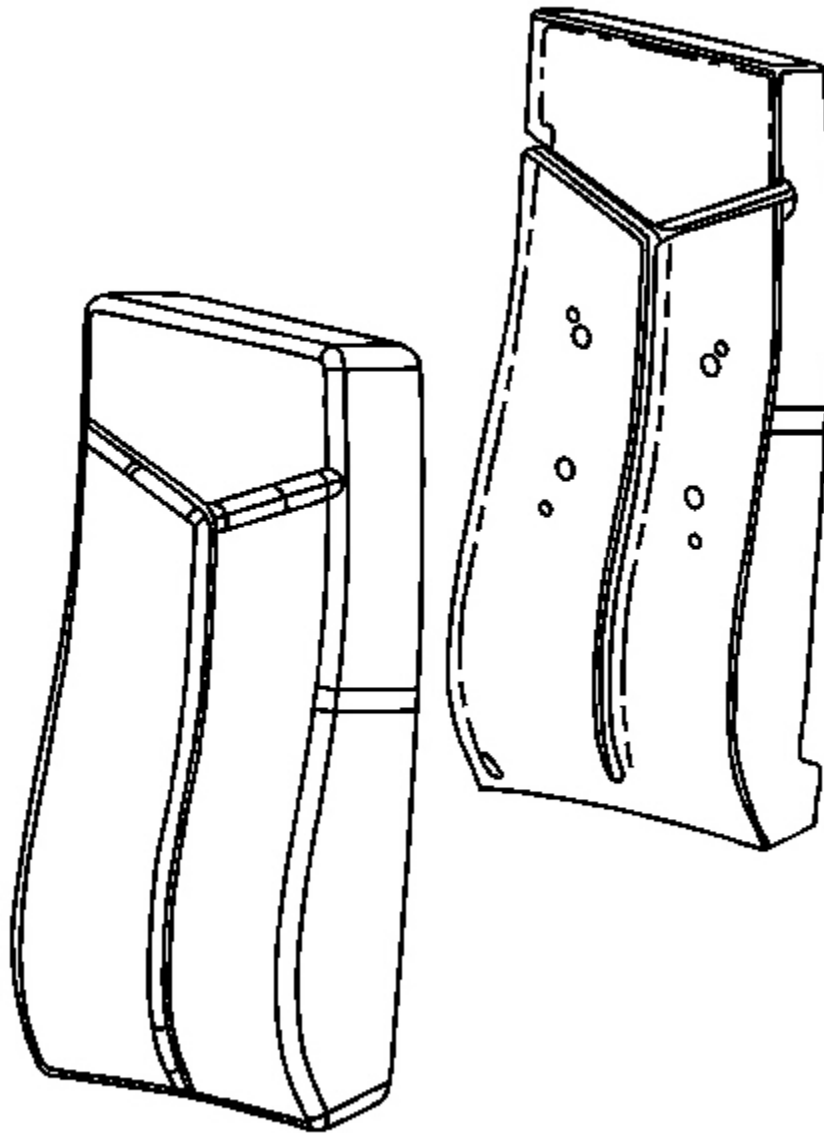


Fig. 76: View Of Seat Cover & Pad
Courtesy of GENERAL MOTORS CORP.

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

1. Install the cover onto the pad.
2. Close the cover flaps and engage the hook and the loop.
3. Install the insert to the seat back.
4. Install the fir tree retainers at the bottom of the insert.
5. Install the insert to the ventilation duct at the top. Push down and under the duct. Then pull up to engage the insert.

COVER REPLACEMENT - DRIVER SEAT BACK INSERT

Removal Procedure

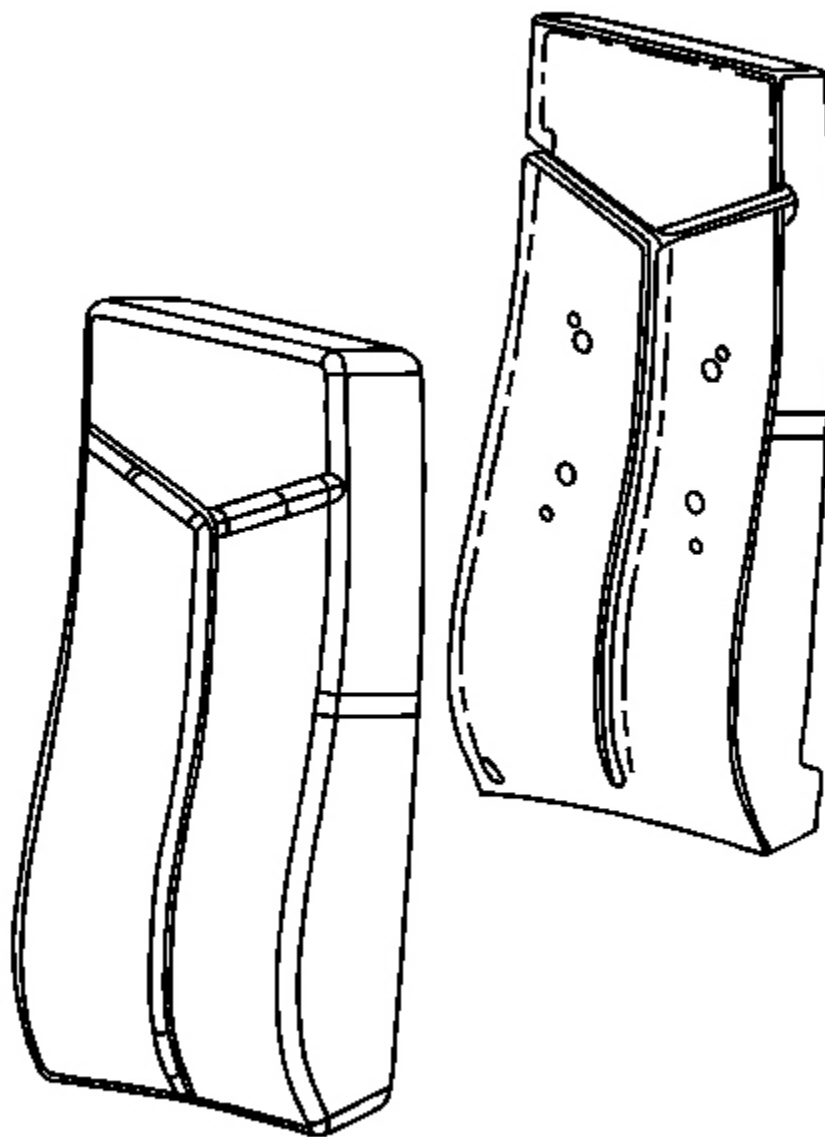


Fig. 77: View Of Seat Cover & Pad
Courtesy of GENERAL MOTORS CORP.

1. Remove the insert at the seat back. Push down on the insert to disengage the insert from the ventilation duct.
2. Remove the lower fir tree retainers at the bottom of the insert.
3. Remove the insert from the seat.

4. Open the insert cover hook and the loop flaps.
5. Remove the cover from the pad.

Installation Procedure

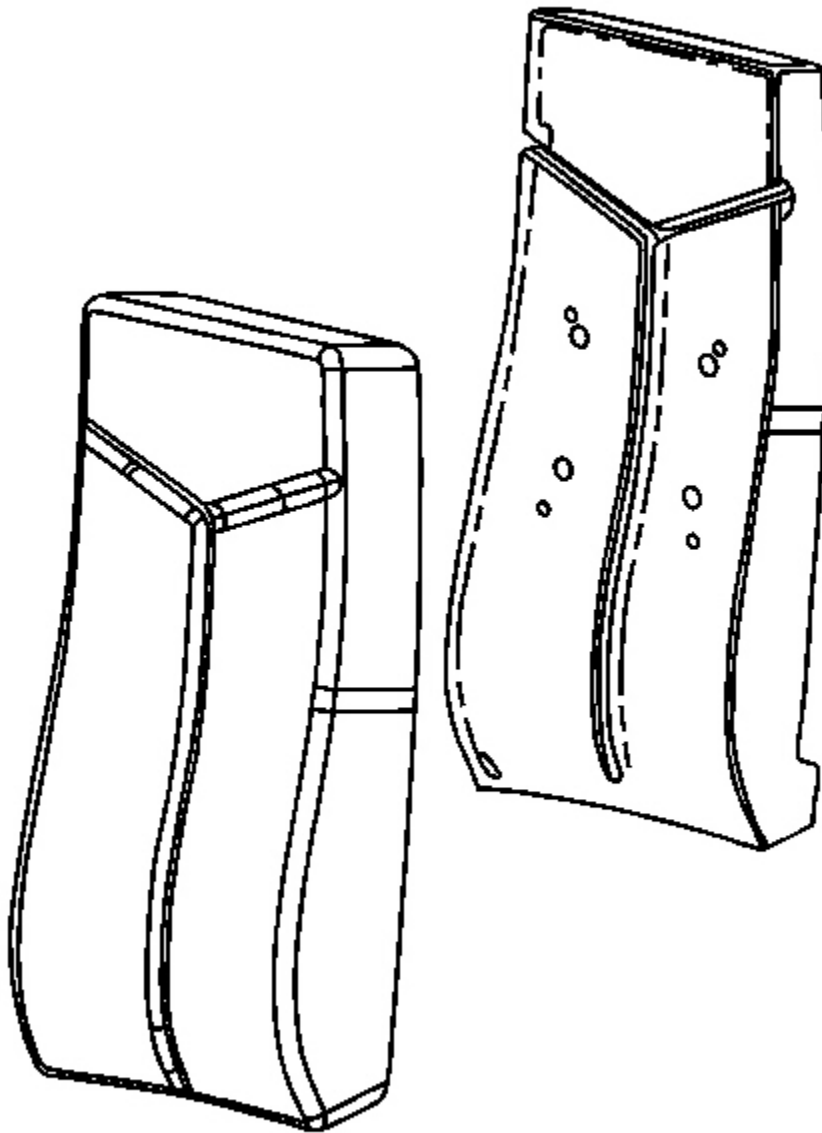


Fig. 78: View Of Seat Cover & Pad
Courtesy of GENERAL MOTORS CORP.

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

1. Install the cover onto the pad.
2. Close the cover flaps and engage the hook and the loop.
3. Install the insert to the seat back.
4. Install the fir tree retainers at the bottom of the insert.
5. Install the insert to the ventilation duct at the top. Push down and under the duct. Then pull up to engage the insert.

COVER REPLACEMENT - PASSENGER SEAT BACK INSERT

Removal Procedure

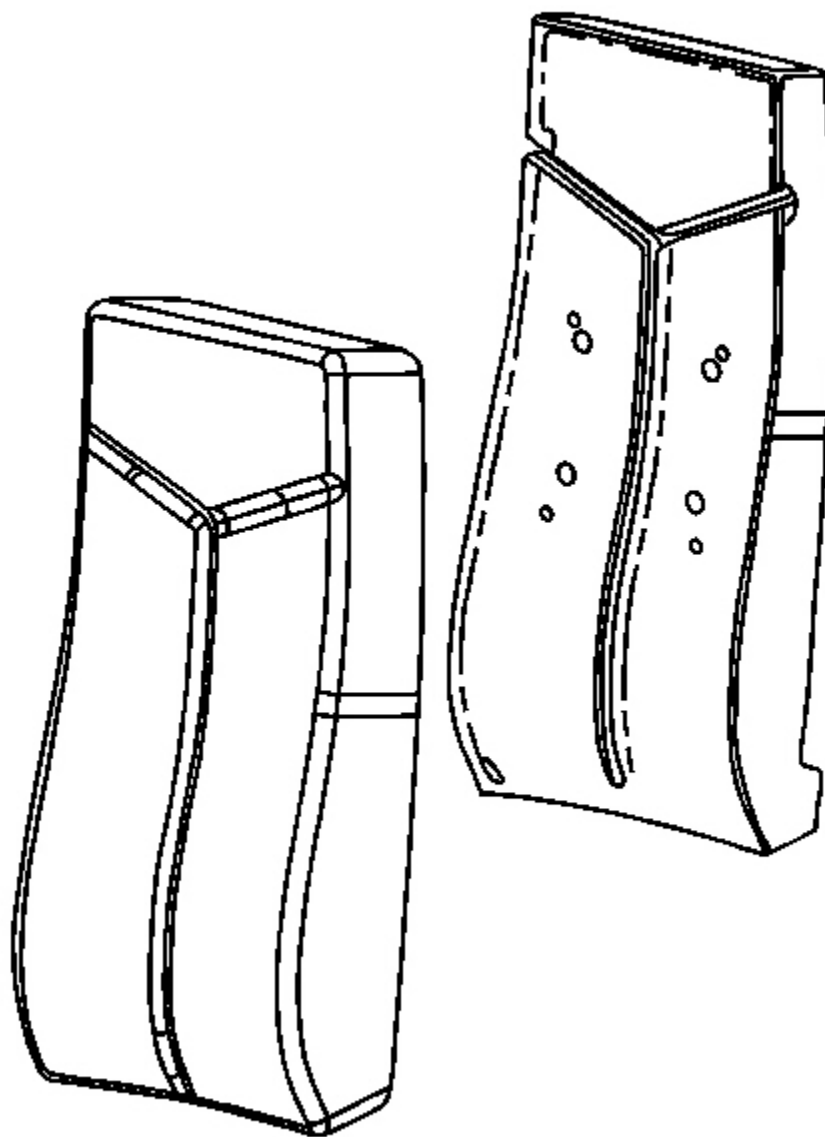


Fig. 79: View Of Seat Cover & Pad
Courtesy of GENERAL MOTORS CORP.

1. Remove the insert at the seat back. Push down on the insert to disengage the insert from the ventilation duct.
2. Remove the lower fir tree retainers at the bottom of the insert.
3. Remove the insert from the seat.

4. Open the insert cover hook and the loop flaps.
5. Remove the cover from the pad.

Installation Procedure

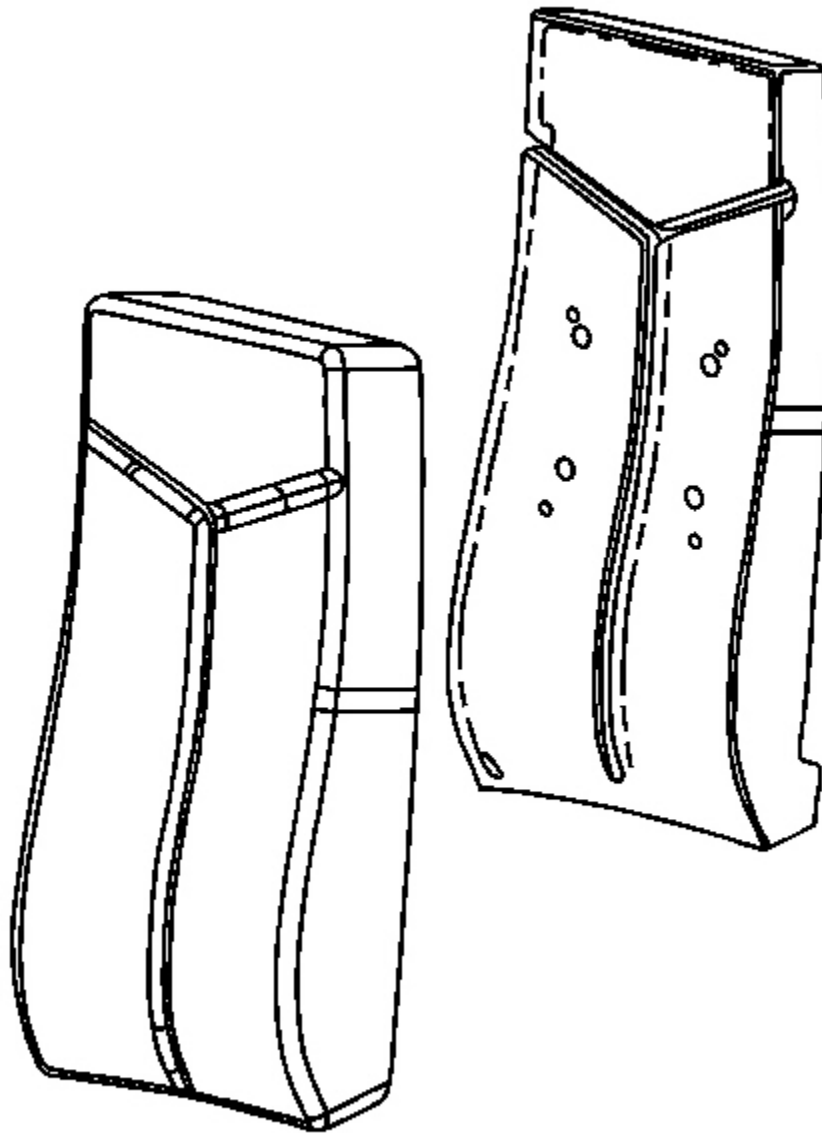


Fig. 80: View Of Seat Cover & Pad
Courtesy of GENERAL MOTORS CORP.

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

1. Install the cover onto the pad.
2. Close the cover flaps and engage the hook and the loop.
3. Install the insert to the seat back.
4. Install the fir tree retainers at the bottom of the insert.
5. Install the insert to the ventilation duct at the top. Push down and under the duct. Then pull up to engage the insert.

LUMBAR PUMP REPLACEMENT

Removal Procedure

The lumbar pump and control module are separate units that are attached to each other by a wire harness and a hose. They are supplied and replaced as an assembly. The lumbar pump is contained in a vinyl pouch under the seat and is tie strapped to the seat adjuster torque tube. The attached control module is contained in a vinyl pouch and is secured with J strips to the bottom of the seat support springs. The service part is supplied with connector fittings and the air hoses are labeled #3 and #4 to aid in assembly.

1. Raise the seat to the full up position.
2. Remove the seat. Refer to **Seat Replacement**.
3. Remove the seat cushion cover. Refer to **Seat Cushion Pad Replacement - Driver Side** or to **Seat Cushion Pad Replacement - Passenger Side**.

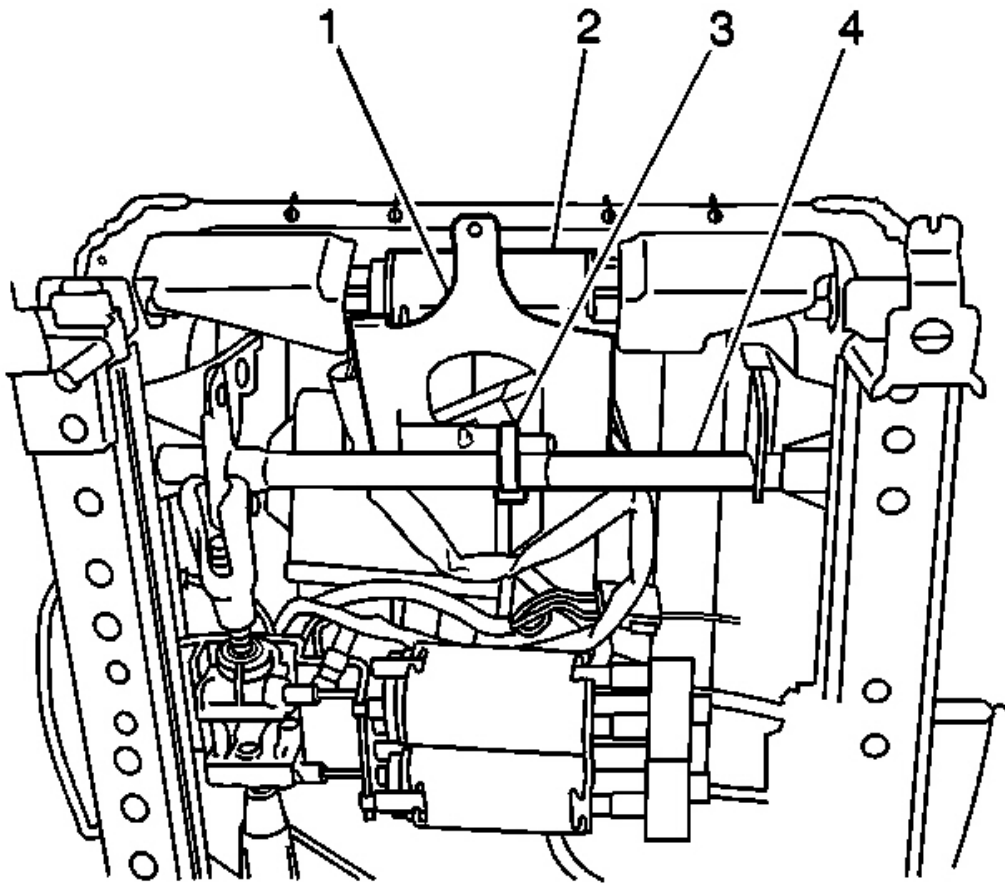


Fig. 81: View Of Torque Tube
Courtesy of GENERAL MOTORS CORP.

4. Remove the tie straps attaching the pump to the torque tube (4) under the seat.
5. Remove the control module by unhooking the J strips from the seat cushion support wires.

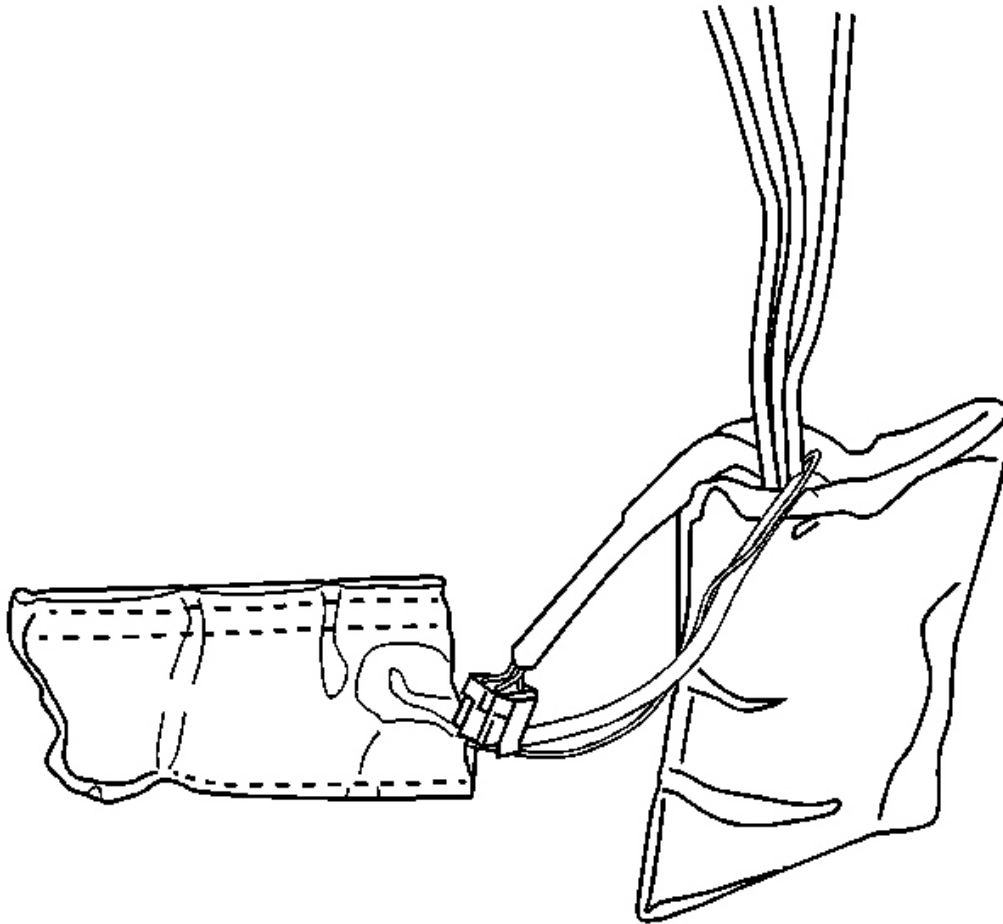


Fig. 82: View Of Pump & Lumbar Control Module
Courtesy of GENERAL MOTORS CORP.

6. Disconnect the electrical connector.
7. Reposition the pump and the lumbar control module from under the seat support wires to on top of the seat support wires.

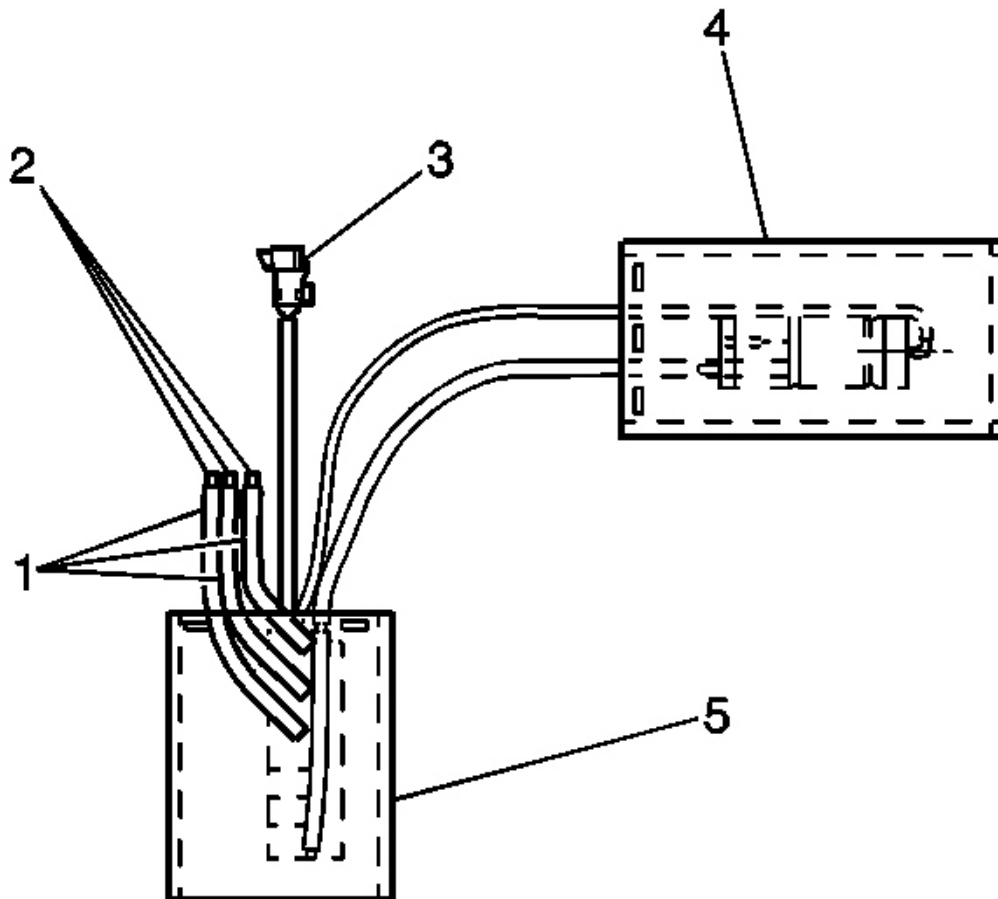


Fig. 83: View Of Control Module, Pump & Air Hoses
Courtesy of GENERAL MOTORS CORP.

8. Cut the air hoses (1) that connect the control module to the bladder 75 mm (3 in) from the control module (5).
9. Remove the pump (4) and the control module (5) as an assembly.

Installation Procedure

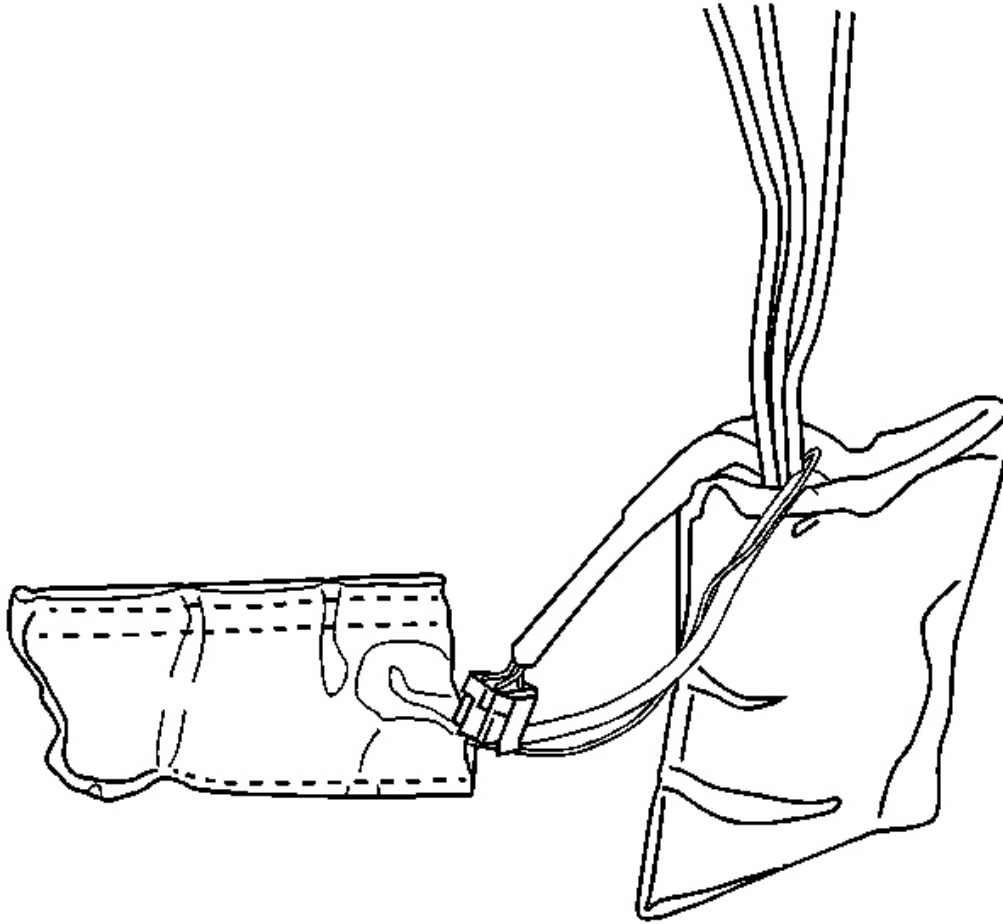


Fig. 84: View Of Pump & Lumbar Control Module
Courtesy of GENERAL MOTORS CORP.

1. Lay the new pump and control module assembly on top of the seat spring assembly.
2. Apply a very small amount of air to each of the 2 lumbar bladder hoses. Perform the procedure in the next step based upon the following information:
 - If the upper lumbar inflates, connect that hose to the hose labeled #3 on the new pump.
 - If the lower lumbar inflates, connect that hose to the hose labeled #4 on the new pump.

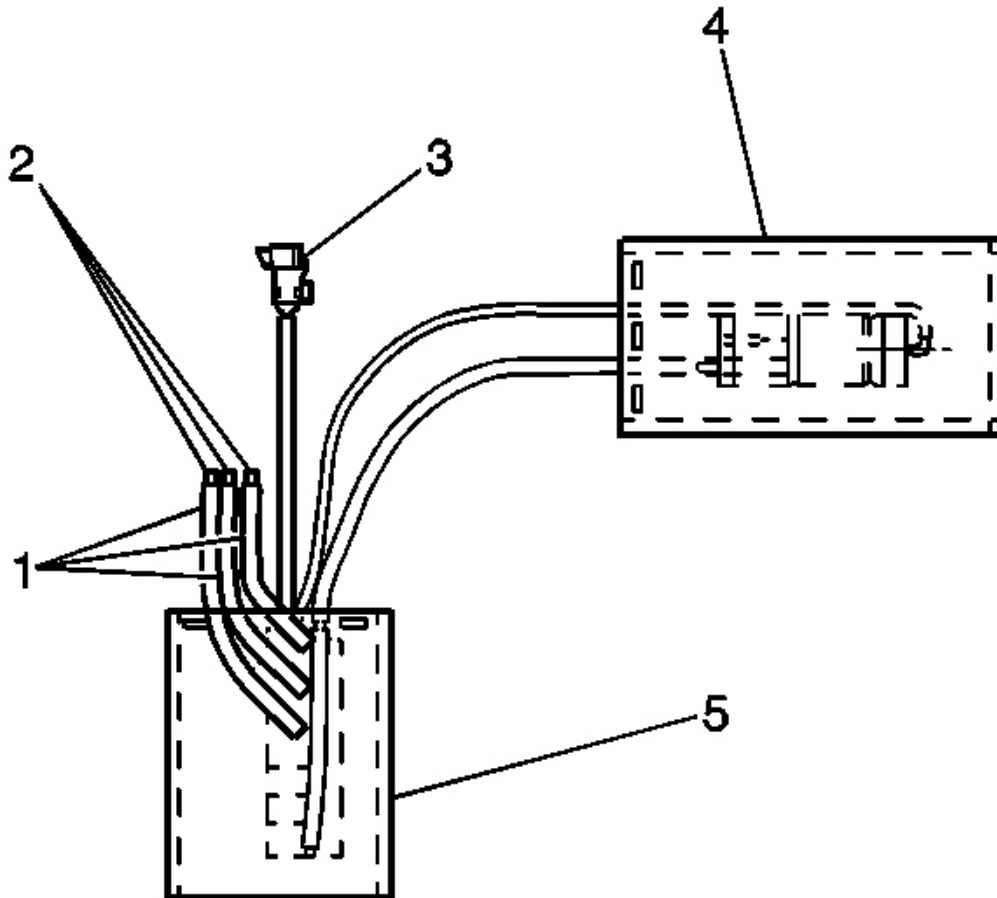


Fig. 85: View Of Control Module, Pump & Air Hoses
Courtesy of GENERAL MOTORS CORP.

3. Using Loctite™ 406, or equivalent, glue each hose to the fitting (2) in the module hose.
 1. Position the hose just over the edge of the barb on the attaching fitting.
 2. Apply the adhesive completely around the fitting.
 3. Quickly push the hose the rest of the way onto the fitting.

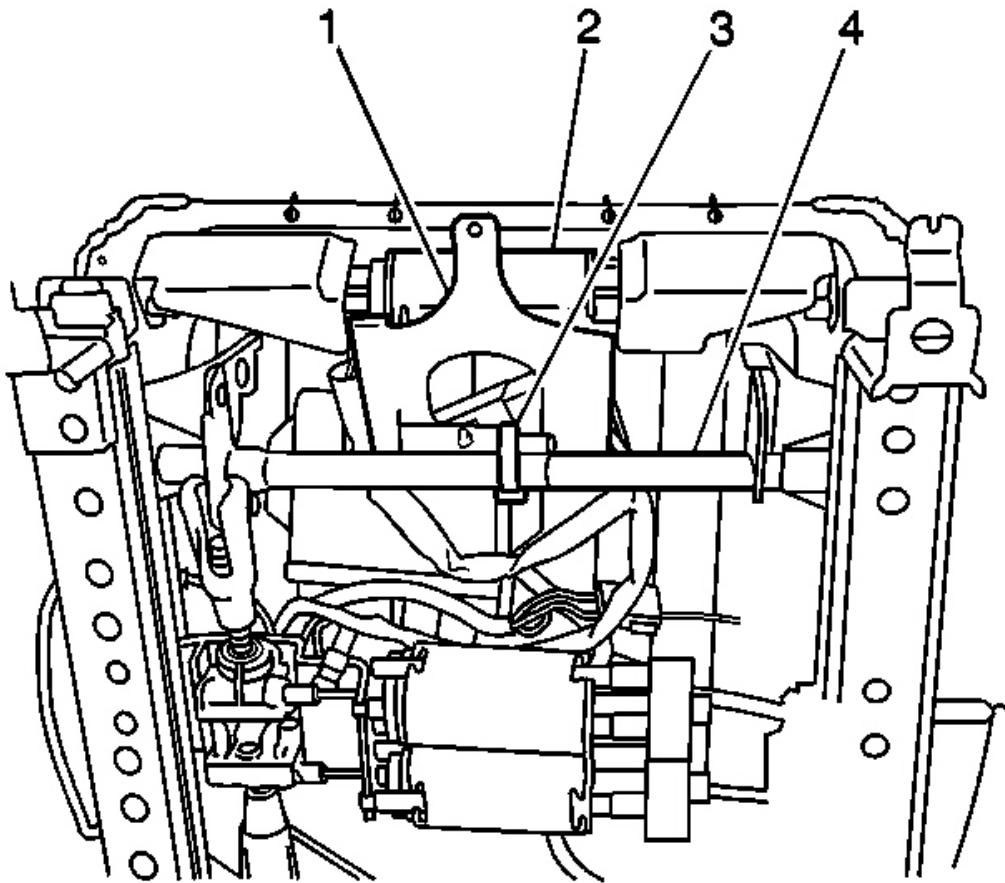


Fig. 86: View Of Torque Tube
Courtesy of GENERAL MOTORS CORP.

4. Insert the pump and the control module down under the seat support wires.
5. Attach the control module with the J strips facing outward to the underside of the seat cushion support wires.
6. Connect the electrical connector to the control module.
7. Tie strap the pump to the torque tube (4) under the front of the seat.
8. Install the seat cushion trim cover. Refer to **Seat Cushion Pad Replacement - Driver Side** or to **Seat Cushion Pad Replacement - Passenger Side**.
9. Install the seat. Refer to **Seat Replacement**.

LUMBAR SWITCH REPLACEMENT

Removal Procedure

1. Remove the seat outer finish panel. Refer to **Finish Panel Replacement - Driver Seat Outer**.

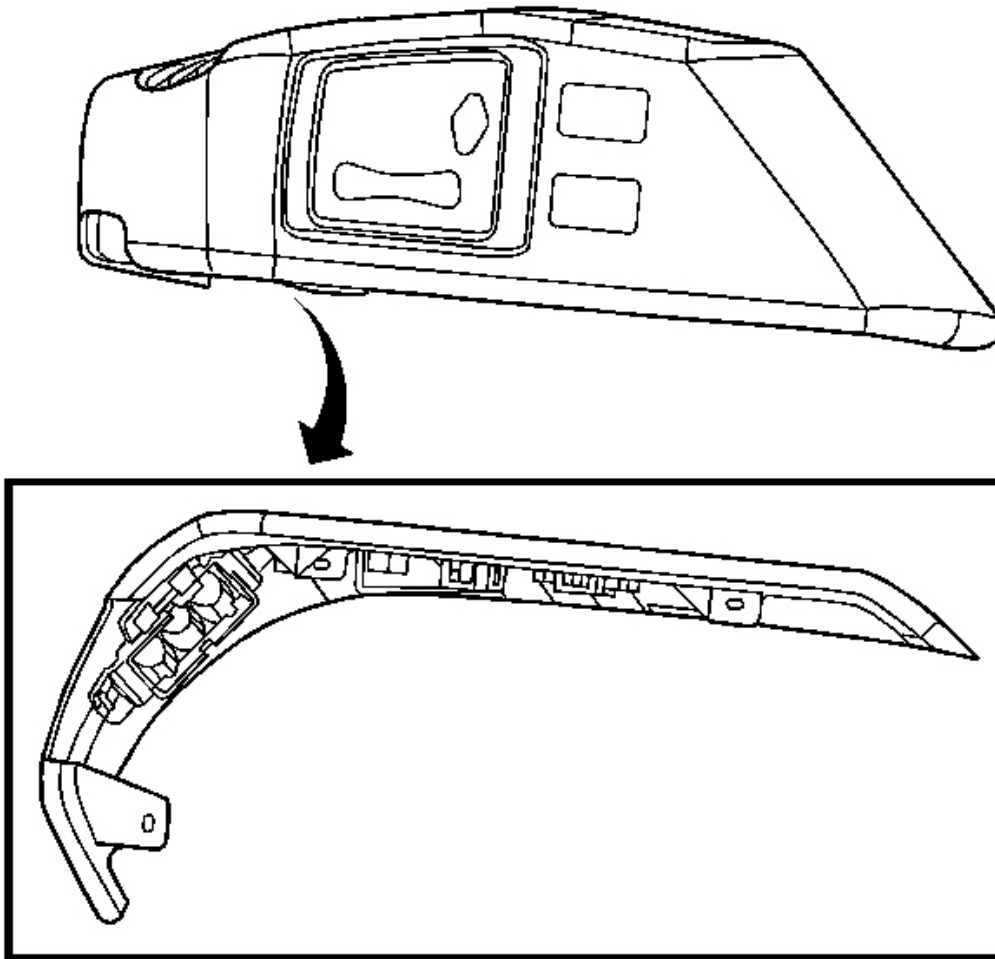


Fig. 87: View Of Finish Panel Bottom
Courtesy of GENERAL MOTORS CORP.

2. Use a small flat-bladed tool to release the switch from the finish panel. Remove the switch.

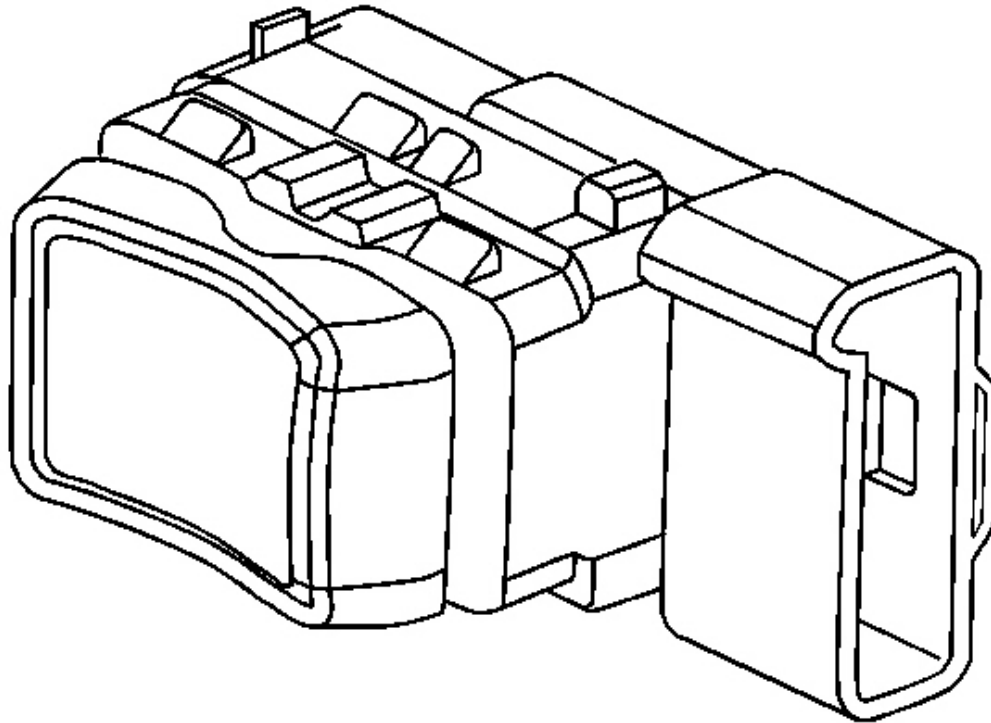


Fig. 88: View Of Lumbar Switch & Electrical Connector
Courtesy of GENERAL MOTORS CORP.

3. Disconnect the electrical connector to the lumbar switch.

Installation Procedure

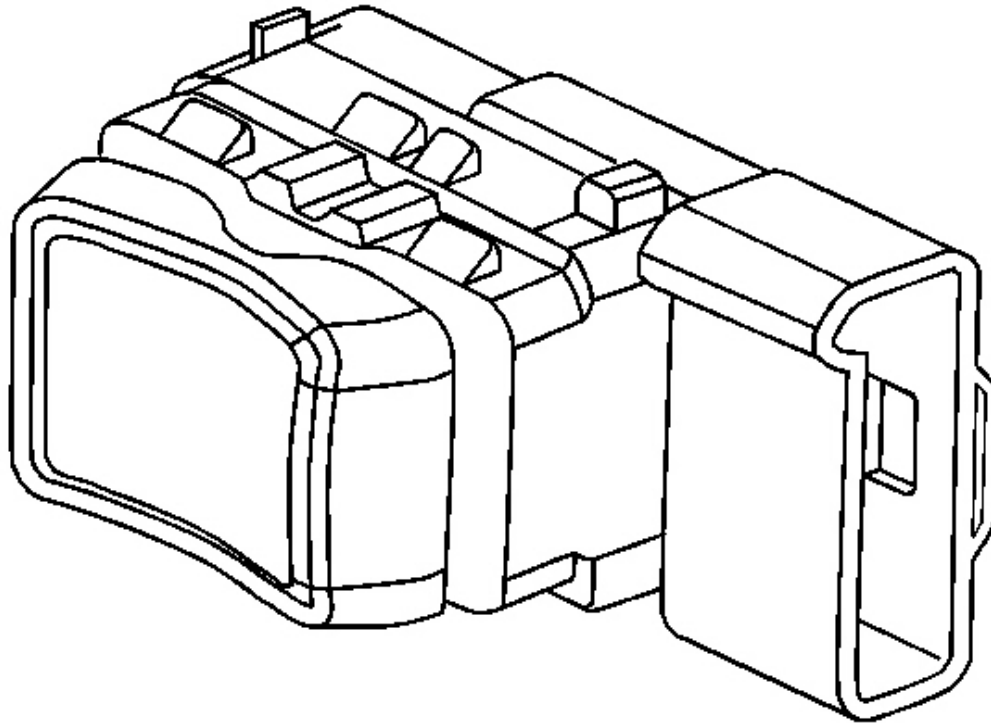


Fig. 89: View Of Lumbar Switch & Electrical Connector
Courtesy of GENERAL MOTORS CORP.

1. Connect the electrical connector to the lumbar switch.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

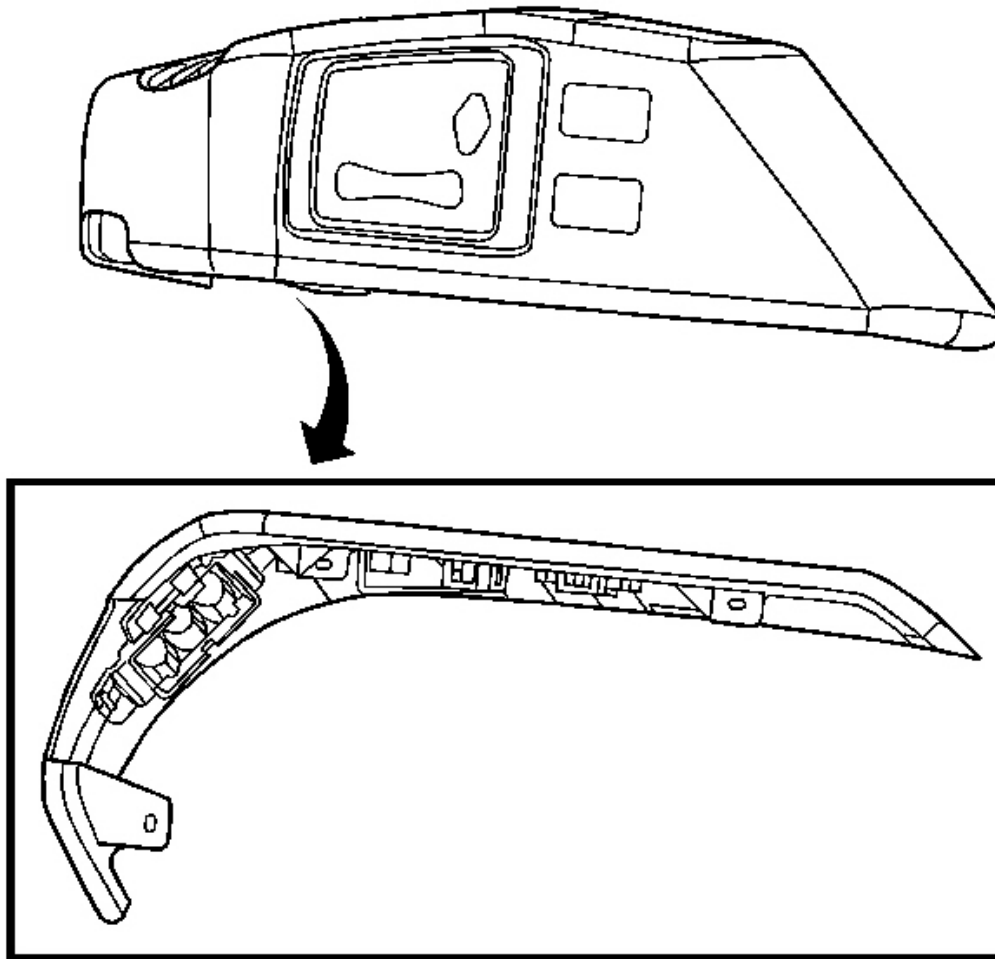


Fig. 90: View Of Finish Panel Bottom
Courtesy of GENERAL MOTORS CORP.

2. Install the lumbar switch to the finish panel. Press until the switch snaps into place.
3. Install the finish panel. Refer to **Finish Panel Replacement - Driver Seat Outer**.

LUMBAR BLADDER REPLACEMENT

Removal Procedure

The lumbar bladders are serviced as a single system. The bladder system is serviced separate from the module assembly. The bladder service part is supplied with the necessary connector fittings. The bladder hoses are labeled #3 and #4 to aid in assembly.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

1. Raise the seat to the full up position.
2. Remove the seat. Refer to **Seat Replacement**.
3. Remove the seat cushion cover and pad. Refer to **Seat Cushion Pad Replacement - Driver Side** and to **Seat Cushion Pad Replacement - Passenger Side**.

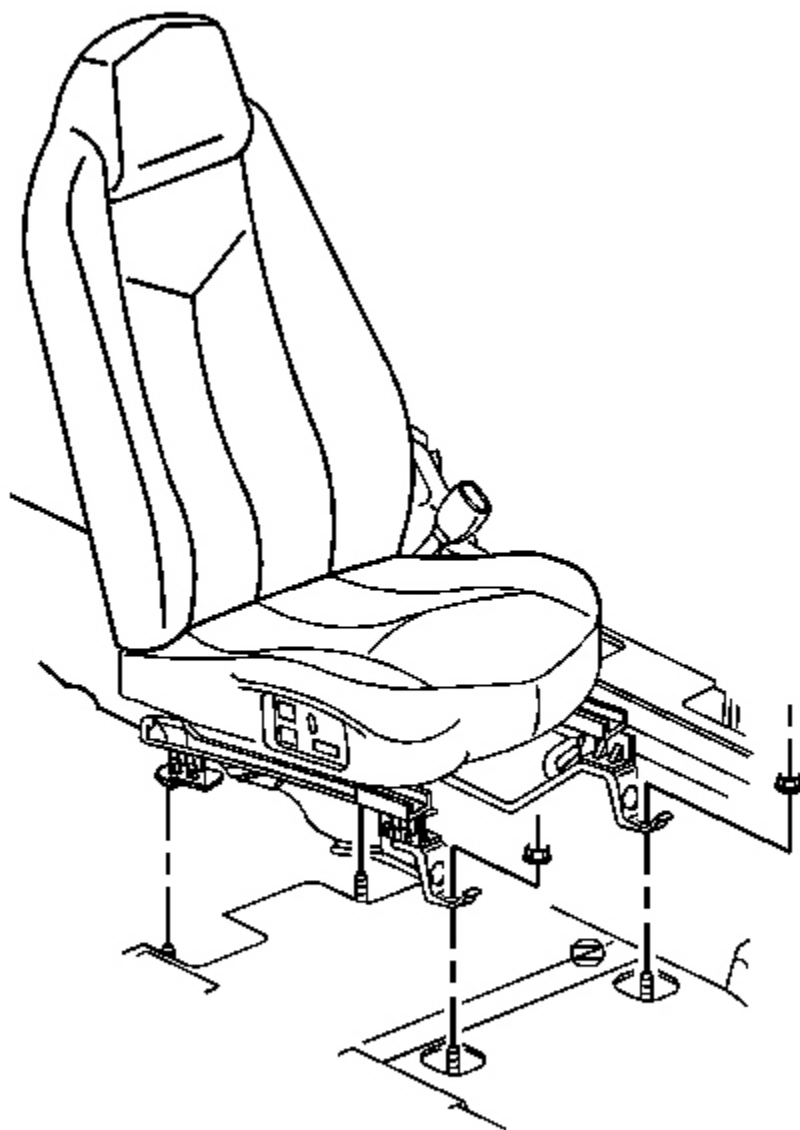


Fig. 91: View Of Seat & Components
Courtesy of GENERAL MOTORS CORP.

4. Remove the seat back insert by pushing down to disengage at the top.
5. Remove the 2 lower fir tree fasteners attaching the seat back insert.
6. Remove the 2 fir tree fasteners which retain the bladder to the seat back.

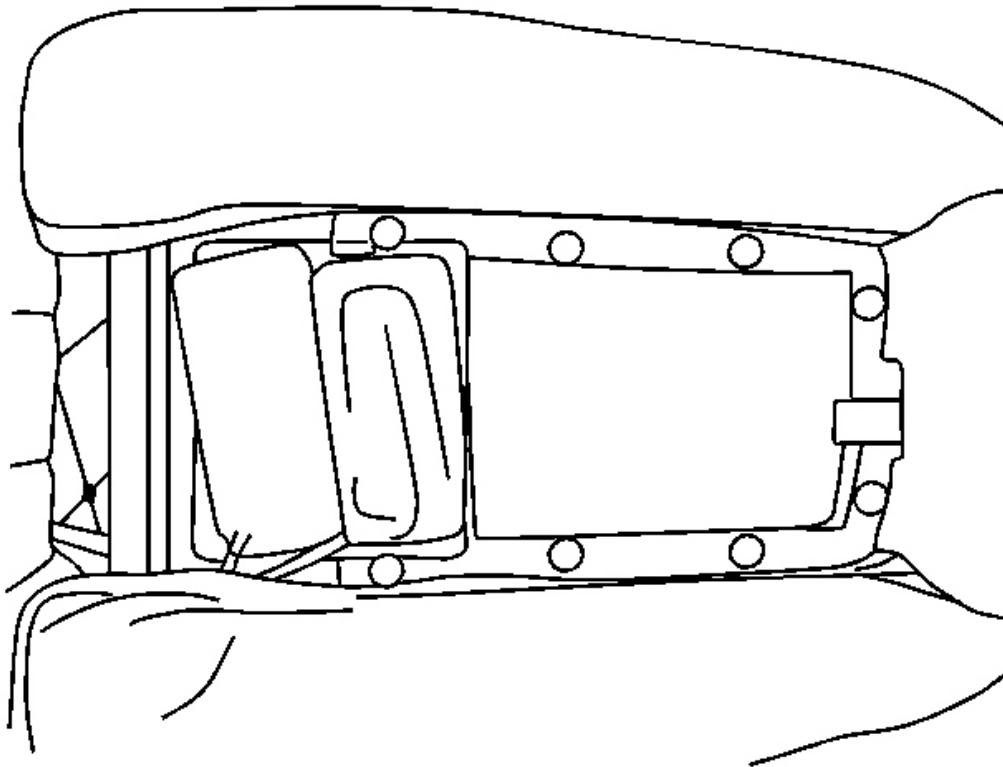


Fig. 92: View Of Lumbar Bladder System
Courtesy of GENERAL MOTORS CORP.

7. Remove the lumbar bladder system from the seat back.

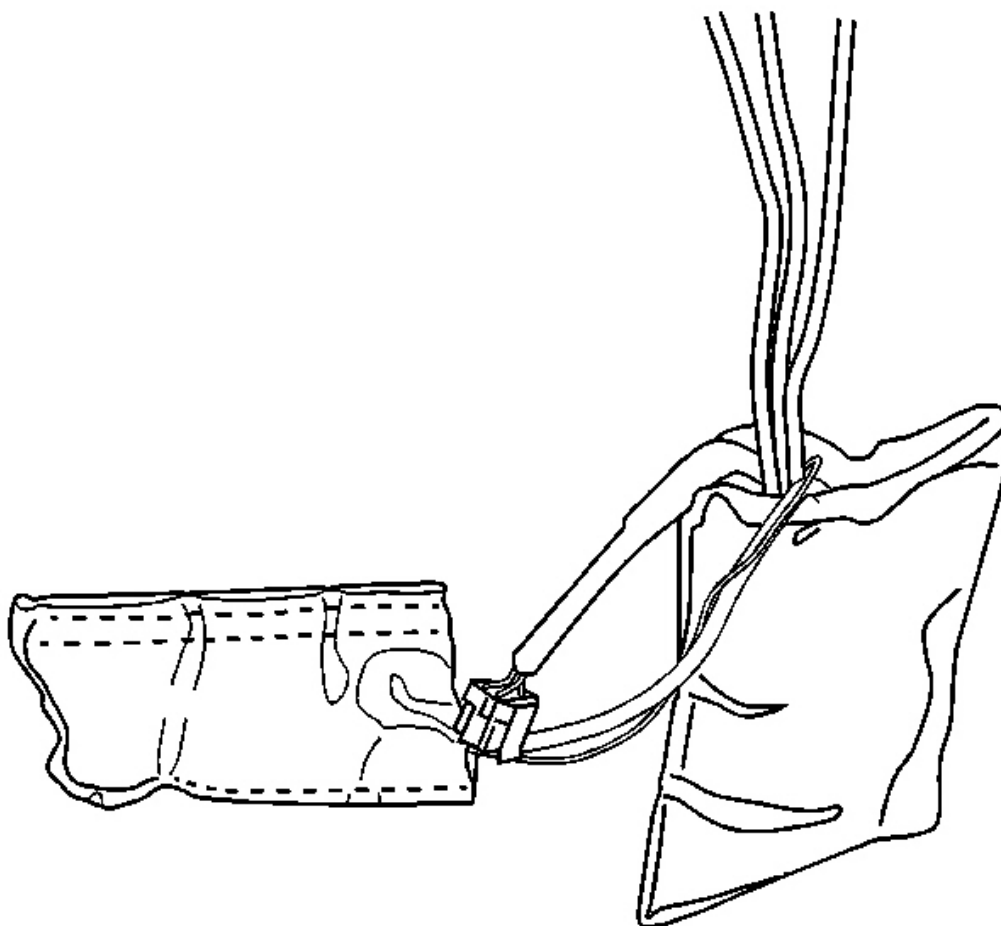


Fig. 93: View Of Pump & Lumbar Control Module
Courtesy of GENERAL MOTORS CORP.

8. Remove the control module J strips from the seat support wires.
9. Reposition the control module to the top of the seat support wires. It is not necessary to remove the lumbar pump.

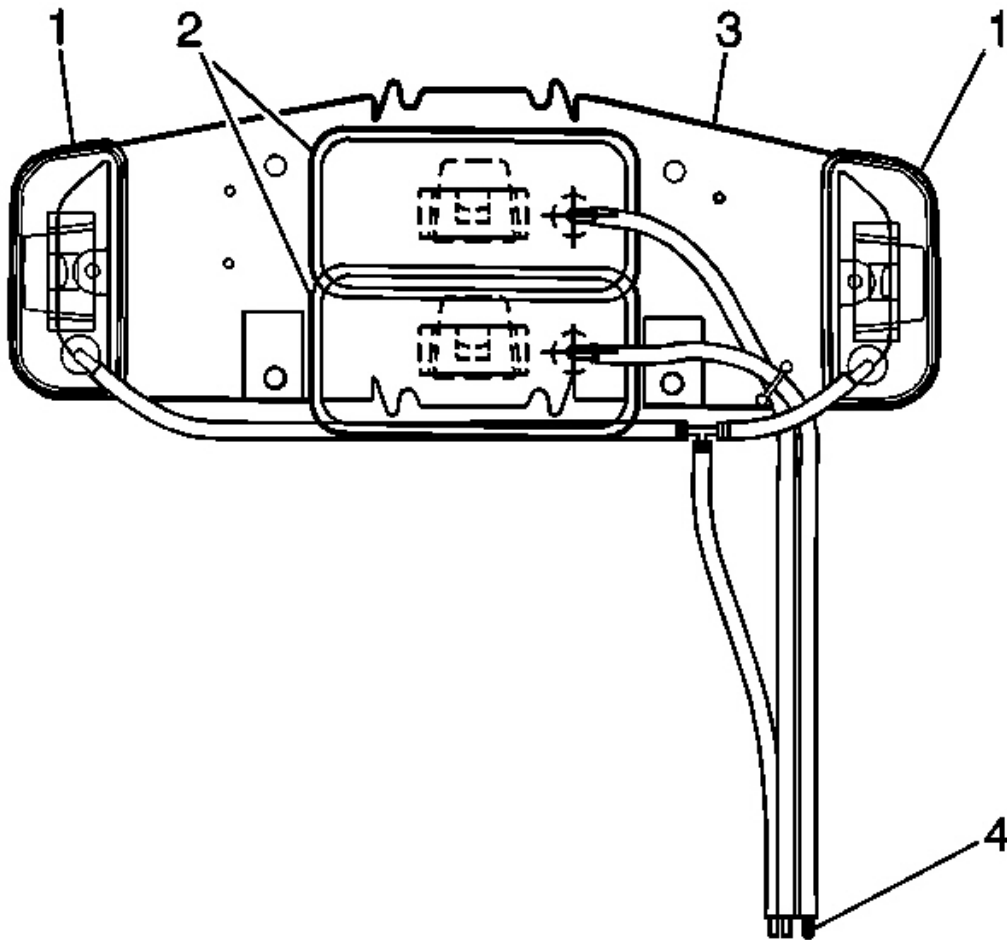


Fig. 94: View Of Hoses

Courtesy of GENERAL MOTORS CORP.

10. Cut the hoses (4) connecting the control module to the bladders 75 mm (3 in) from the control module.

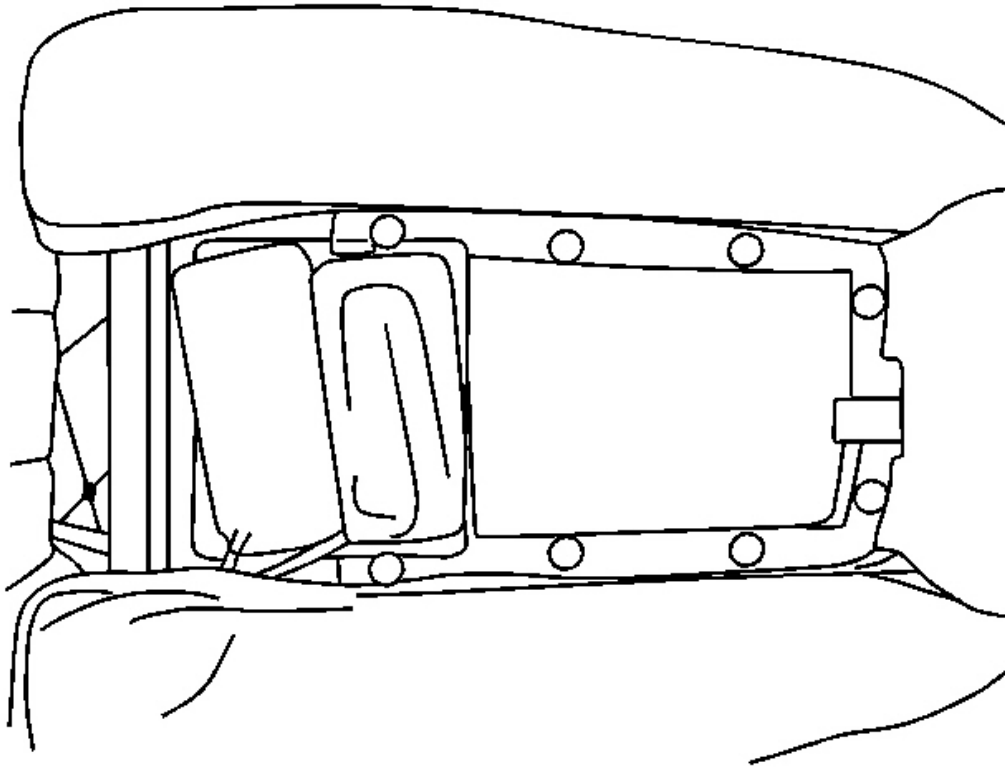


Fig. 95: View Of Lumbar Bladder System
Courtesy of GENERAL MOTORS CORP.

11. Remove the lumbar bladder assembly.

Installation Procedure

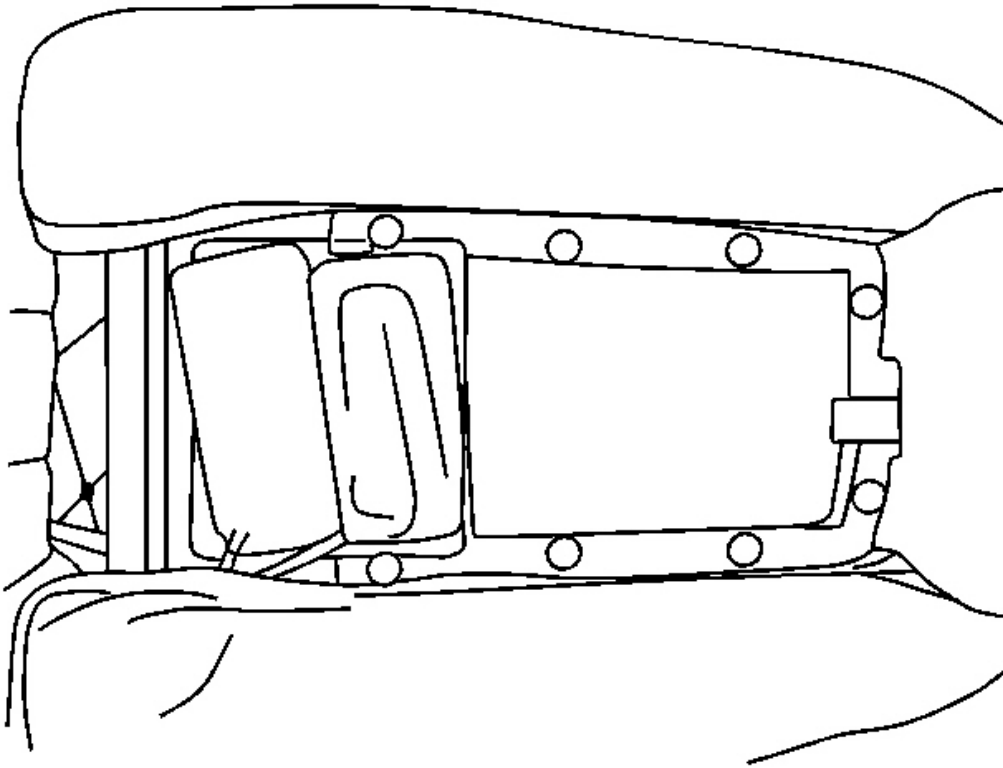


Fig. 96: View Of Lumbar Bladder System
Courtesy of GENERAL MOTORS CORP.

1. Position the lumbar support bladders to the seat back inserting the tabs into the seat back.
2. Route the hoses through the pivot area and tie strap them to the seat frame under the seat back adjuster.
3. Connect the seat switch to the harness.
4. Connect power to the seat. You may need to position the seat in the vehicle.
5. Perform the procedure in the next step based upon the following information:
 - Operate the upper lumbar control and connect the hose that pressurized to the bladder hose labeled #3.
 - Operate the lower lumbar control and connect the hose that pressurized to the bladder hose labeled #4.

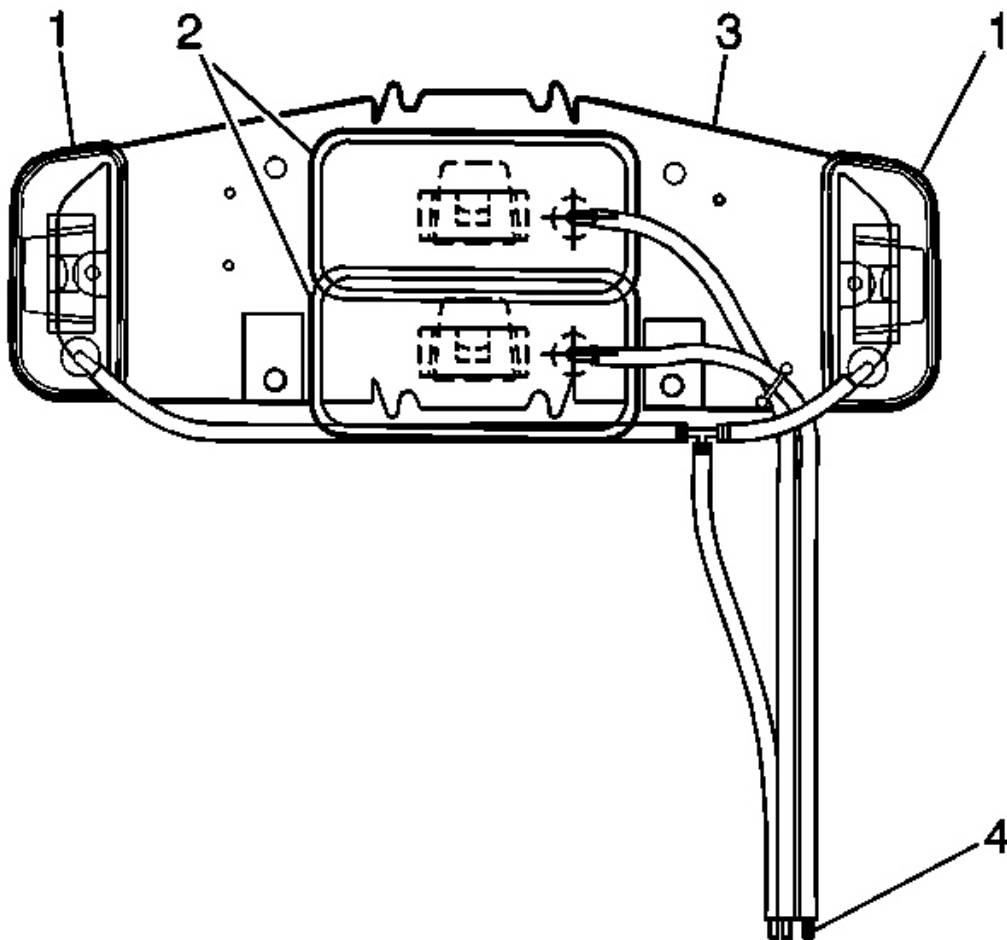


Fig. 97: View Of Hoses

Courtesy of GENERAL MOTORS CORP.

6. Using Loctite™ 406, or equivalent, glue the module hoses to the fittings on the bladder hoses (4).
 1. Position the hose just over the edge of the barb on the attaching fitting.
 2. Apply the adhesive completely around the fitting.
 3. Quickly push the hose the rest of the way onto the fitting.
7. Install the control module to the seat support wires with the J-strips.
8. Disconnect the seat electrical connector and remove the seat from the vehicle.
9. Install the seat cushion cover. Refer to **Seat Cushion Pad Replacement - Driver Side** or to **Seat Cushion Pad Replacement - Passenger Side**.

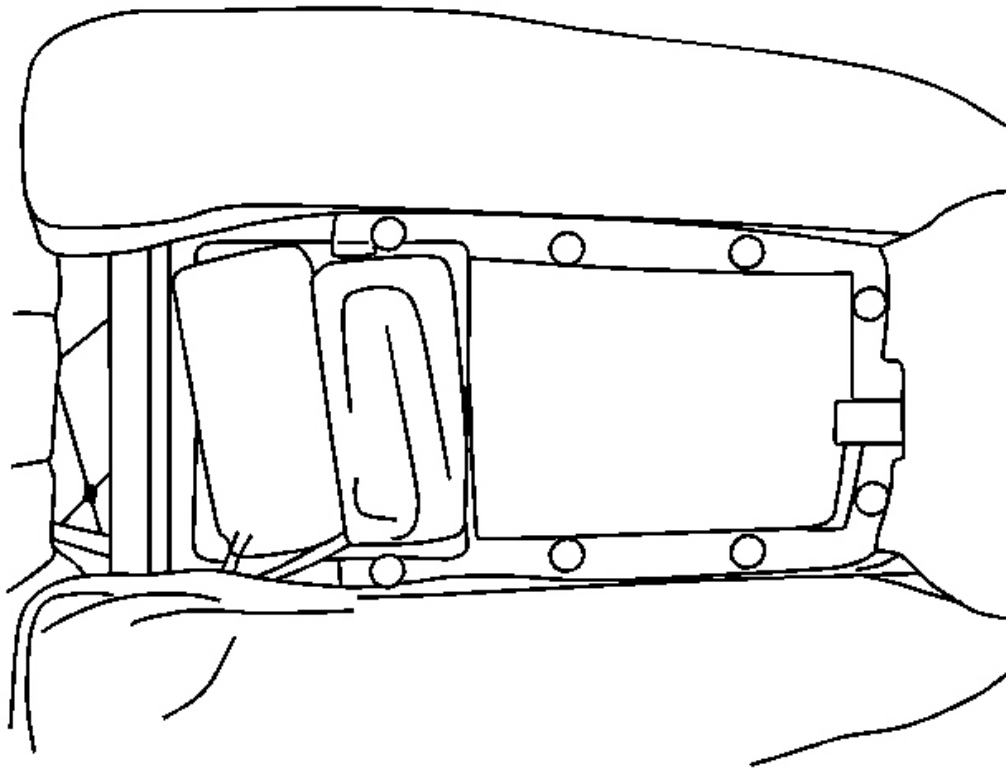


Fig. 98: View Of Lumbar Bladder System
Courtesy of GENERAL MOTORS CORP.

10. Attach the cover and the bladder assembly with the 2 fir tree fasteners.
11. Tuck the cover over the corners of the hinges.
12. Install the seat back insert.
13. Install the seat. Refer to **Seat Replacement**.

SEAT ADJUSTER REPLACEMENT - DRIVER SIDE

Removal Procedure

1. Remove the seat. Refer to **Seat Replacement**.
2. Remove the seat cushion cover. Refer to **Seat Cushion Pad Replacement - Driver Side**.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

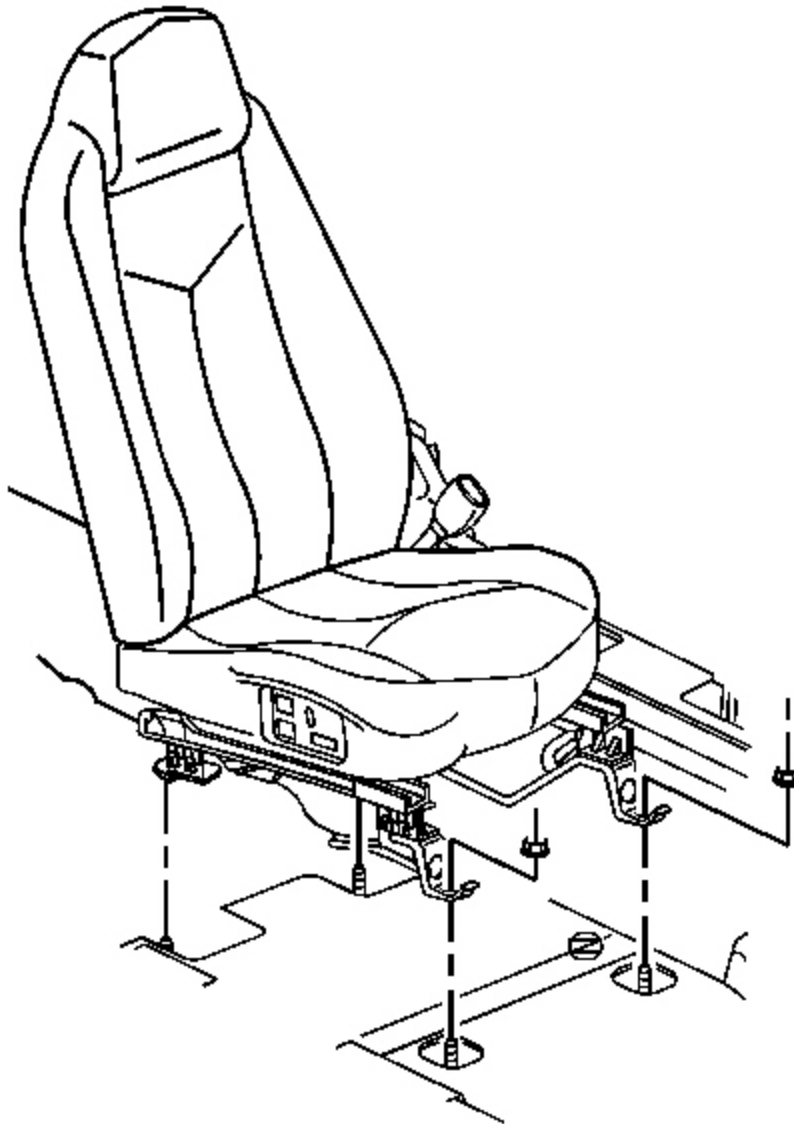


Fig. 99: View Of Seat & Components
Courtesy of GENERAL MOTORS CORP.

3. Reposition the lumbar pump, if equipped.

Remove the tie straps and reposition the pump and pouch up through the seat support wires.

4. Disconnect the seat belt harness from the seat frame.
5. Remove the memory seat control module.

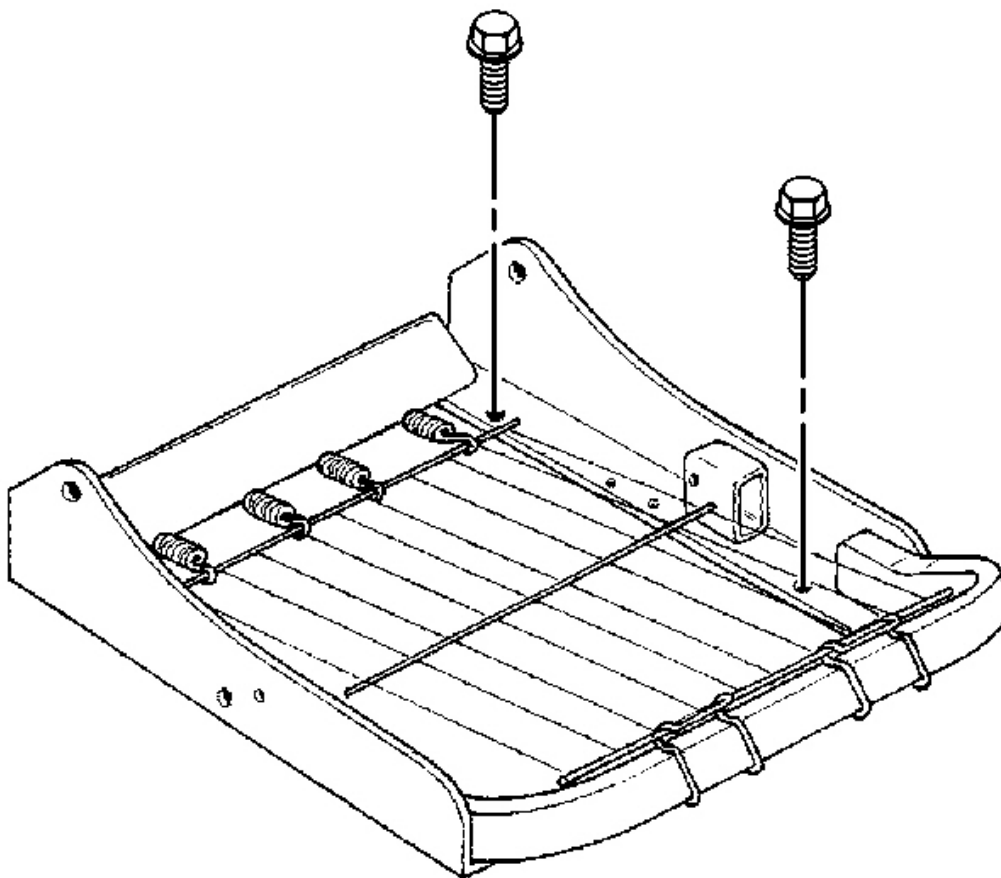


Fig. 100: View Of Seat Cushion Frame
Courtesy of GENERAL MOTORS CORP.

6. Remove the bolts mounting the seat to the adjuster.
7. Remove the adjuster.
8. Transfer parts as necessary.

Installation Procedure

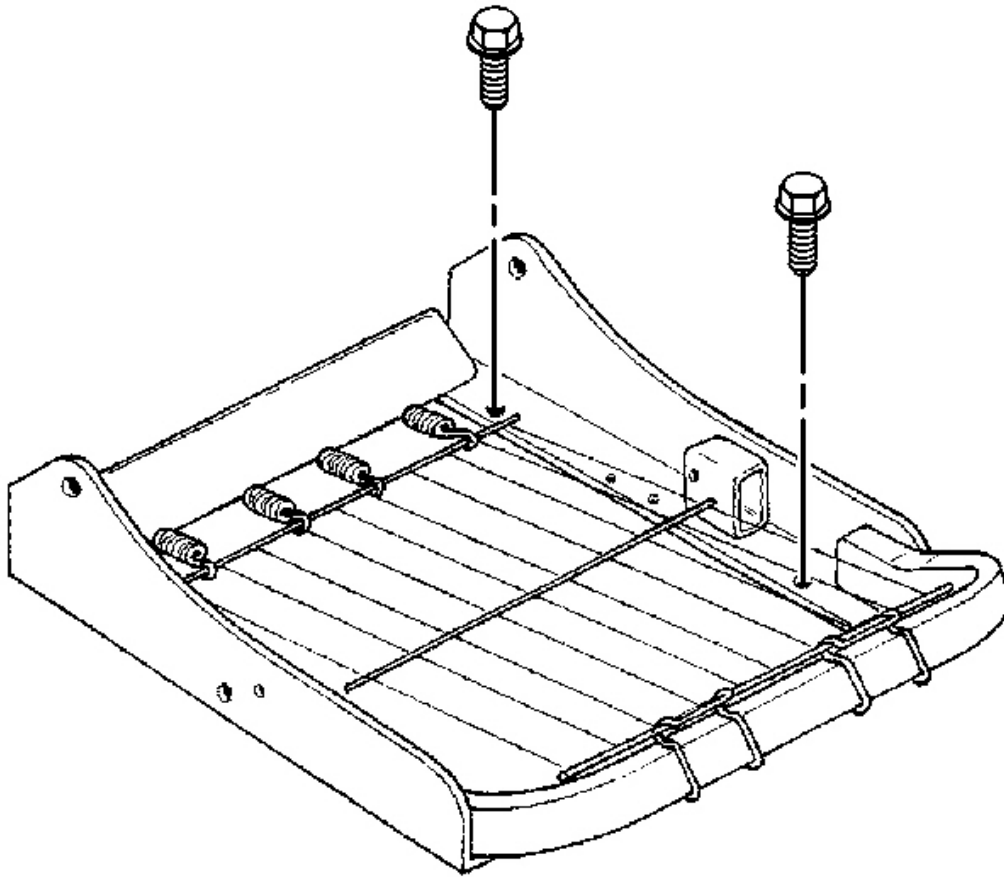


Fig. 101: View Of Seat Cushion Frame
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

1. Install the adjuster to the seat.

Tighten: Tighten the bolts to 24 N.m (18 lb ft).

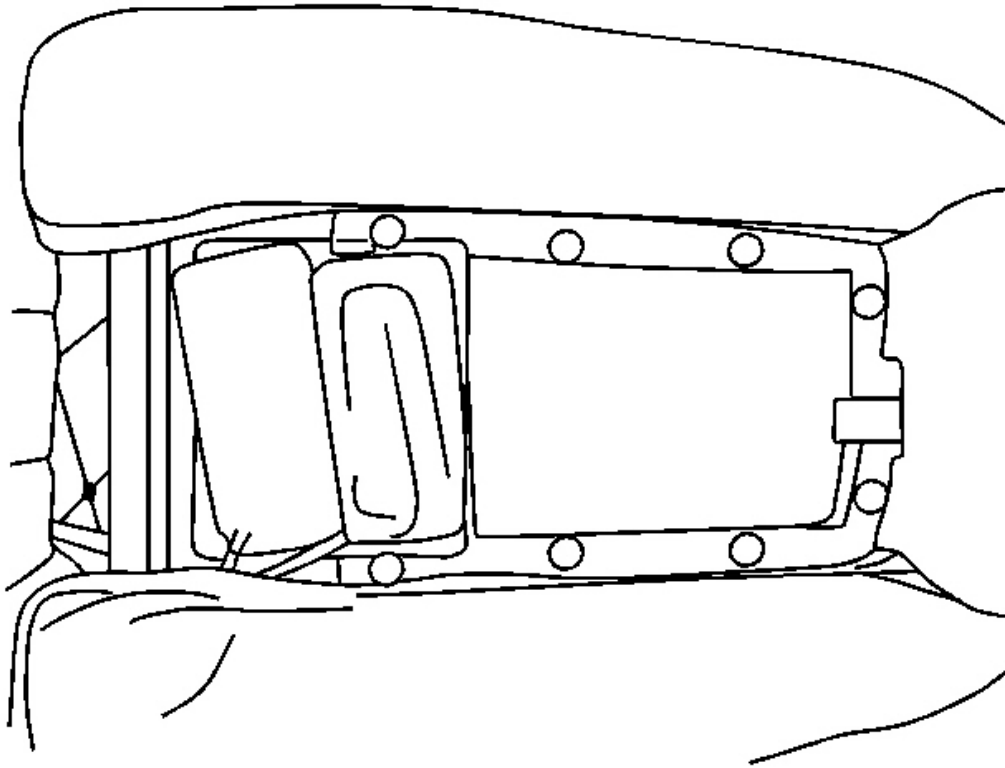


Fig. 102: View Of Lumbar Bladder System
Courtesy of GENERAL MOTORS CORP.

2. Install the lumbar pump, if equipped. Secure the pump to the torque tube with tie straps.
3. Connect the seat belt harness to the seat frame.
4. Install the memory seat control module.
5. Install the seat cushion cover. Refer to **Seat Cushion Pad Replacement - Driver Side**.
6. Install the seat. Refer to **Seat Replacement**.
7. Calibrate the seat. Refer to **Memory Seat Calibration Procedure**.

SEAT ADJUSTER REPLACEMENT - PASSENGER SIDE

Removal Procedure

1. Remove the seat. Refer to **Seat Replacement**.
2. Remove the seat cushion cover. Refer to **Seat Cushion Pad Replacement - Passenger Side**.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

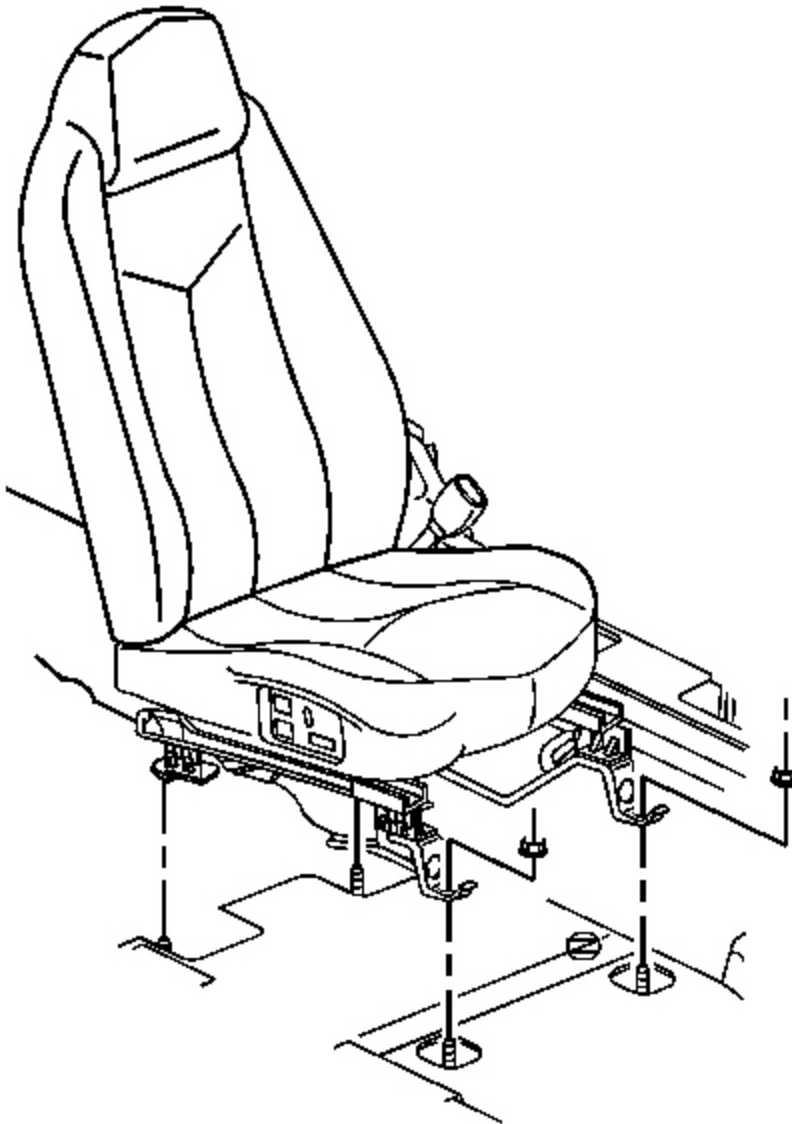


Fig. 103: View Of Seat & Components
Courtesy of GENERAL MOTORS CORP.

3. Reposition the lumbar pump, if equipped.

Remove the tie straps and reposition the pump and pouch up through the seat support wires.

4. Disconnect the seat belt harness from the seat frame.
5. Remove the memory seat control module.

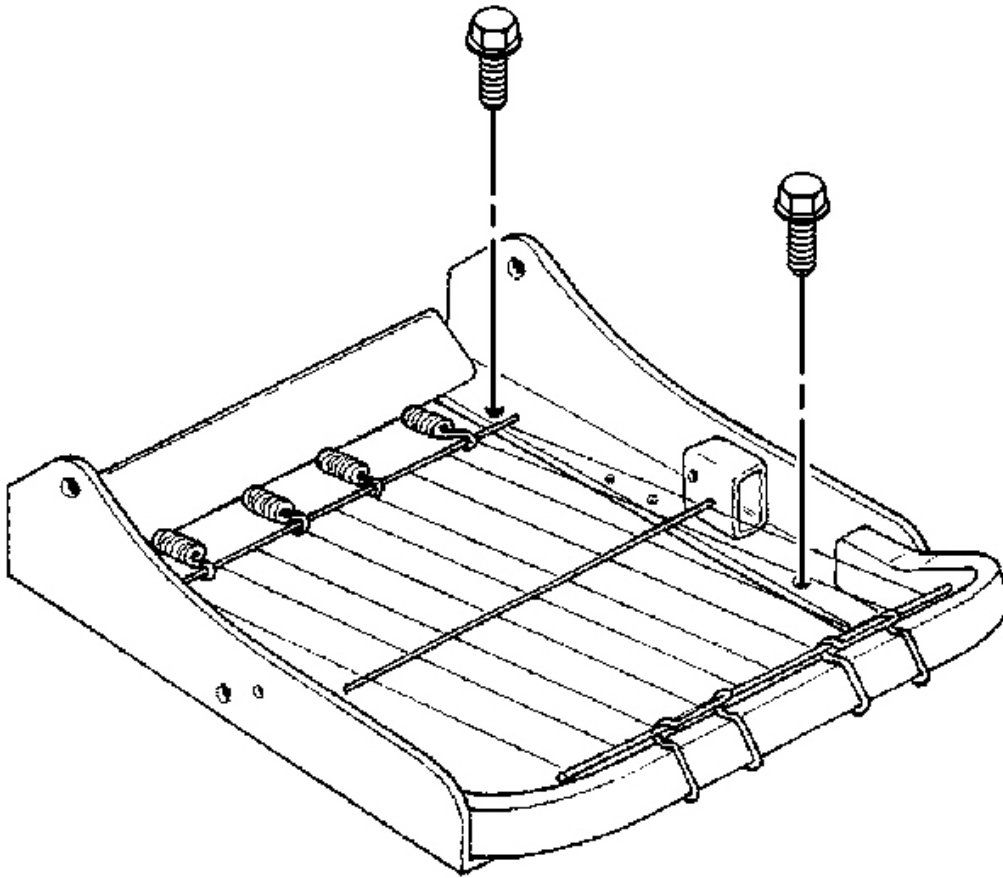


Fig. 104: View Of Seat Cushion Frame
Courtesy of GENERAL MOTORS CORP.

6. Remove the bolts mounting the seat to the adjuster.
7. Remove the adjuster.
8. Transfer parts as necessary.

Installation Procedure

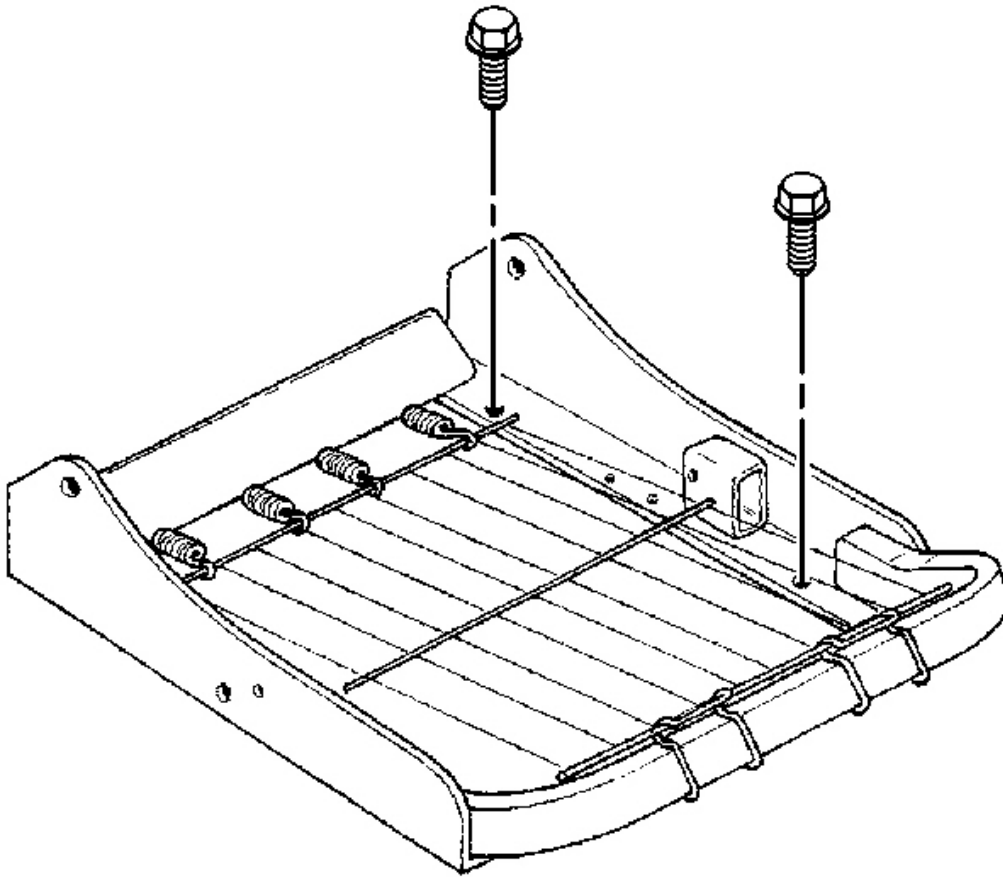


Fig. 105: View Of Seat Cushion Frame
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

1. Install the adjuster to the seat.

Tighten: Tighten the bolts to 24 N.m (18 lb ft).

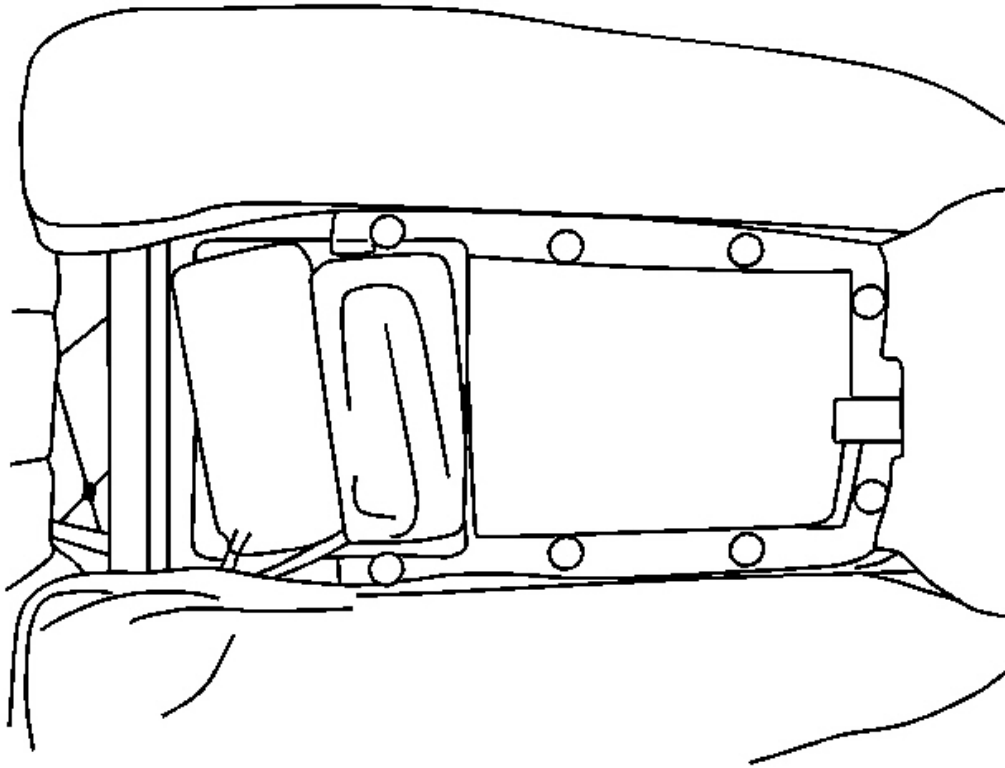


Fig. 106: View Of Lumbar Bladder System
Courtesy of GENERAL MOTORS CORP.

2. Install the lumbar pump, if equipped. Secure the pump to the torque tube with tie straps.
3. Connect the seat belt harness to the seat frame.
4. Install the memory seat control module.
5. Install the seat cushion cover. Refer to **Seat Cushion Pad Replacement - Passenger Side**.
6. Install the seat. Refer to **Seat Replacement**.

SEAT ADJUSTER TRACK COVER REPLACEMENT - FRONT

Removal Procedure

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

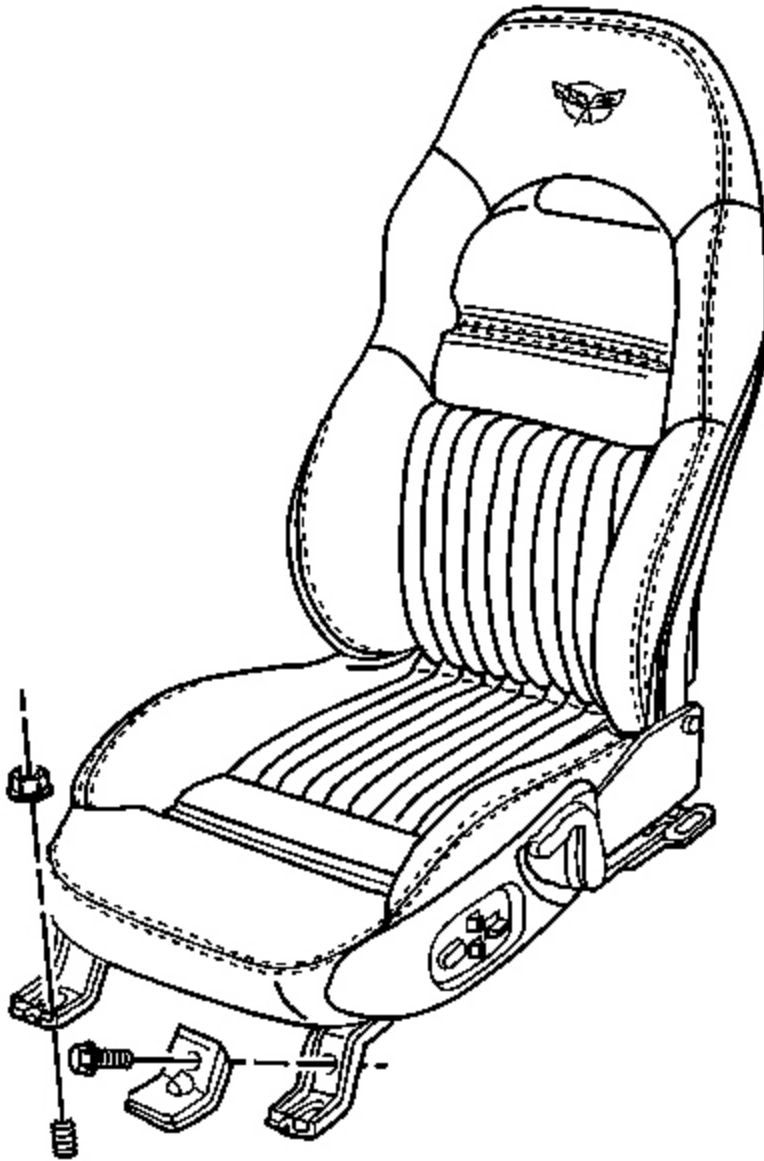


Fig. 107: Seat Mounting Component View
Courtesy of GENERAL MOTORS CORP.

1. Position the seat fully rearward.
2. Remove the plastic rivet from the seat track cover.
3. Remove the cover from the seat track.

Installation Procedure

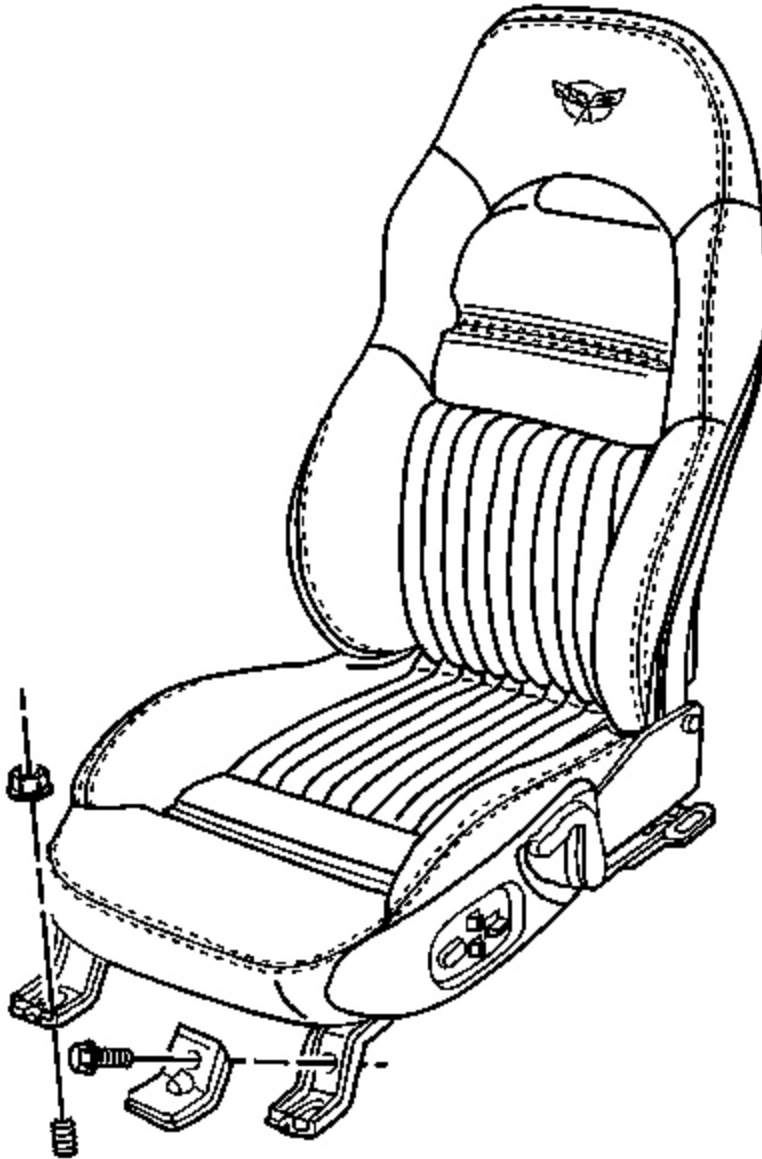


Fig. 108: Seat Mounting Component View
Courtesy of GENERAL MOTORS CORP.

1. Install the cover to the seat track.

2. Install a plastic rivet to the cover.
3. Return the seat to the customer position.

KNOB REPLACEMENT - POWER SEAT SWITCH - SEAT BACK

Removal Procedure

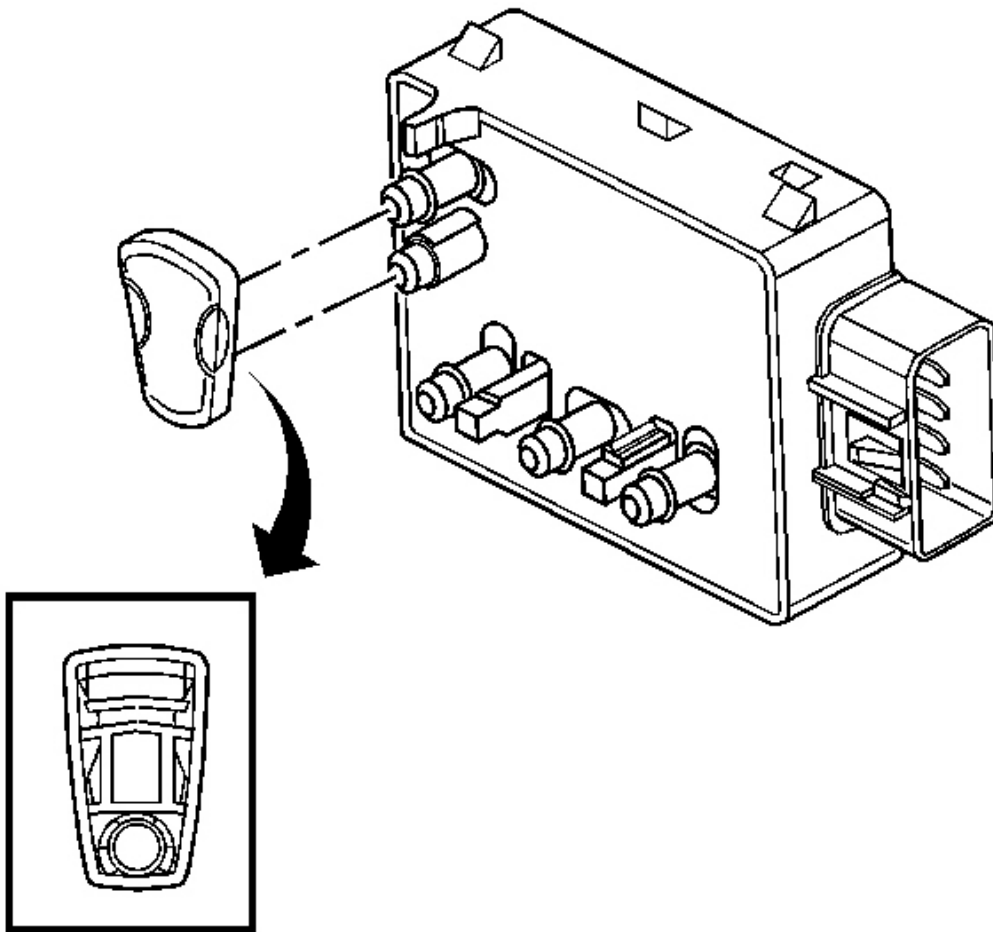


Fig. 109: View Of Seat Back Switch Knob
Courtesy of GENERAL MOTORS CORP.

1. Raise the seat up to access the switch knob.
2. Using a small plastic flat-bladed tool, pry between the finish panel and the back of the switch knob.
3. Remove the knob from the switch.

Installation Procedure

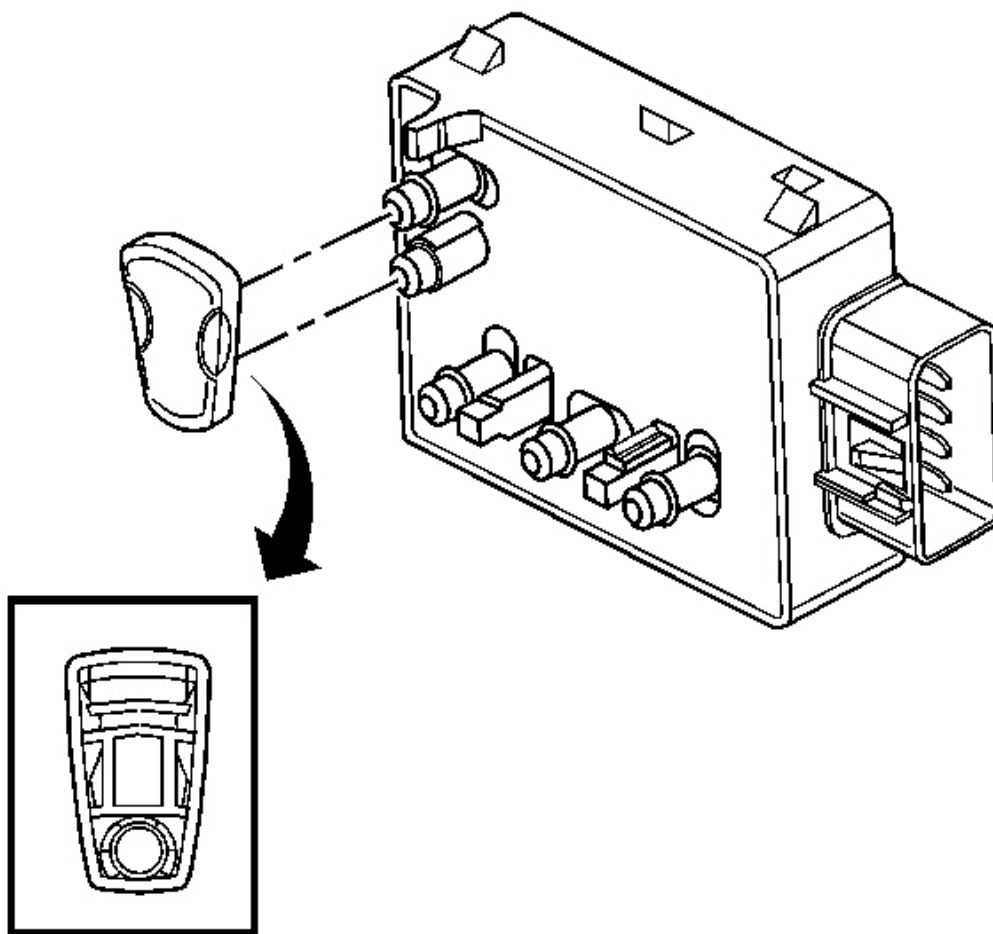


Fig. 110: View Of Seat Back Switch Knob
Courtesy of GENERAL MOTORS CORP.

1. Align the switch knob to the switch pins.
2. Install the knob to the switch. Gently push to engage the knob.
3. Return the seat to the customer position.

KNOB REPLACEMENT - POWER SEAT SWITCH - SEAT CUSHION

Removal Procedure

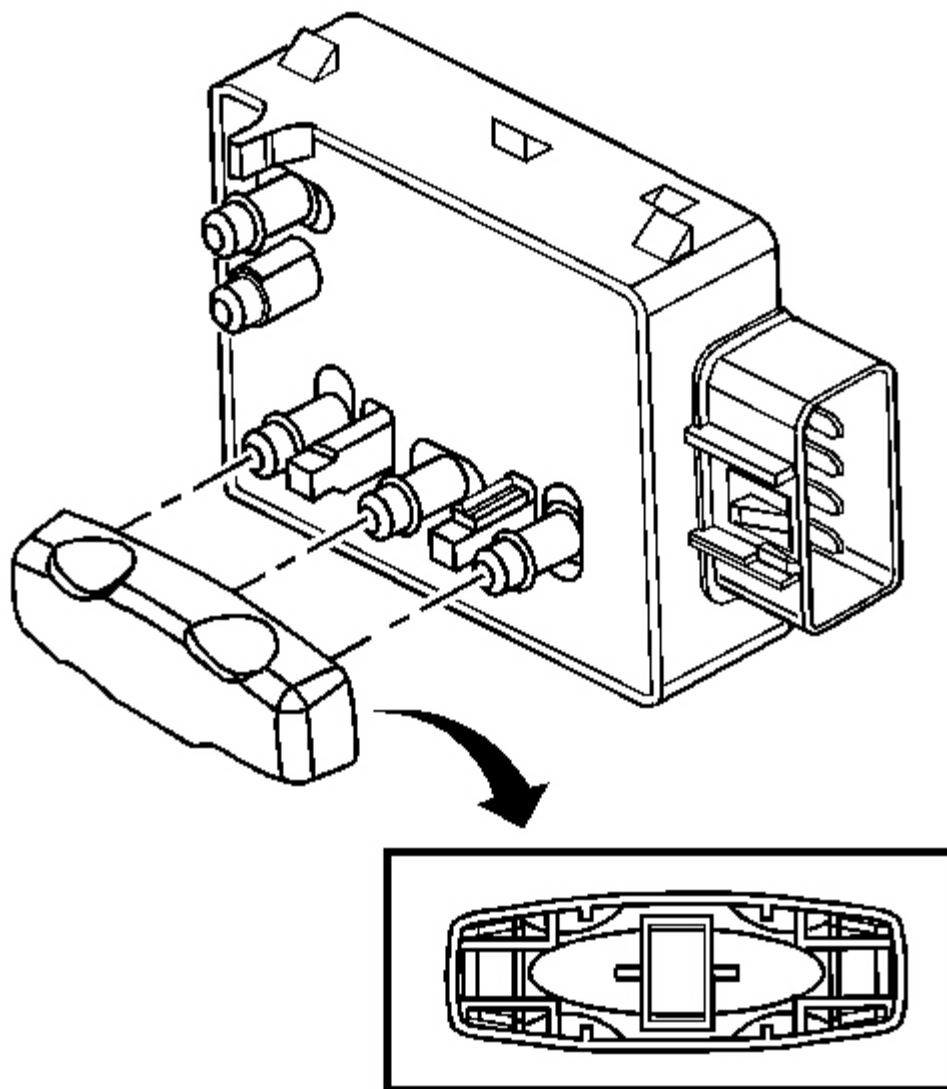


Fig. 111: View Of Seat Control Switch Knob
Courtesy of GENERAL MOTORS CORP.

1. Raise the seat up to access the switch knob.
2. Using a small plastic flat-bladed tool, pry between the finish panel and the back of the switch knob.
3. Remove the knob from the switch.

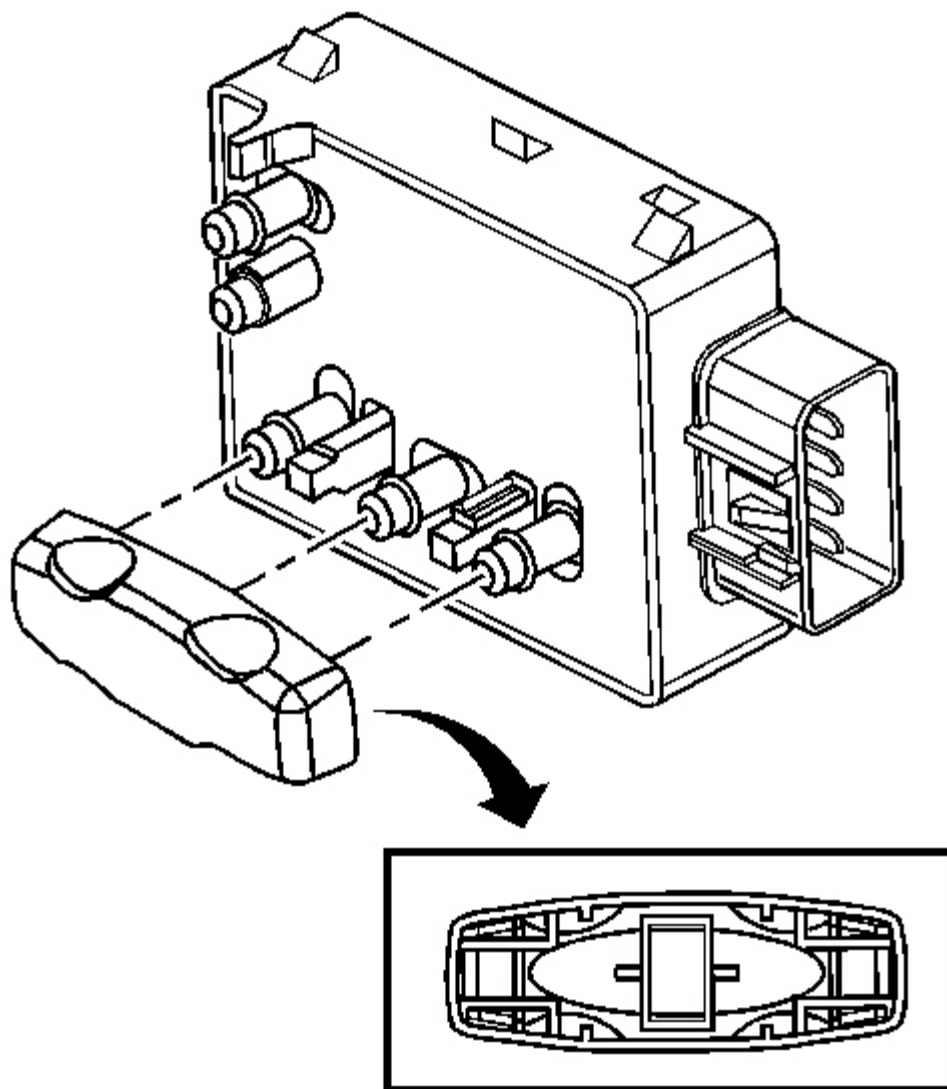


Fig. 112: View Of Seat Control Switch Knob
Courtesy of GENERAL MOTORS CORP.

1. Align the switch knob to the switch pins.
2. Install the knob to the switch. Gently push to engage the knob.
3. Return the seat to the customer position.

Removal Procedure

1. Remove the seat assembly. Refer to **Seat Replacement**.
2. Remove the finish side panel. Refer to **Finish Panel Replacement - Driver Seat Outer**.

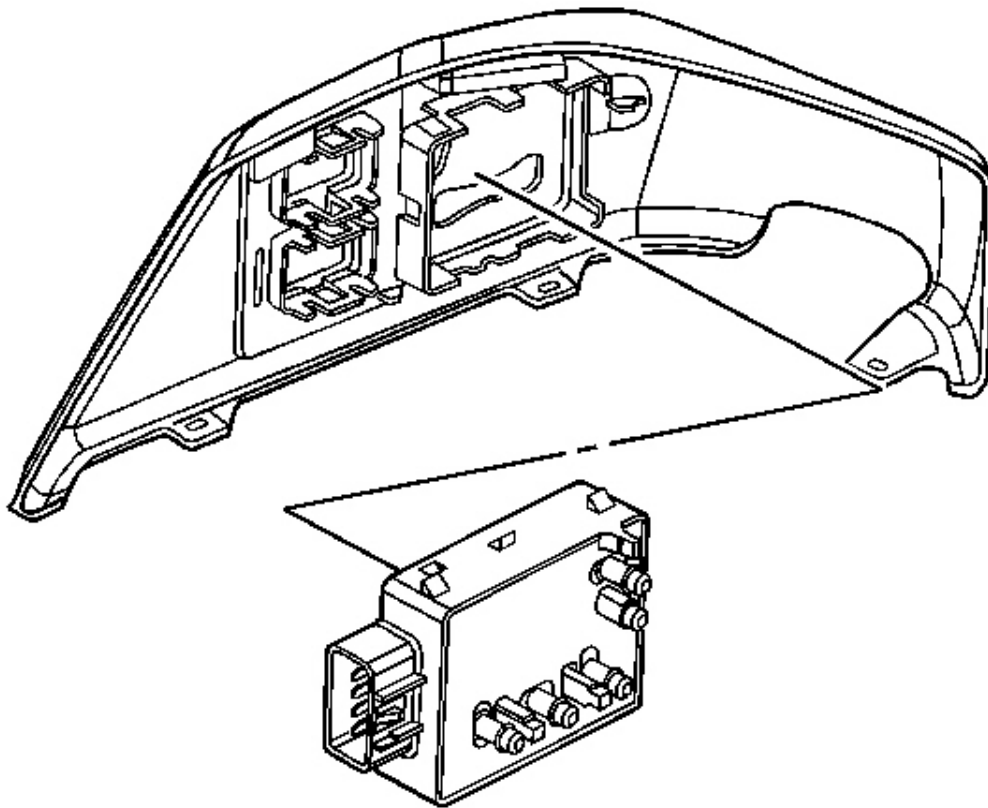


Fig. 113: View Of Seat Switches
Courtesy of GENERAL MOTORS CORP.

3. Disconnect the electrical connector from the seat switch.
4. Use a small flat-bladed tool to release the retainers to the switch. Remove the seat switch from the finish panel.

Installation Procedure

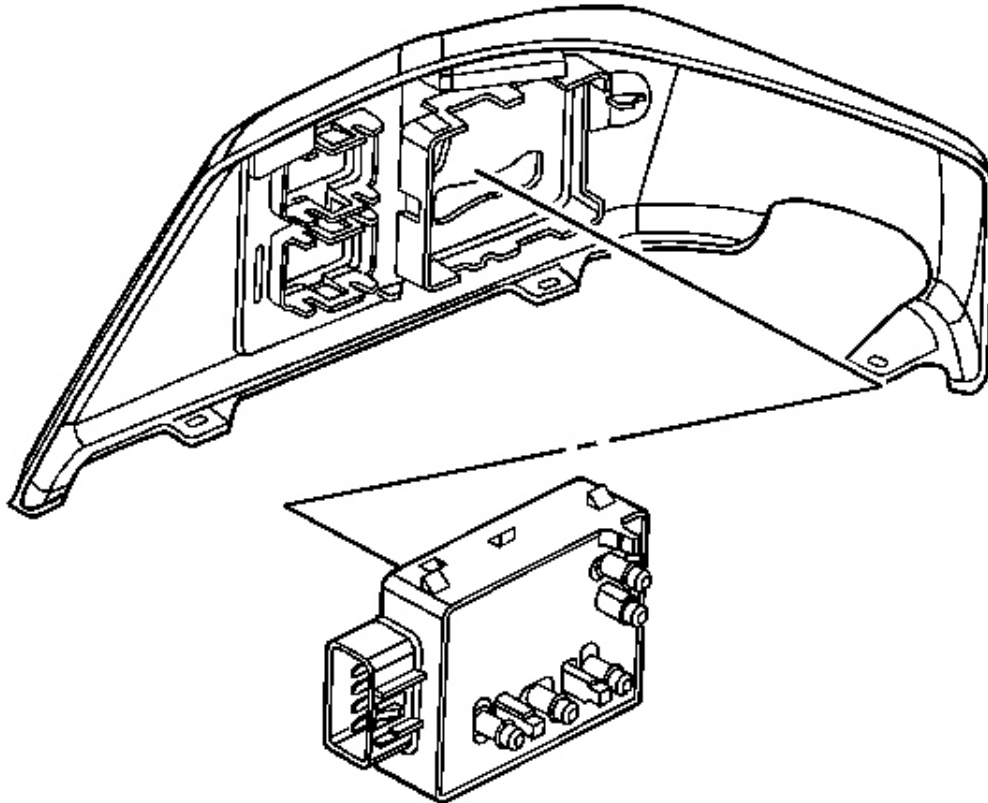


Fig. 114: View Of Seat Switches
Courtesy of GENERAL MOTORS CORP.

1. Install the seat switch to the finish panel. Push to engage the retainers to the panel.
2. Connect the electrical connector to the seat switch.
3. Install the finish side panel. Refer to **Finish Panel Replacement - Driver Seat Outer**.
4. Install the seat assembly. Refer to **Seat Replacement**.

SEAT SWITCH REPLACEMENT - POWER - PASSENGER SIDE

Removal Procedure

1. Remove the seat assembly. Refer to **Seat Replacement**.
2. Remove the finish side panel. Refer to **Finish Panel Replacement - Passenger Seat Outer**.

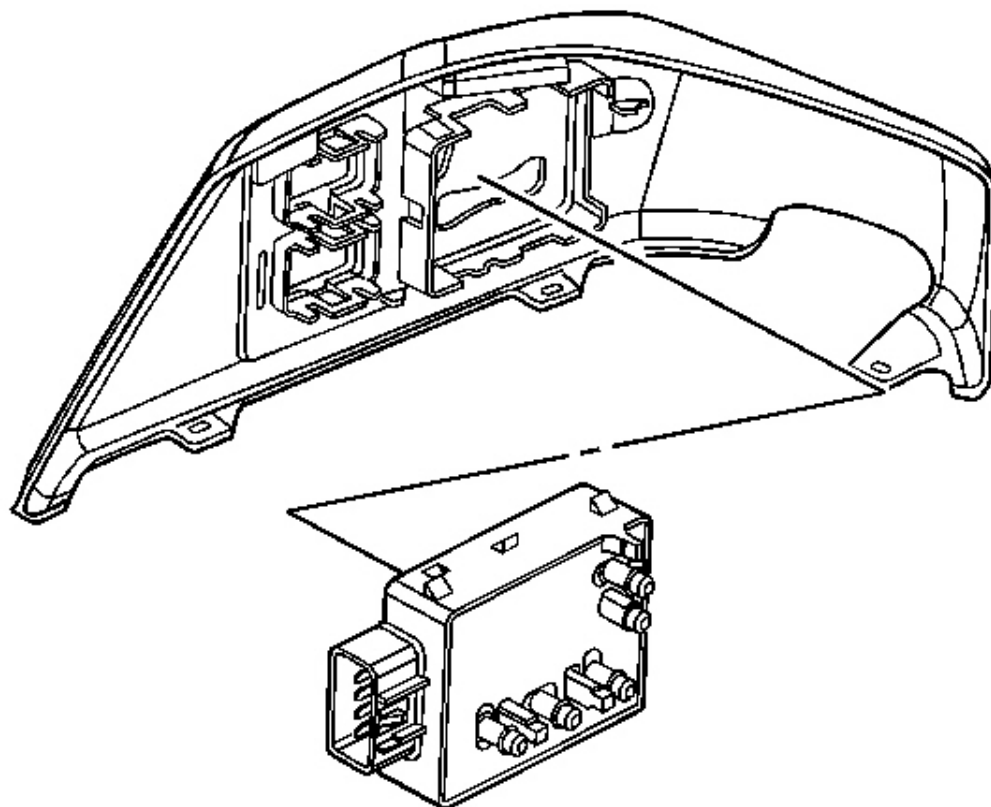


Fig. 115: View Of Seat Switches
Courtesy of GENERAL MOTORS CORP.

3. Disconnect the electrical connector from the seat switch.
4. Use a small flat-bladed tool to release the retainers to the switch. Remove the seat switch from the finish panel.

Installation Procedure

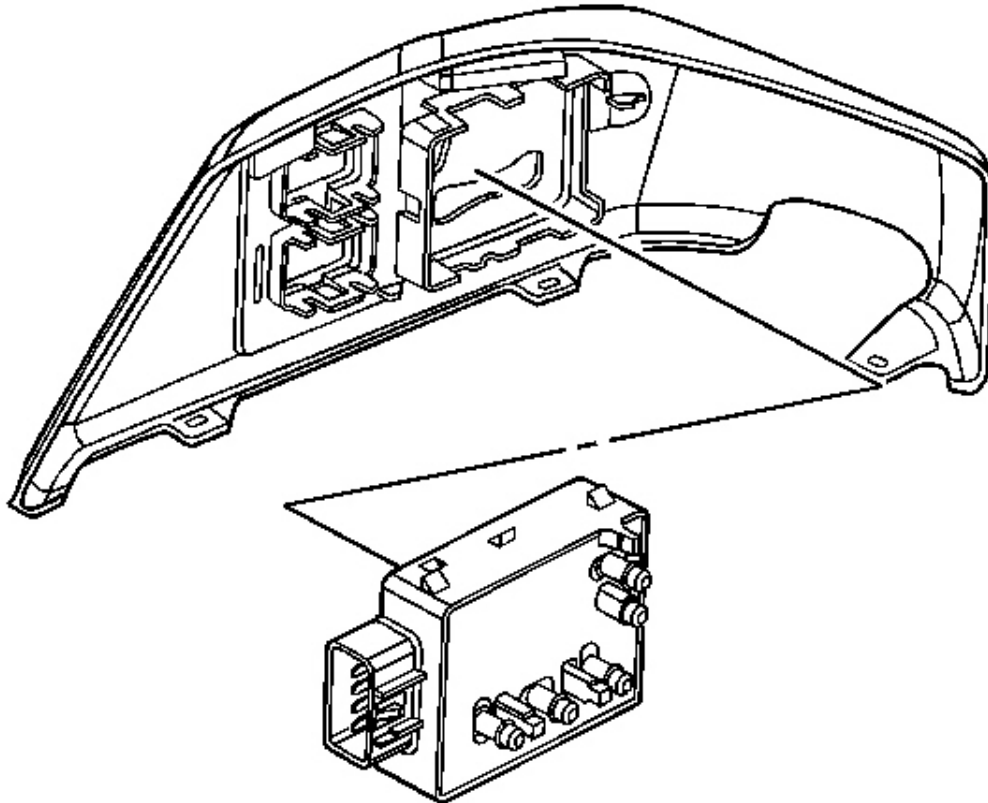


Fig. 116: View Of Seat Switches
Courtesy of GENERAL MOTORS CORP.

1. Install the seat switch to the finish panel. Push to engage the retainers to the panel.
2. Connect the electrical connector to the seat switch.
3. Install the finish side panel. Refer to **Finish Panel Replacement - Passenger Seat Outer**.
4. Install the seat assembly. Refer to **Seat Replacement**.

MEMORY SEAT CONTROL MODULE REPLACEMENT

Removal Procedure

1. Remove the seat. Refer to **Seat Replacement**.

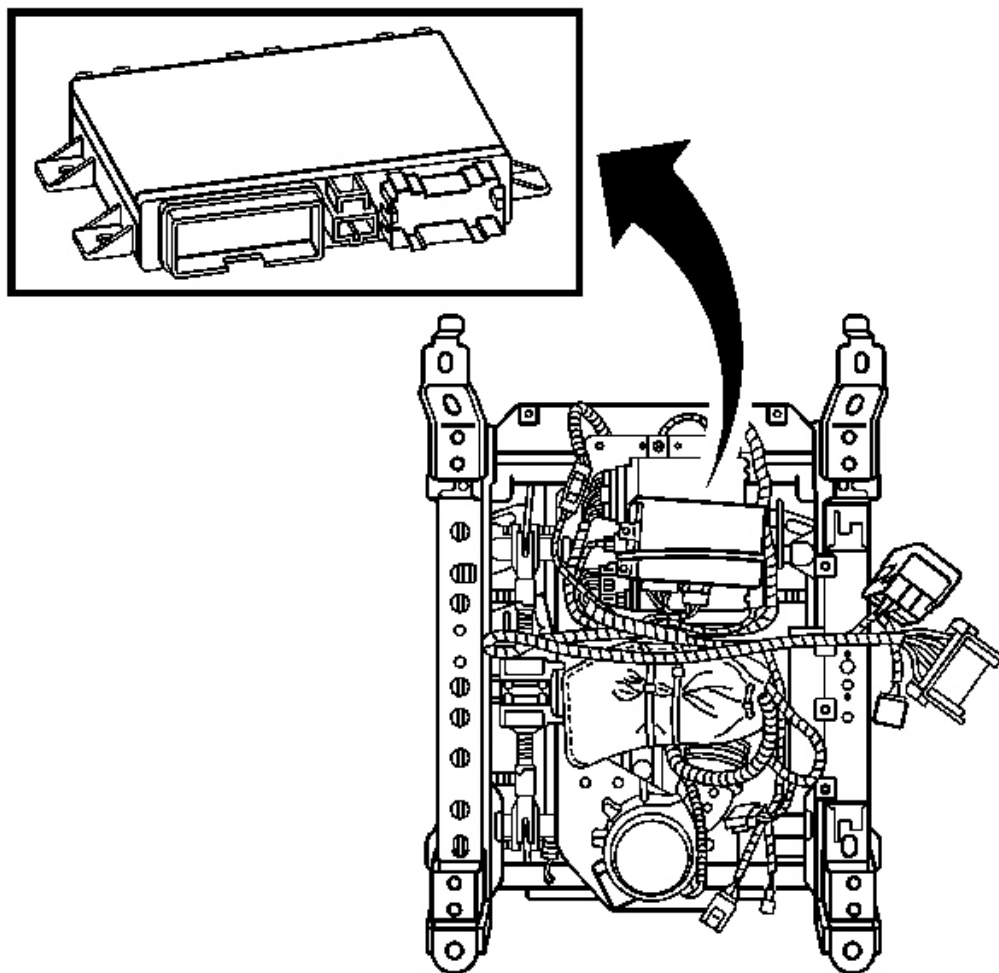


Fig. 117: View Of Memory Seat Control Module
Courtesy of GENERAL MOTORS CORP.

2. Remove the memory seat control module from the seat track assembly by cutting the tie straps.
3. Disconnect the harness connectors.

Installation Procedure

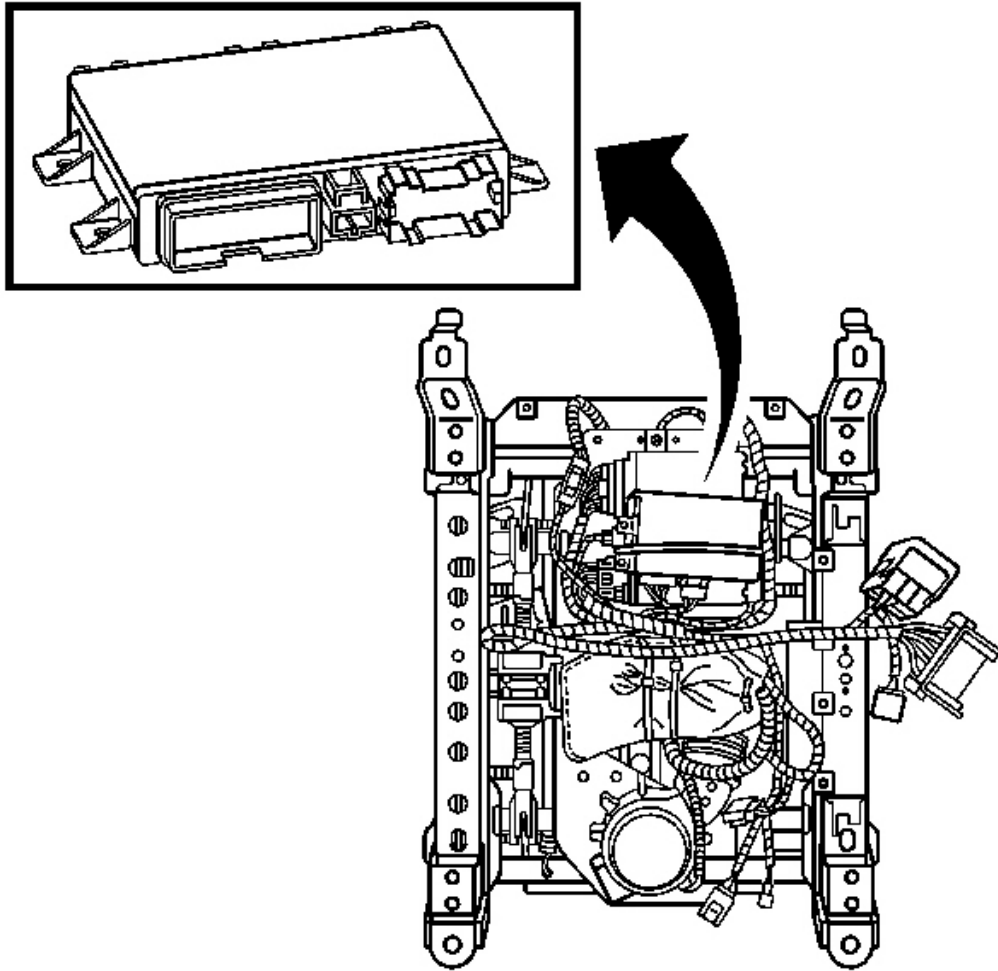


Fig. 118: View Of Memory Seat Control Module
Courtesy of GENERAL MOTORS CORP.

1. Connect harness connectors to the memory seat control module.
2. Install the memory seat control module to the seat track assembly using the tie straps.
3. Install the seat. Refer to **Seat Replacement**.
4. Calibrate the seat. Refer to **Memory Seat Calibration Procedure**.

MEMORY SEAT CALIBRATION PROCEDURE

The memory seat module uses position sensor inputs to establish soft stop locations for the adjuster motors several millimeters ahead of the physical limits of the adjuster assembly. After replacing a memory seat module

or adjuster components, it may be necessary to reset the adjuster motor soft stop locations. When the repair procedure has been completed, operate the seat adjuster switch in every direction until the seat adjuster reaches its mechanical hard stop by repeatedly pressing and releasing the switch as necessary.

MODULE REPLACEMENT - SEAT CLIMATE CONTROL - DRIVER SIDE

Removal Procedure

1. Remove the seat. Refer to Seat Replacement.

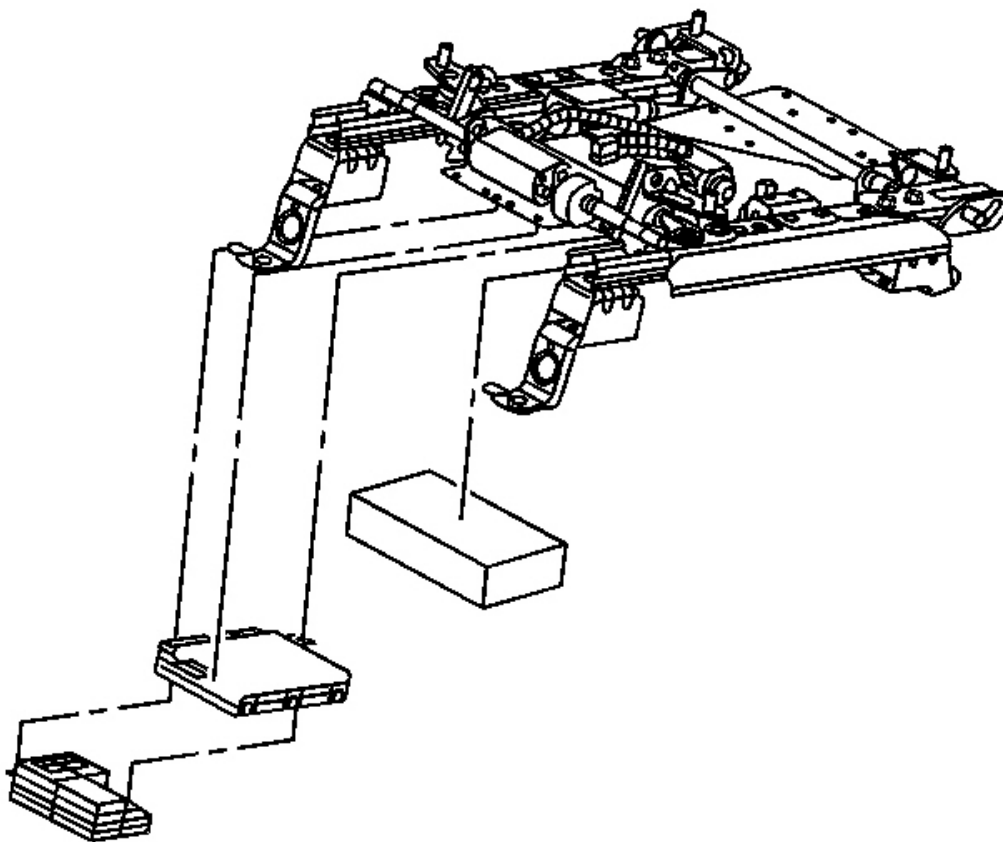


Fig. 119: View Of Seat Climate Control Module - Driver Side
Courtesy of GENERAL MOTORS CORP.

2. Remove the memory seat control module from the seat track assembly by cutting the tie straps.
3. Disconnect the harness connectors.

Installation Procedure

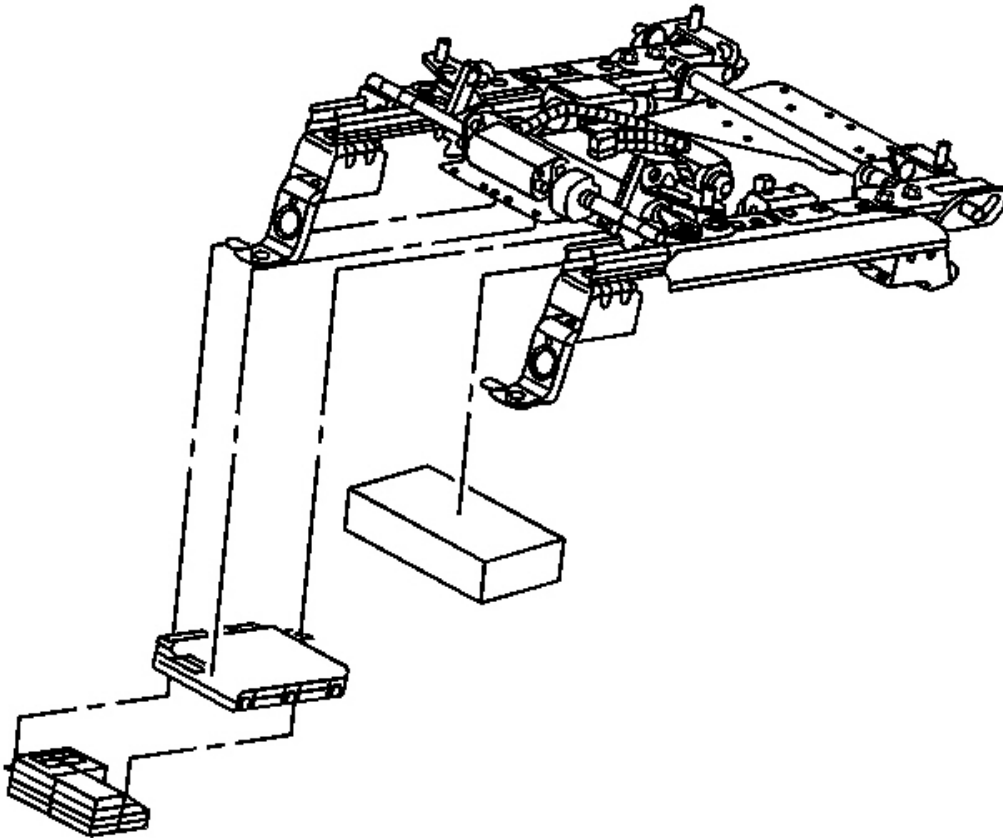


Fig. 120: View Of Seat Climate Control Module - Driver Side
Courtesy of GENERAL MOTORS CORP.

1. Connect harness connectors to the memory seat control module.
2. Install the memory seat control module to the seat track assembly using the tie straps.
3. Install the seat. Refer to **Seat Replacement**.

MODULE REPLACEMENT - SEAT CLIMATE CONTROL - PASSENGER SIDE

Removal Procedure

1. Remove the seat. Refer to **Seat Replacement**.

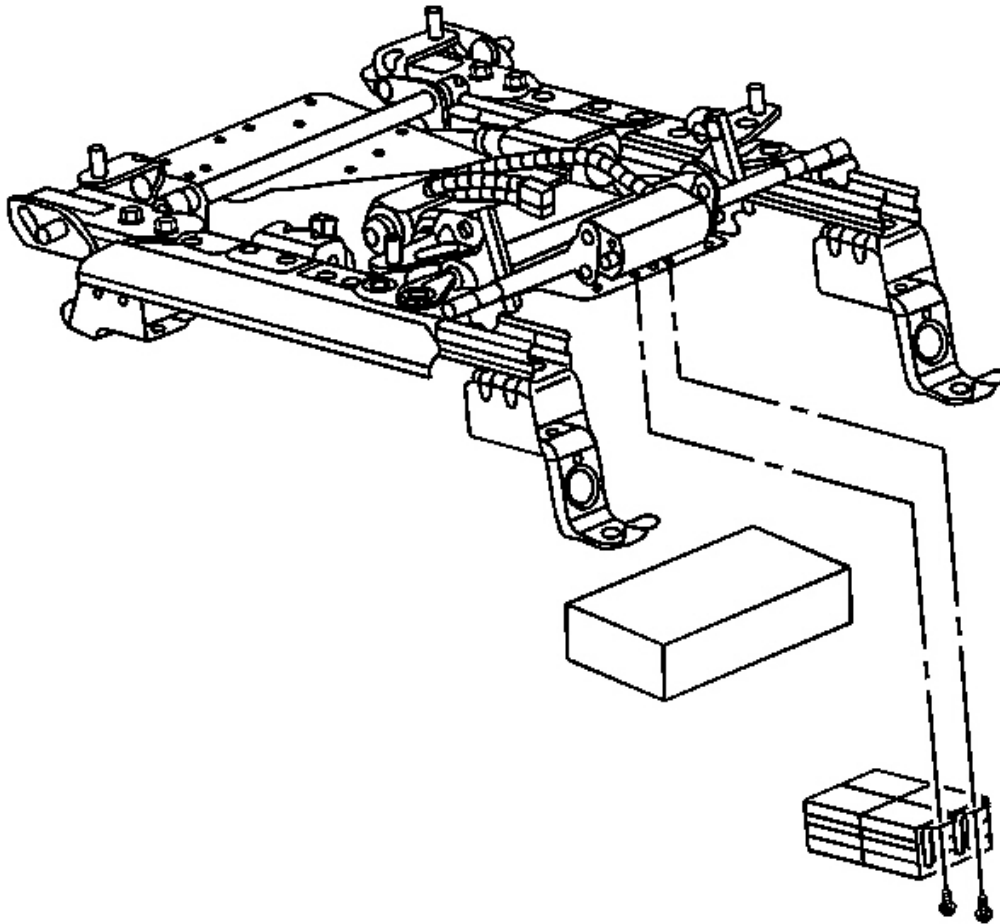


Fig. 121: View Of Seat Climate Control Module - Passenger Side
Courtesy of GENERAL MOTORS CORP.

2. Remove the memory seat control module from the seat track assembly by cutting the tie straps.
3. Disconnect the harness connectors.

Installation Procedure

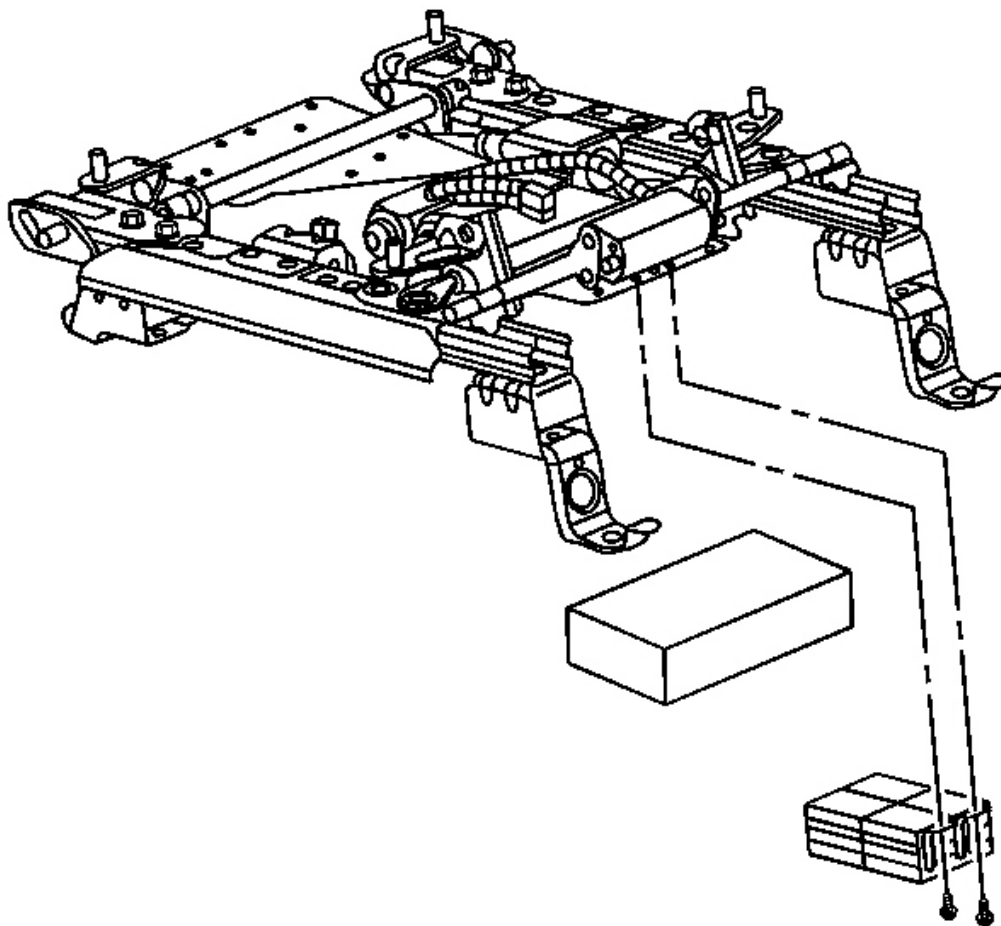


Fig. 122: View Of Seat Climate Control Module - Passenger Side
Courtesy of GENERAL MOTORS CORP.

1. Connect harness connectors to the memory seat control module.
2. Install the memory seat control module to the seat track assembly using the tie straps.
3. Install the seat. Refer to **Seat Replacement**.

BLOWER REPLACEMENT - VENTILATION HEAT AND COOL - DRIVER SEAT

Removal Procedure

1. Remove the seat. Refer to **Seat Replacement**.
2. Cut the tie straps to the blower from the seat ductwork.

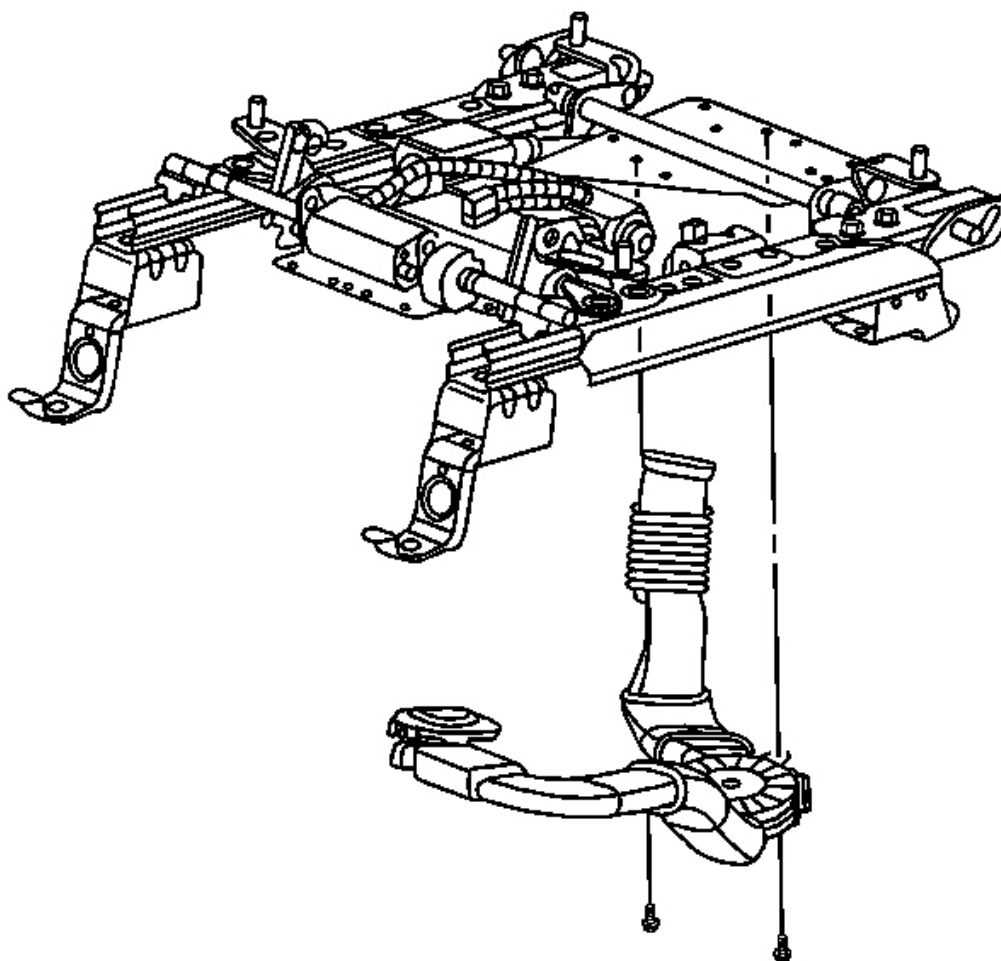


Fig. 123: View Of Blower Assembly & Screws - Driver Seat
Courtesy of GENERAL MOTORS CORP.

3. Disconnect the electrical connection to the blower assembly.
4. Remove the screws from the blower to the seat bottom.
5. Remove the blower assembly from the seat bottom.

Installation Procedure

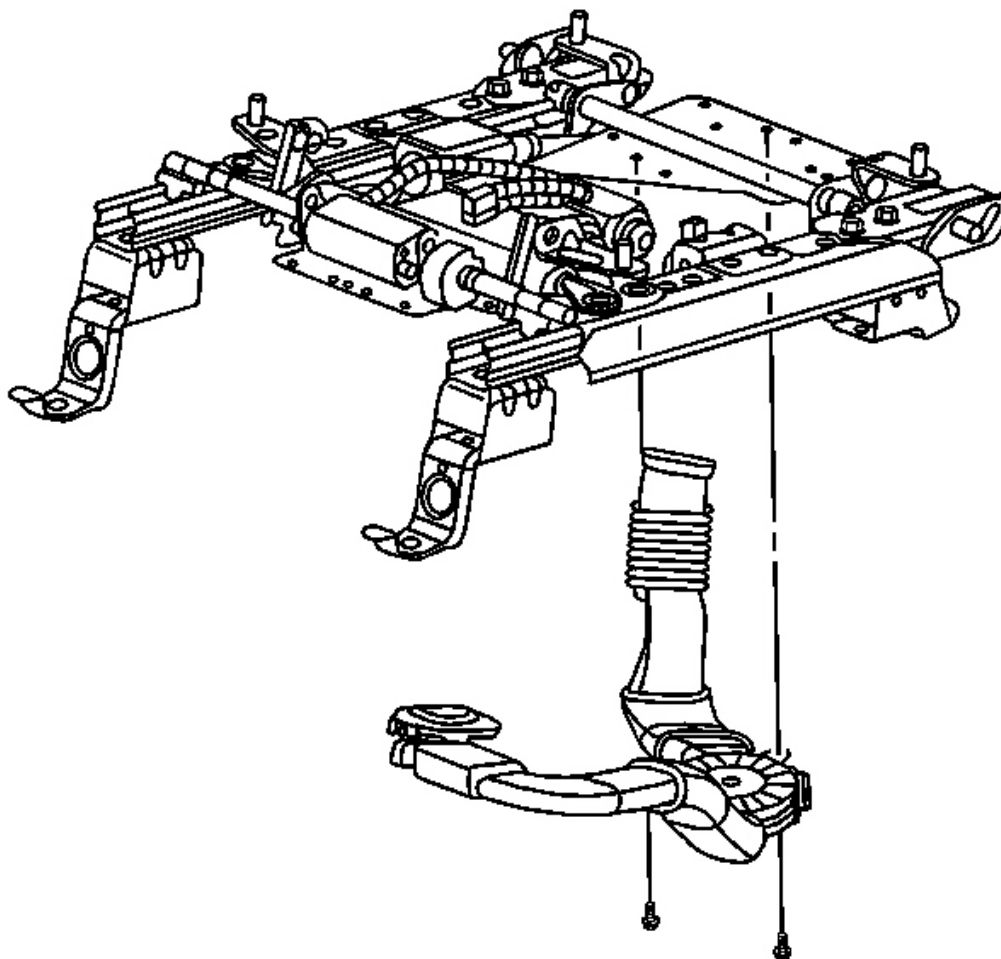


Fig. 124: View Of Blower Assembly & Screws - Driver Seat
Courtesy of GENERAL MOTORS CORP.

1. Install the blower assembly to the seat bottom.

NOTE: Refer to **Fastener Notice** in Cautions and Notices.

2. Install the blower assembly screws to the seat bottom.

Tighten: Tighten the screws to 2.5 N.m (22 lb in).

3. Connect the electrical connection to the blower assembly.

4. Install the seat ductwork to the blower. Secure the ductwork with new tie straps.
5. Install the seat. Refer to **Seat Replacement**.

BLOWER REPLACEMENT - VENTILATION HEAT AND COOL - PASSENGER SEAT

Removal Procedure

1. Remove the seat. Refer to **Seat Replacement**.
2. Cut the tie straps to the blower from the seat ductwork.

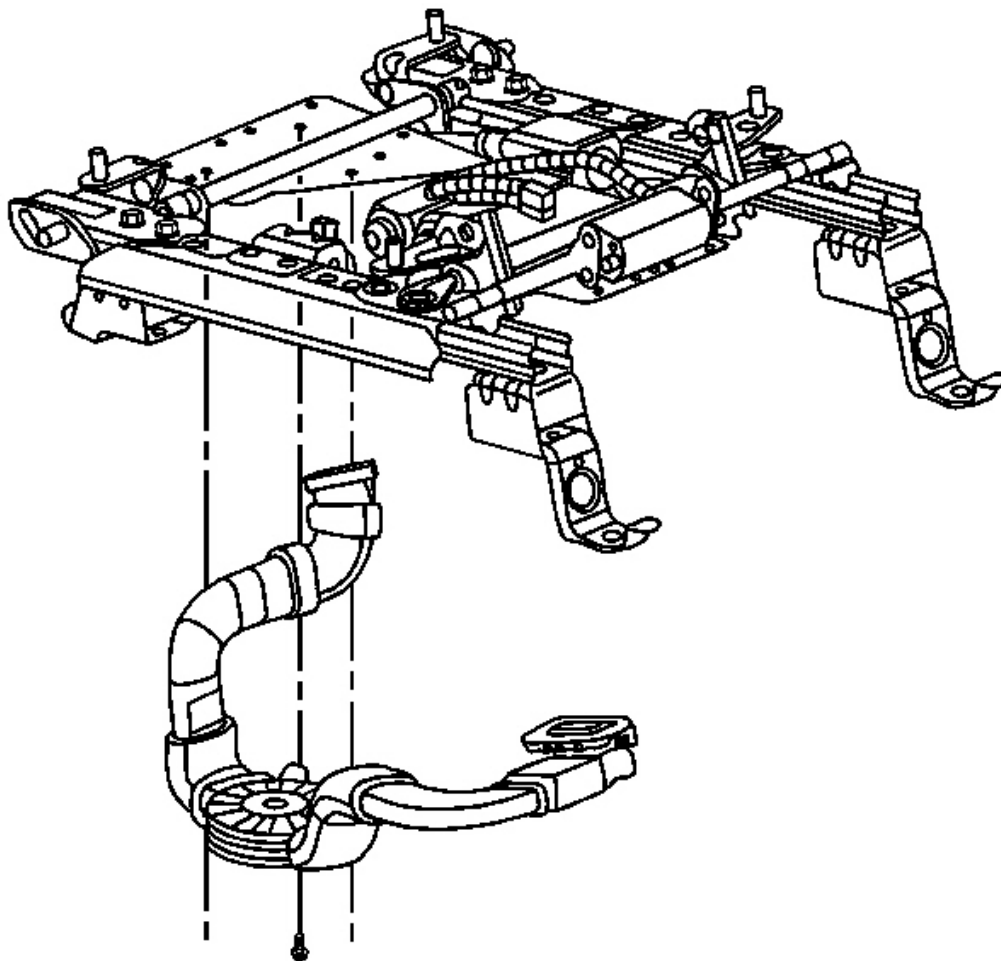


Fig. 125: View Of Blower Assembly & Screws - Passenger Seat
Courtesy of GENERAL MOTORS CORP.

3. Disconnect the electrical connection to the blower assembly.
4. Remove the screws from the blower to the seat bottom.
5. Remove the blower assembly from the seat bottom.

Installation Procedure

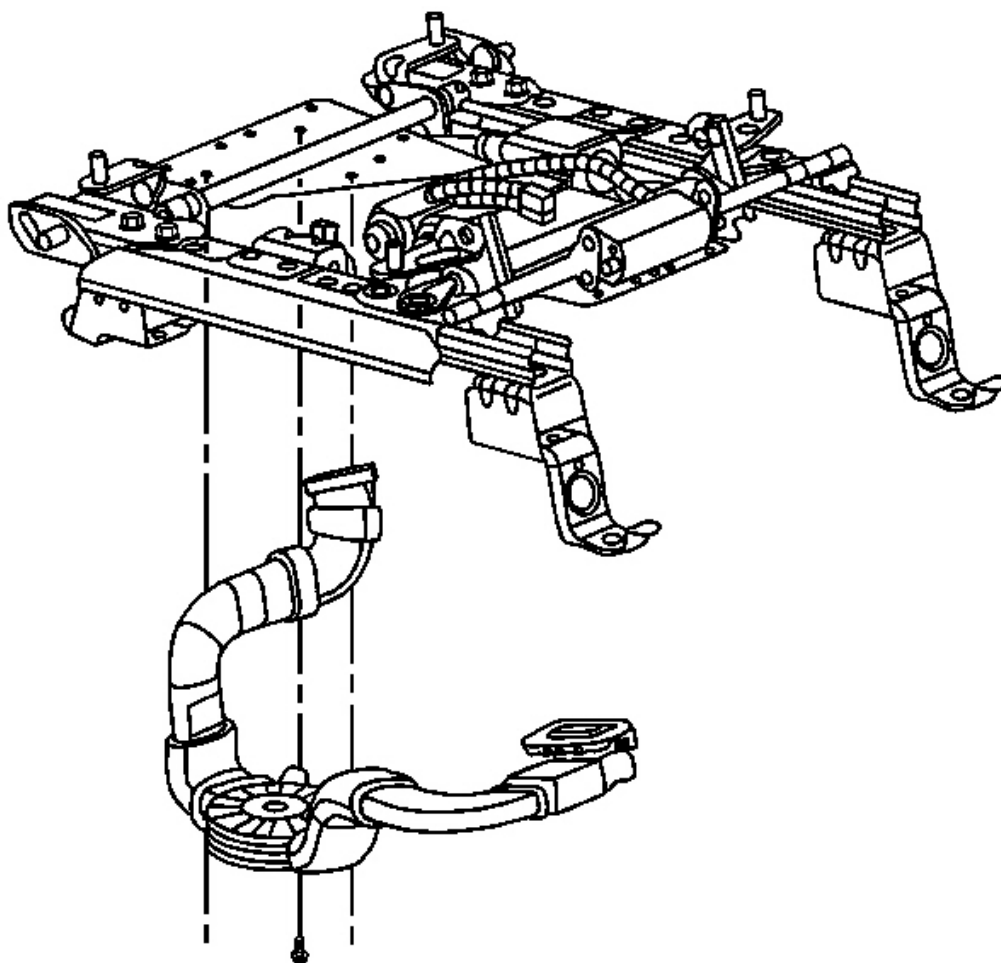


Fig. 126: View Of Blower Assembly & Screws - Passenger Seat
Courtesy of GENERAL MOTORS CORP.

1. Install the blower assembly to the seat bottom.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

2. Install the blower assembly screws to the seat bottom.

Tighten: Tighten the screws to 2.5 N.m (22 lb in).

3. Connect the electrical connection to the blower assembly.
4. Install the seat ductwork to the blower. Secure the ductwork with new tie straps.
5. Install the seat. Refer to **Seat Replacement**.

MODULE REPLACEMENT - VENTILATION HEAT AND COOL - DRIVER SEAT BACK

Removal Procedure

1. Remove the seat back trim cover and cushion. Refer to **Pad Replacement - Driver Seat Back Cushion**.
2. Disconnect the electrical connector to the ventilation module.

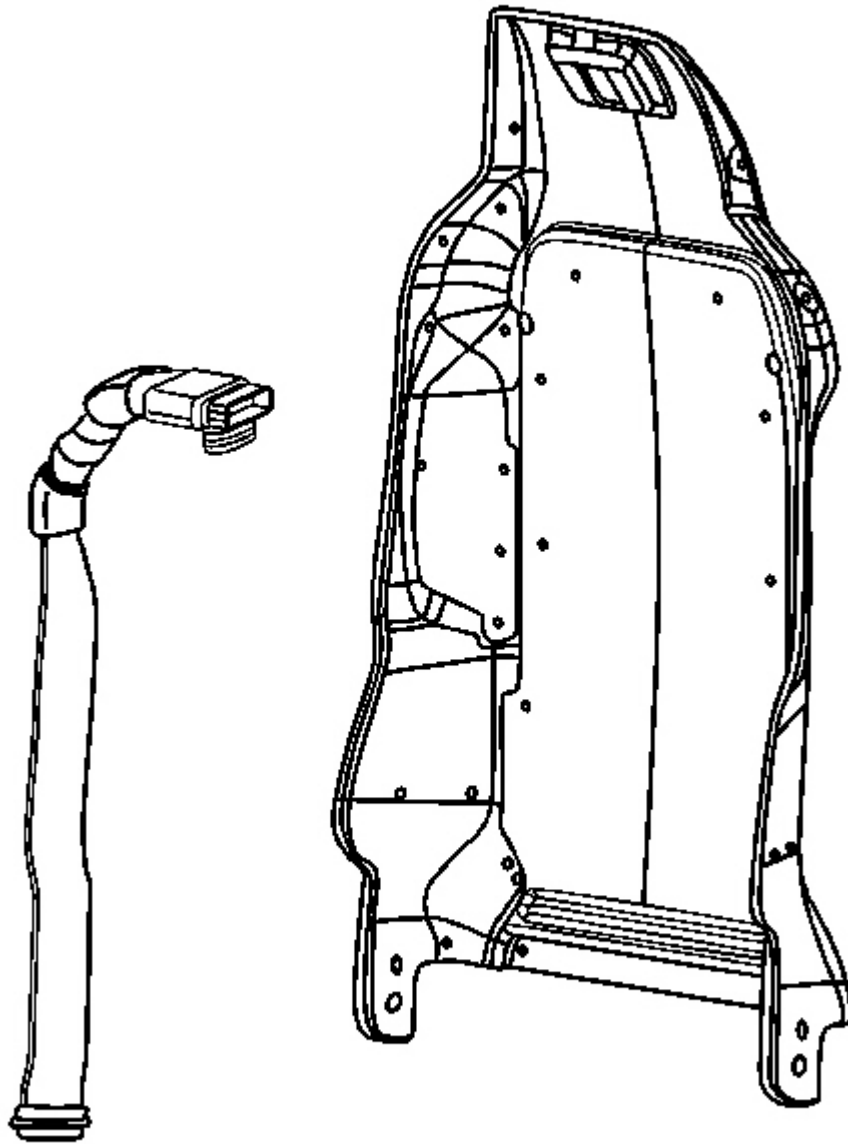


Fig. 127: View Of Ventilation Module - Driver Seat Back
Courtesy of GENERAL MOTORS CORP.

3. Cut the tie strap to the ventilation duct.
4. Remove the retaining screws from the ventilation module to the seat back.
5. Remove the ventilation module from the seat.

Installation Procedure

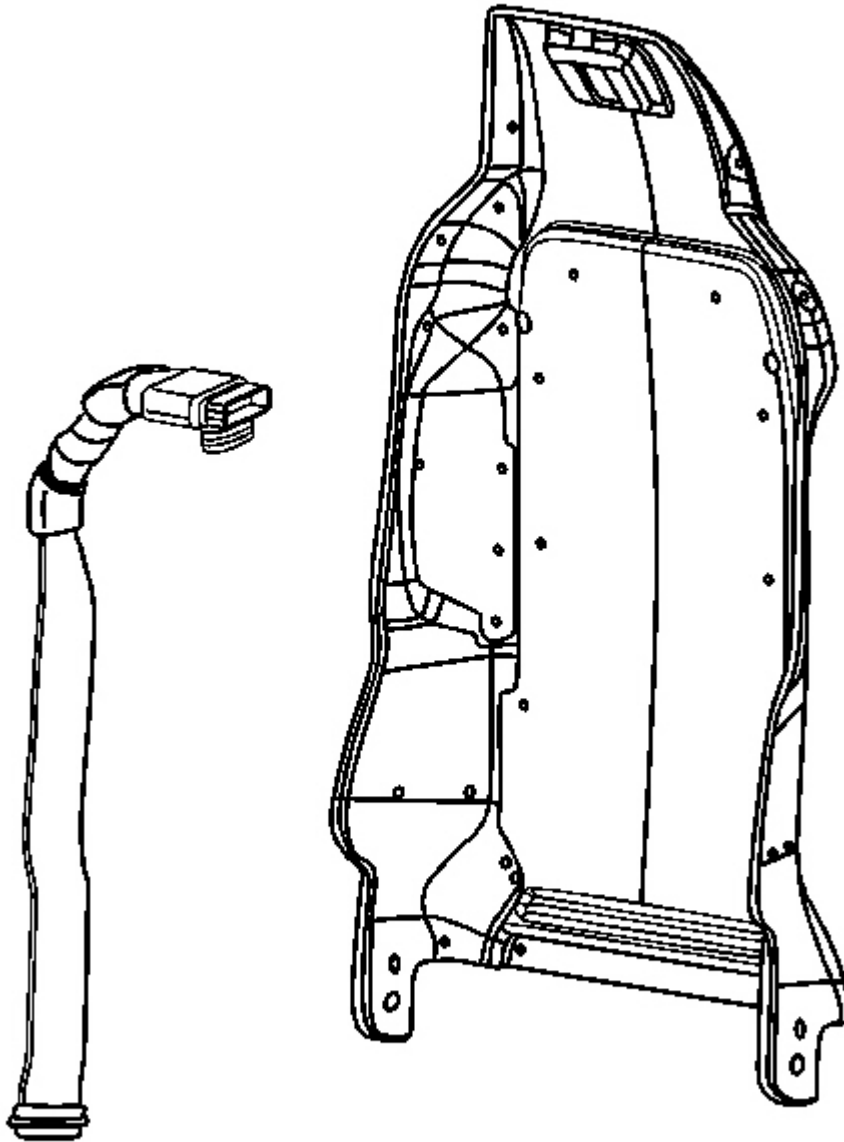


Fig. 128: View Of Ventilation Module - Driver Seat Back
Courtesy of GENERAL MOTORS CORP.

1. Install the ventilation module to the seat.
2. Install the retaining screws securing the ventilation module to the seat back.

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

3. Connect the electrical connector to the ventilation module.
4. Install the ventilation duct to the ventilation module. Secure the duct with new tie straps.
5. Install the seat back trim cover and cushion. Refer to **Pad Replacement - Driver Seat Back Cushion**.

MODULE REPLACEMENT - VENTILATION HEAT AND COOL - PASSENGER SEAT BACK

Removal Procedure

1. Remove the seat back trim cover and cushion. Refer to **Pad Replacement - Passenger Seat Back Cushion**.
2. Disconnect the electrical connector to the ventilation module.

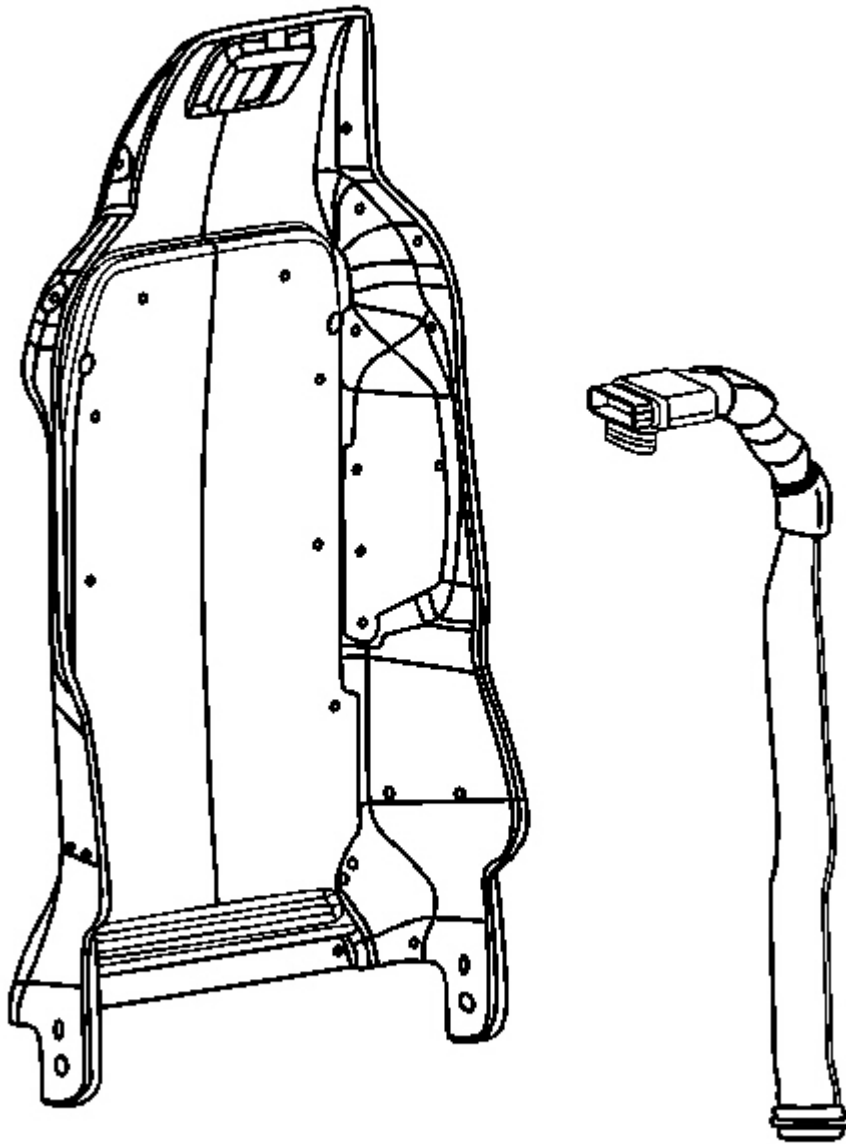


Fig. 129: View Of Ventilation Module - Passenger Seat Back
Courtesy of GENERAL MOTORS CORP.

3. Cut the tie strap to the ventilation duct.
4. Remove the retaining screws from the ventilation module to the seat back.
5. Remove the ventilation module from the seat.

Installation Procedure

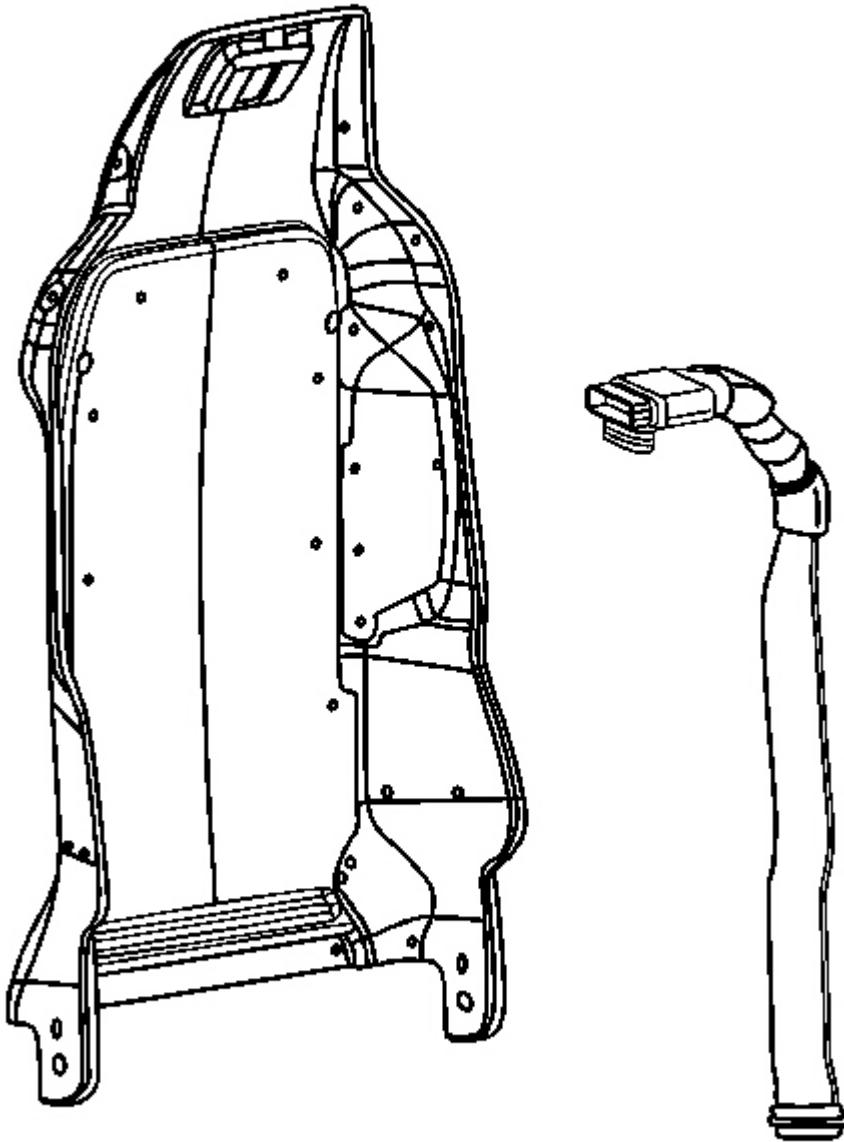


Fig. 130: View Of Ventilation Module - Passenger Seat Back
Courtesy of GENERAL MOTORS CORP.

1. Install the ventilation module to the seat.
2. Install the retaining screws securing the ventilation module to the seat back.

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

3. Connect the electrical connector to the ventilation module.
4. Install the ventilation duct to the ventilation module. Secure the duct with new tie straps.
5. Install the seat back trim cover and cushion. Refer to **Pad Replacement - Passenger Seat Back Cushion**.

MODULE REPLACEMENT - VENTILATION HEAT AND COOL - DRIVER SEAT CUSHION

Removal Procedure

1. Remove the seat cover and cushion. Refer to **Seat Cushion Pad Replacement - Driver Side**.
2. Disconnect the electrical connector to the ventilation module.
3. Cut the tie strap to the ventilation duct.

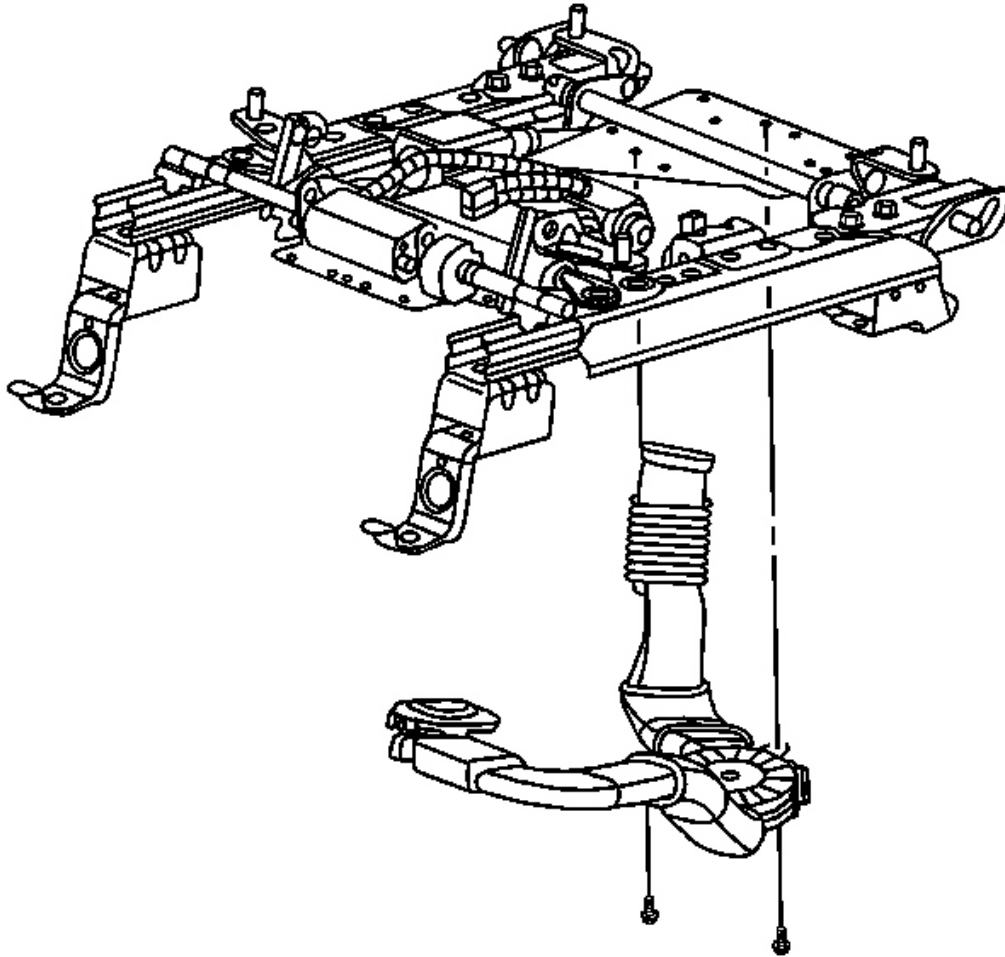


Fig. 131: View Of Blower Assembly & Screws - Driver Seat
Courtesy of GENERAL MOTORS CORP.

4. Remove the retaining screw from the ventilation module to the seat cushion wire frame.
5. Remove the ventilation module from the seat.

Installation Procedure

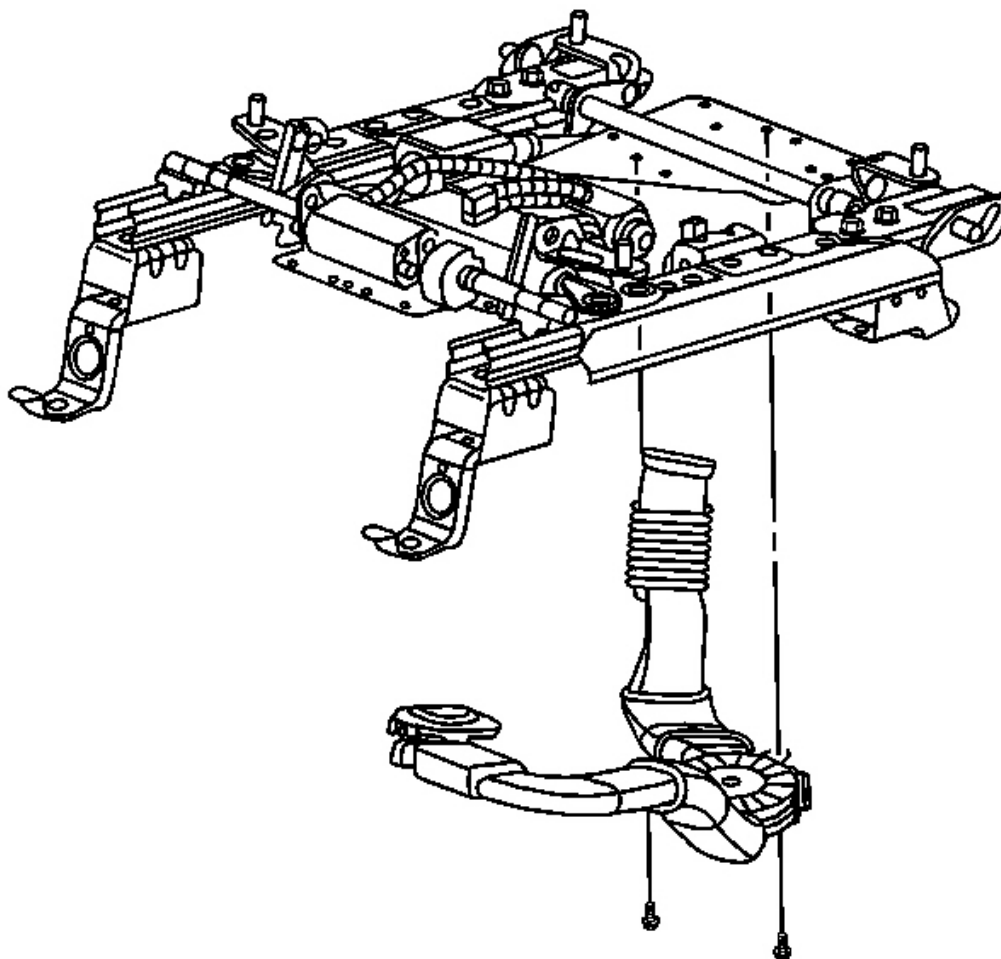


Fig. 132: View Of Blower Assembly & Screws - Driver Seat
Courtesy of GENERAL MOTORS CORP.

1. Install the ventilation module to the seat cushion wire frame.

NOTE: Refer to **Fastener Notice** in Cautions and Notices.

2. Install the retaining screw to the ventilation module.

Tighten: Tighten the screw to 2.5 N.m (22 lb in).

3. Connect the electrical connector to the ventilation module.

4. Install the ventilation duct to the ventilation module and tie with a new strap.
5. Install the seat cover and cushion. Refer to **Seat Cushion Pad Replacement - Driver Side.**

MODULE REPLACEMENT - VENTILATION HEAT AND COOL - PASSENGER SEAT CUSHION

Removal Procedure

1. Remove the seat cover and cushion. Refer to **Seat Cushion Pad Replacement - Passenger Side.**
2. Disconnect the electrical connector to the ventilation module.
3. Cut the tie strap to the ventilation duct.

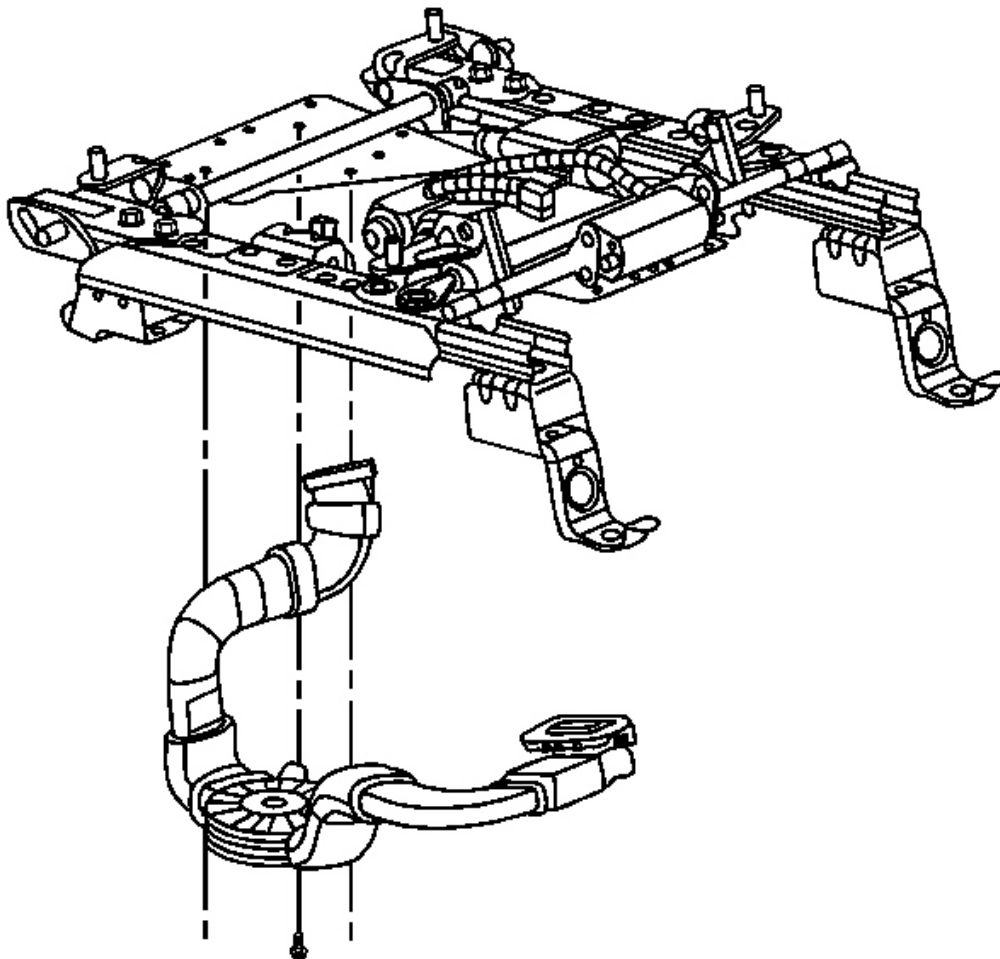


Fig. 133: View Of Blower Assembly & Screws - Passenger Seat

Courtesy of GENERAL MOTORS CORP.

4. Remove the retaining screw from the ventilation module to the seat cushion wire frame.
5. Remove the ventilation module from the seat.

Installation Procedure

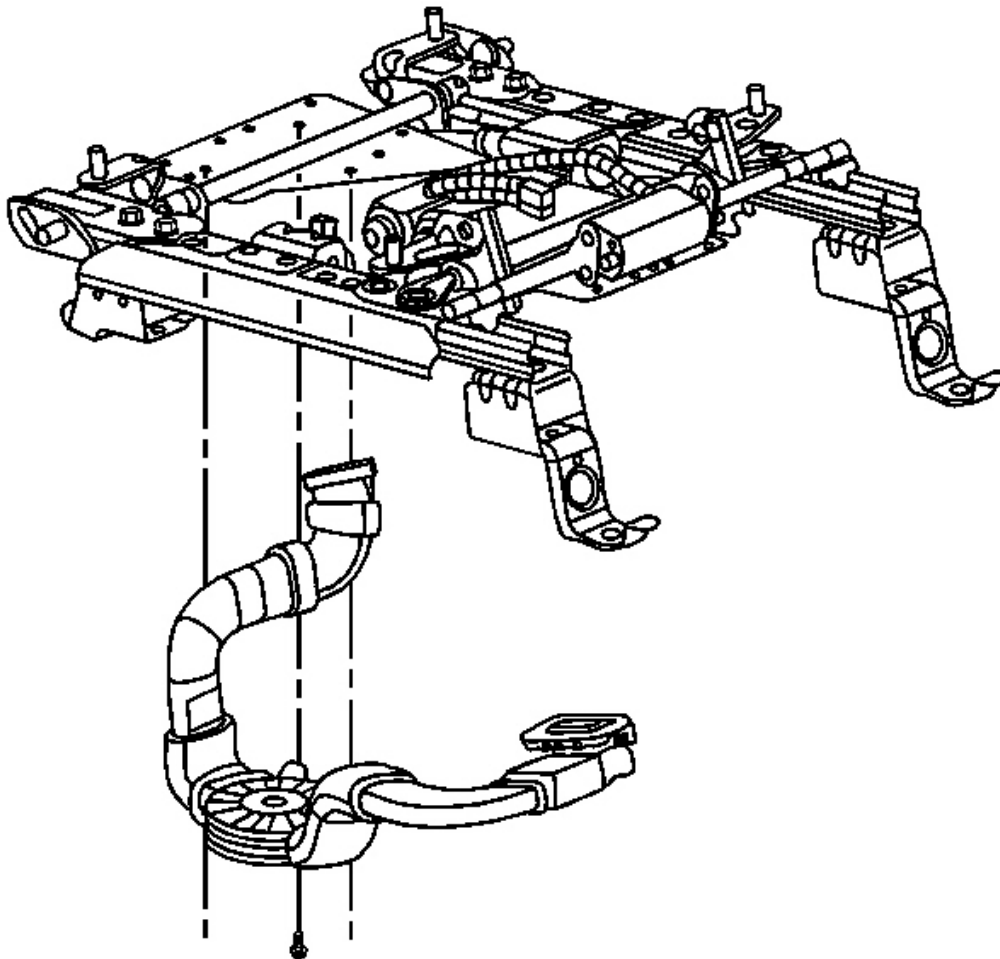


Fig. 134: View Of Blower Assembly & Screws - Passenger Seat
Courtesy of GENERAL MOTORS CORP.

1. Install the ventilation module to the seat cushion wire frame.

NOTE: **Refer to Fastener Notice in Cautions and Notices.**

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

2. Install the retaining screw to the ventilation module.

Tighten: Tighten the screw to 2.5 N.m (22 lb in).

3. Connect the electrical connector to the ventilation module.
4. Install the ventilation duct to the ventilation module and tie with a new strap.
5. Install the seat cover and cushion. Refer to **Seat Cushion Pad Replacement - Passenger Side**.

DUCT REPLACEMENT - VENTILATION - DRIVER SEAT CUSHION

Removal Procedure

1. Remove the seat cover and cushion. Refer to **Seat Cushion Pad Replacement - Driver Side**.

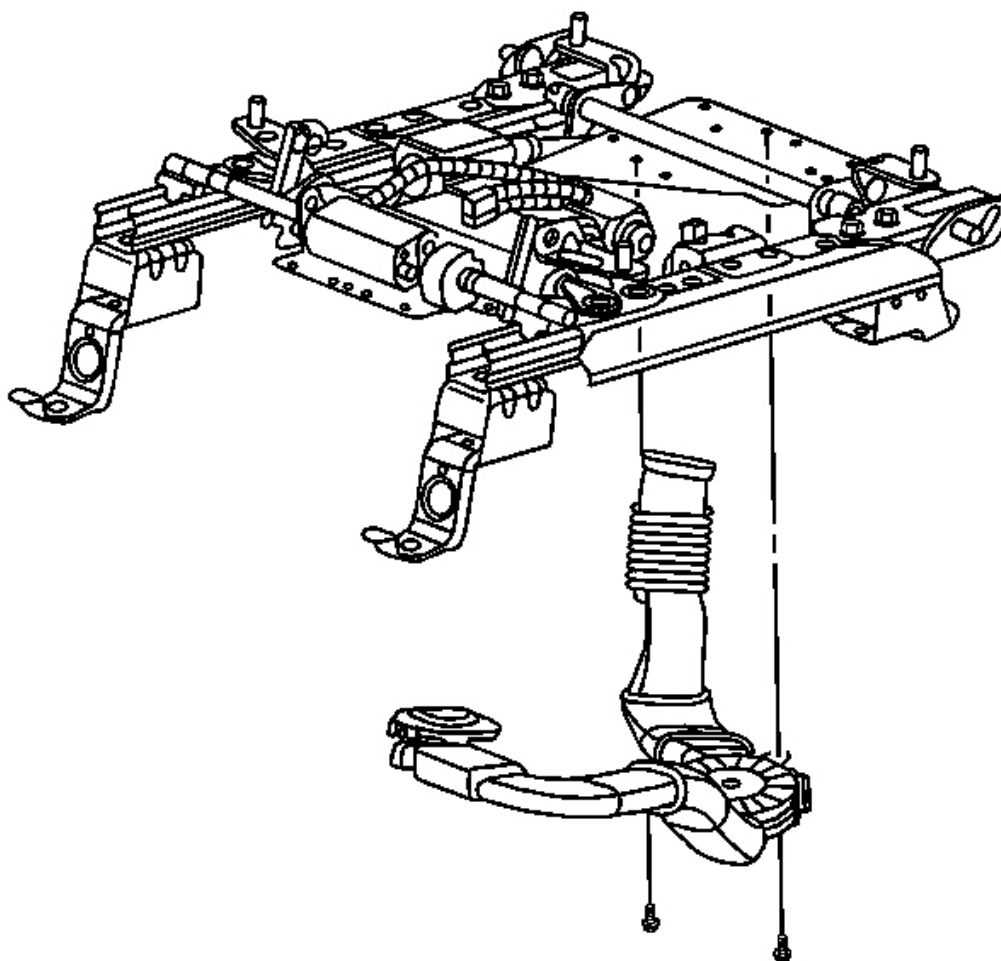


Fig. 135: View Of Blower Assembly & Screws - Driver Seat
Courtesy of GENERAL MOTORS CORP.

2. Cut the tie straps to the ventilation duct at the heat and cool module and blower
3. Remove the ventilation duct from the heat and cool module and blower.
4. Remove the ventilation duct from the seat cushion wire frame.

Installation Procedure

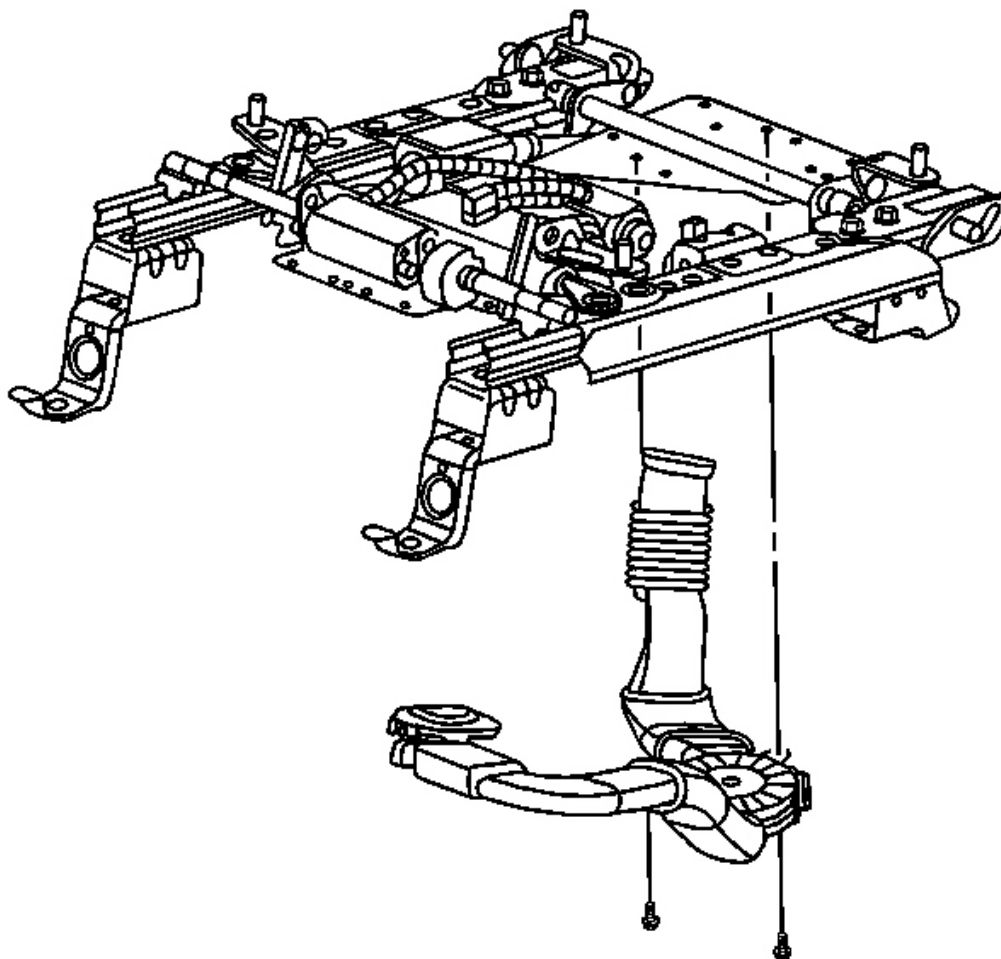


Fig. 136: View Of Blower Assembly & Screws - Driver Seat
Courtesy of GENERAL MOTORS CORP.

1. Install the ventilation duct to the seat cushion wire frame.
2. Install the duct to the heat and cool module and blower.
3. Secure the duct with new tie straps.
4. Install the seat cover and cushion. Refer to **Seat Cushion Pad Replacement - Driver Side.**

DUCT REPLACEMENT - VENTILATION - PASSENGER SEAT CUSHION

Removal Procedure

1. Remove the seat cover and cushion. Refer to **Seat Cushion Pad Replacement - Passenger Side.**

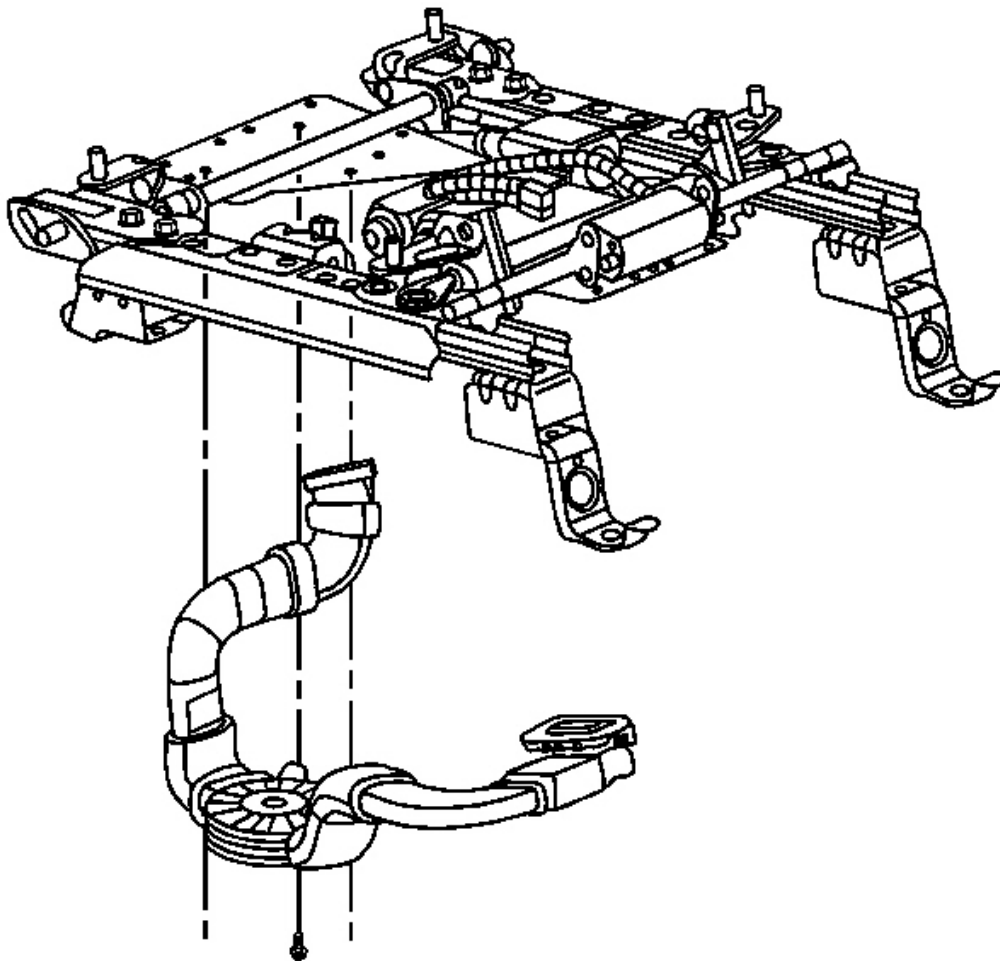


Fig. 137: View Of Blower Assembly & Screws - Passenger Seat
Courtesy of GENERAL MOTORS CORP.

2. Cut the tie straps to the ventilation duct at the heat and cool module and blower
3. Remove the ventilation duct from the heat and cool module and blower.
4. Remove the ventilation duct from the seat cushion wire frame.

Installation Procedure

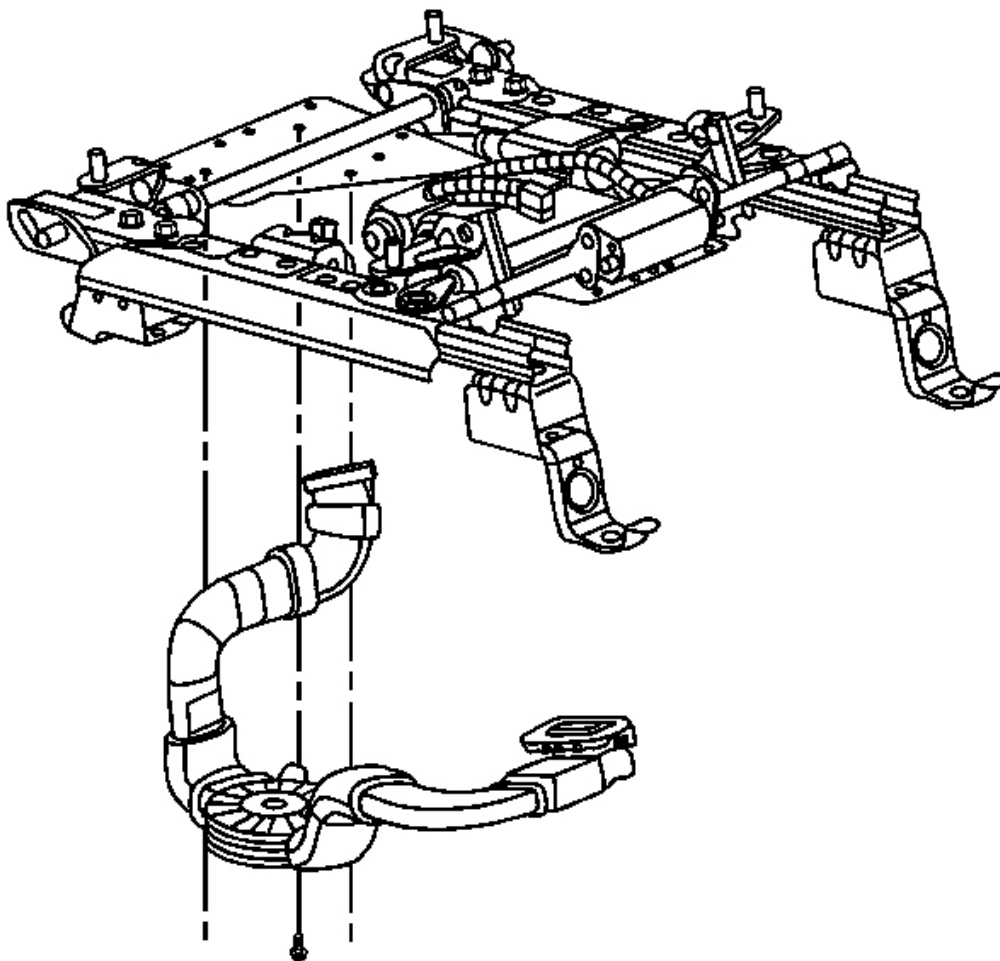


Fig. 138: View Of Blower Assembly & Screws - Passenger Seat
Courtesy of GENERAL MOTORS CORP.

1. Install the ventilation duct to the seat cushion wire frame.
2. Install the duct to the heat and cool module and blower.
3. Secure the duct with new tie straps.
4. Install the seat cover and cushion. Refer to Seat Cushion Pad Replacement - Passenger Side.

DUCT REPLACEMENT - VENTILATION - DRIVER SEAT BACK

Removal Procedure

1. Remove the seat cover and cushion. Refer to **Pad Replacement - Driver Seat Back Cushion**.

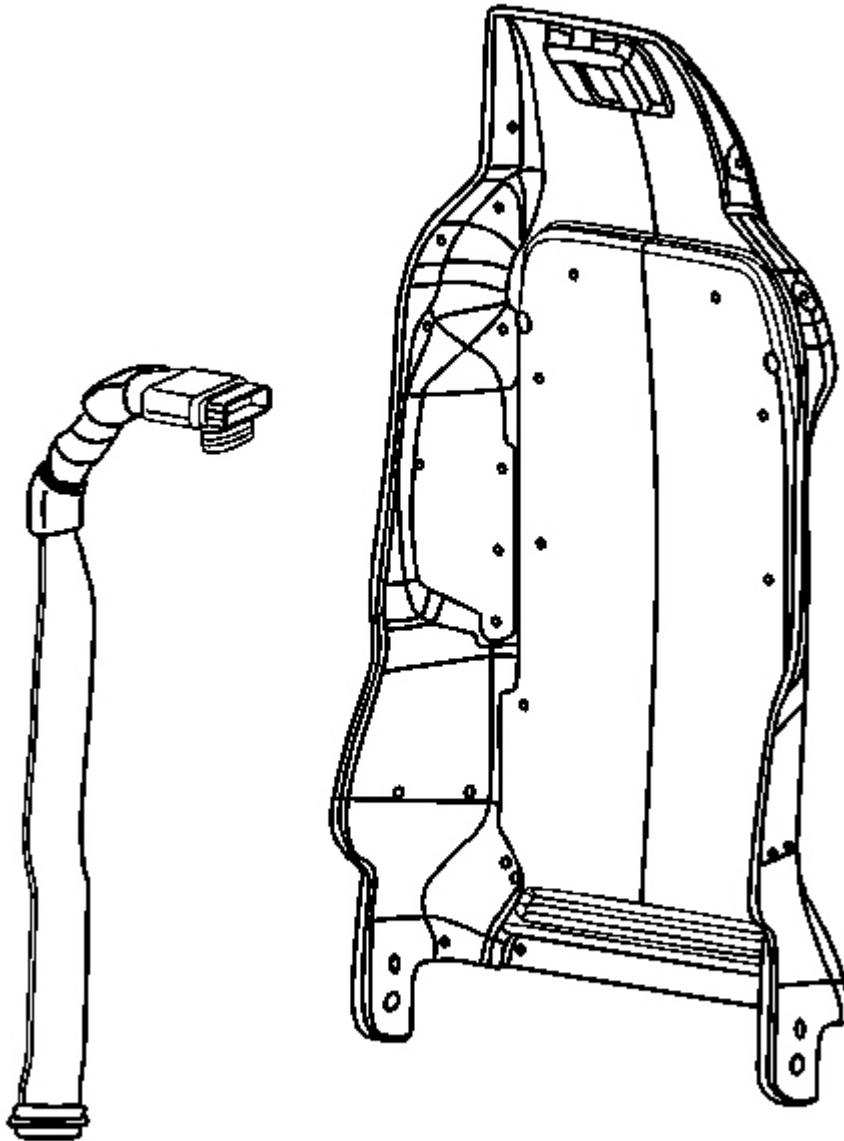


Fig. 139: View Of Ventilation Module - Driver Seat Back
Courtesy of GENERAL MOTORS CORP.

2. Cut the tie straps retaining the ventilation duct to the seat back frame.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

3. Cut the tie straps retaining the ventilation duct to the heat and cool module and blower.
4. Remove the ventilation duct from the heat and cool module and blower.
5. Remove the ventilation duct from the seat back frame.

Installation Procedure

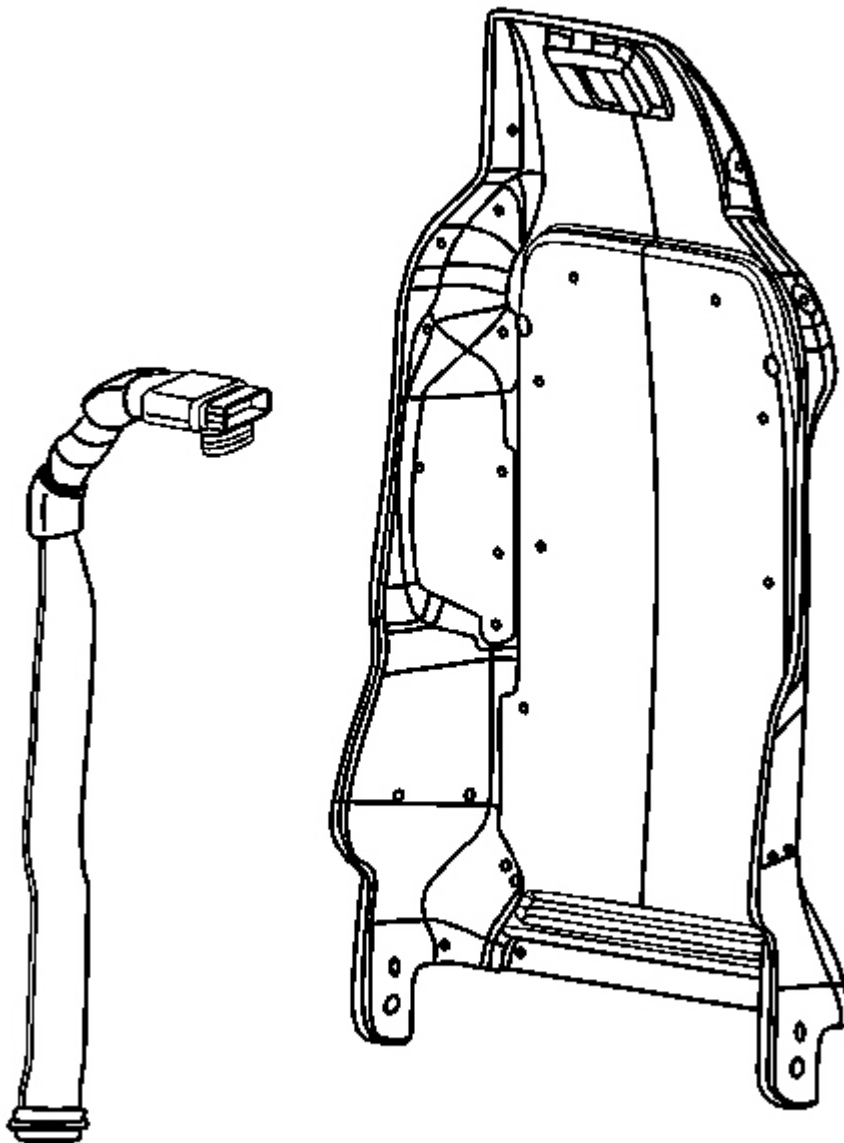


Fig. 140: View Of Ventilation Module - Driver Seat Back
Courtesy of GENERAL MOTORS CORP.

1. Install the ventilation duct to the seat back frame.
2. Install the ventilation duct to the heat and cool module and blower.
3. Tie new plastic straps retaining the ventilation duct to the heat and cool module and blower.
4. Tie new plastic straps retaining the ventilation duct to the seat back frame.
5. Install the seat cover and cushion. Refer to **Pad Replacement - Driver Seat Back Cushion.**

DUCT REPLACEMENT - VENTILATION - PASSENGER SEAT BACK

Removal Procedure

1. Remove the seat cover and cushion. Refer to **Pad Replacement - Passenger Seat Back Cushion.**

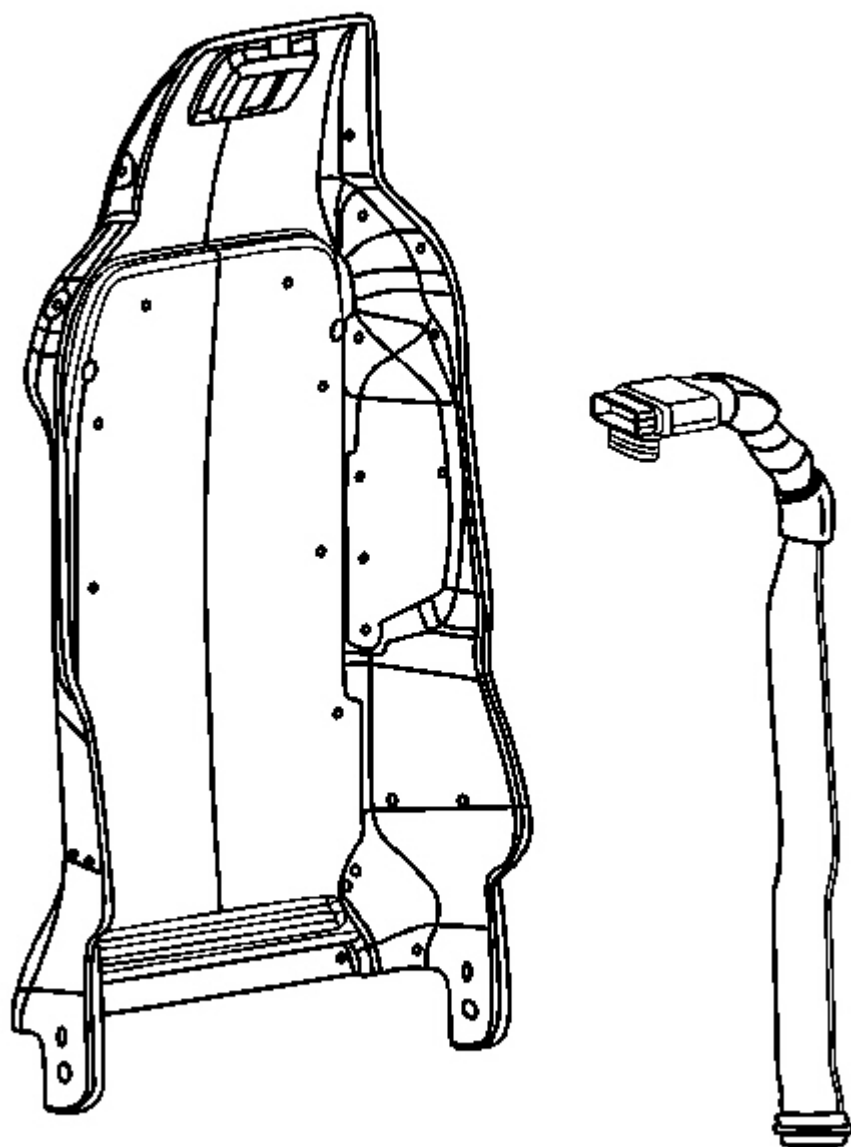


Fig. 141: View Of Ventilation Module - Passenger Seat Back
Courtesy of GENERAL MOTORS CORP.

2. Cut the tie straps retaining the ventilation duct to the seat back frame.
3. Cut the tie straps retaining the ventilation duct to the heat and cool module and blower.
4. Remove the ventilation duct from the heat and cool module and blower.

5. Remove the ventilation duct from the seat back frame.

Installation Procedure

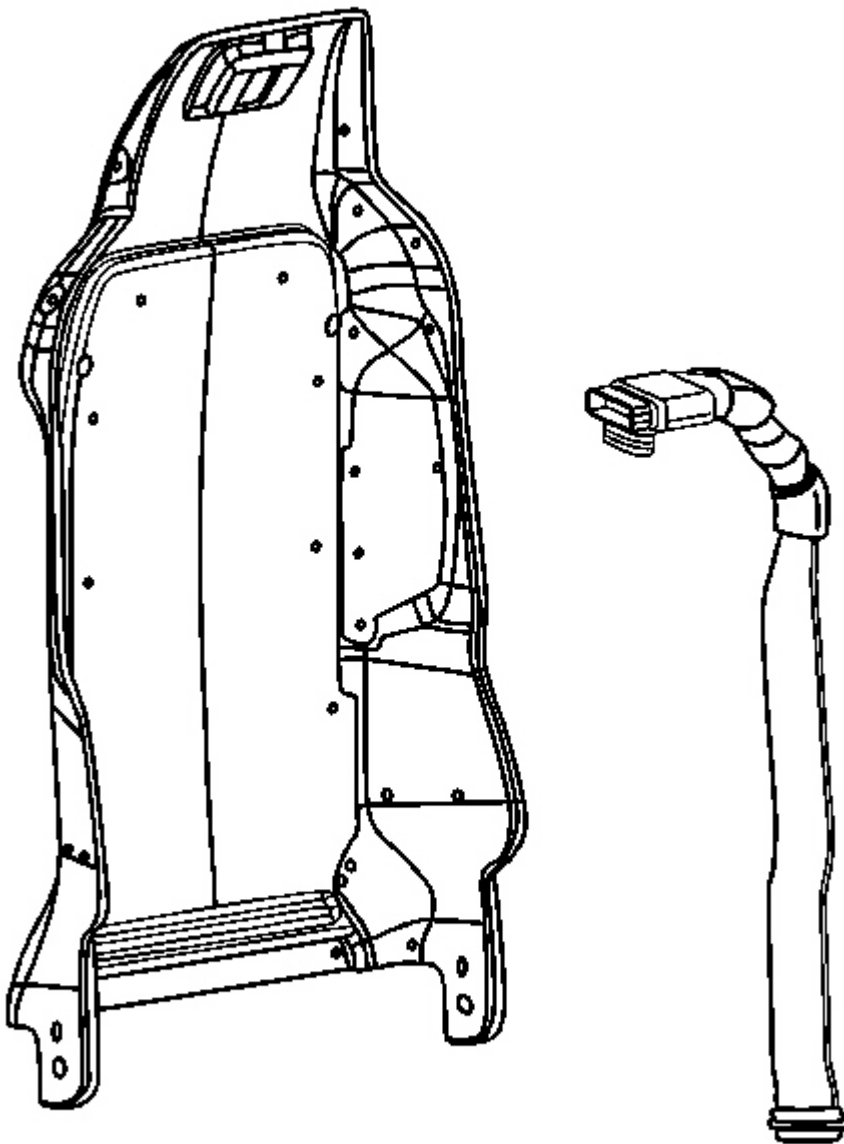


Fig. 142: View Of Ventilation Module - Passenger Seat Back
Courtesy of GENERAL MOTORS CORP.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

1. Install the ventilation duct to the seat back frame.
2. Install the ventilation duct to the heat and cool module and blower.
3. Tie new plastic straps retaining the ventilation duct to the heat and cool module and blower.
4. Tie new plastic straps retaining the ventilation duct to the seat back frame.
5. Install the seat cover and cushion. Refer to **Pad Replacement - Passenger Seat Back Cushion**.

DESCRIPTION AND OPERATION

POWER SEATS SYSTEM DESCRIPTION AND OPERATION

The passenger power seat system consists of the following components:

- Seat Adjuster Switch
- Seat Horizontal Motor
- Seat Front Vertical Motor
- Seat Rear Vertical Motor
- Seat Recline Motor
- SEATS Circuit Breaker 30 A

Seat Adjuster Switch

The seat adjuster switch provides both power and ground to the selected seat motors. Battery positive voltage is supplied at all times to the passenger seat adjuster switch from the SEATS Circuit Breaker located in the IP fuse block. The switch is grounded through the switch ground circuit and G307.

Motors

All of the seat motors operate independently of each other. Each motor contains an electronic circuit breaker (PTC) that opens in the event of a circuit overload and will reset only after voltage has been removed from the circuit. There are four seat position motors. These are the horizontal motor, front vertical motor, rear vertical motor, and the seat back recline motor. The horizontal motor moves the entire seat forward and rearward. The seat vertical motors may operate independently to tilt the front or rear of the seat cushion up or down. Both motors can also run simultaneously to move the entire seat up or down. The recline motor moves the angle of the seat back forward or rearward.

Horizontal

When the seat switch is operated to move the entire seat forward, battery positive voltage is applied through the switch contacts and the horizontal motor forward control circuit to the motor. The motor is grounded through the horizontal motor rearward switch contacts and the horizontal motor rearward control circuit to the motor. The motor runs in order to drive the entire seat forward until the switch is released. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery positive voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction.

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

Rear Vertical

When the seat switch is operated to tilt the rear of the seat cushion up, battery positive voltage is applied through the switch contacts and the rear vertical motor up control circuit to the rear vertical motor. The motor is grounded through the down switch contacts and the rear vertical motor down control circuit to the motor. The motor runs in order to drive the rear of the seat cushion up until the switch is released. Tilting the rear of the seat cushion down works similarly to tilting the rear of the seat cushion up, except that battery positive voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction.

Front Vertical

When the seat switch is operated to tilt the front of the seat cushion up, battery positive voltage is applied through the switch contacts and the front vertical motor up control circuit to the motor. The motor is grounded through the down switch contacts and the front vertical motor down control circuit to the motor. The motor runs in order to drive the front of the seat cushion up until the switch is released. Tilting the front of the seat cushion down works similarly to tilting the front of the seat cushion up, except that battery positive voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction.

Entire Seat Up or Down

When the seat switch is operated in order to move the entire seat to the up position, battery positive voltage is simultaneously applied through the front and rear vertical motor up switch contacts and the front and rear vertical motor up control circuits to both vertical motors. The motors are grounded through the down switch contacts and the front and rear vertical motor down control circuits to both vertical motors. Both motors run simultaneously in order to drive the entire seat up until the switch is released. Moving the entire seat down works similarly to moving the entire seat up, except that battery positive voltage and ground are applied on the opposite circuits causing the motors to run in the opposite direction.

Recline

When the seat recline switch is operated to move the seat back forward, battery positive voltage is applied through the switch contacts and the recline motor forward control circuit to the motor. The motor is grounded through the rearward switch contacts and the recline motor rearward control circuit to the motor. The motor runs in order to move the seat back forward until the switch is released. Moving the seat back rearward works similarly to moving the seat back forward, except that battery positive voltage and ground are applied on the opposite circuits causing the motor to run in the opposite direction.

LUMBAR SUPPORT DESCRIPTION AND OPERATION

The driver and passenger lumbar support systems each consist of the following components:

- Upper Lumbar Switch
- Lower Lumbar Switch
- Lumbar Pump/Control Module
- Upper Lumbar Support Bladder
- Lower Lumbar Support Bladder

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

- POWER LUMBAR LH/RH Fuse 15 A

Power and ground

Battery positive voltage is supplied at all times to the driver and passenger lumbar support switches and the lumbar pump/control modules through the battery positive voltage circuit and the POWER LUMBAR LH/RH Fuse located in the instrument panel (I/P) fuse block. Ground is provided through the module ground circuit to the ground stake.

Lumbar Support System Operation

This is a power inflate/deflate pneumatic system used for controlling seat back comfort by inflating or deflating air bladders within the seat back cushion.

The upper and lower lumbar support in the seat backrest may be adjusted independently. When the upper lumbar switch is operated to inflate or increase the amount of lumbar support, battery positive is applied through the switch contacts and the upper lumbar inflate control circuit to the lumbar control module. In response to this signal, the lumbar module energizes its internal inflate relay and the pump motor runs to inflate the upper lumbar support bladder in the seat backrest until the switch is released. When the upper lumbar switch is operated to deflate or decrease the amount of lumbar support, battery positive voltage is applied through the switch contacts and the upper lumbar deflate control circuit to the lumbar module. In response to this signal, the lumbar module releases air from the upper lumbar support bladder until the switch is released. The lumbar lower support is also controlled this way.

HEATED/COOLED SEATS DESCRIPTION AND OPERATION

The driver and passenger climate control seat systems each consist of the following components:

- Heated/Cooled Seat Switch
- HVAC Control Module
- Climate Control Seat Module (CCSM)
- Heated/Cool Seat Cushion Ventilation Module
- Heated/Cool Seat Back Ventilation Module
- Heated/Cooled Seat Blower Motor
- Seat Cushion Temperature Sensor
- Seat Back Temperature Sensor
- HEATED SEAT LH Fuse 15 A
- HEATED SEAT RH Fuse 15 A
- RPA/H/C Fuse 1 10 A

Climate Controlled Seat (CCS) System

Both the driver and passenger seat have independent CCS systems. A CCSM mounted to the bottom of each seat cushion electronically controls each CCS system. The CCSM receive power from both battery positive

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

voltage and ignition 1 voltage. The ignition must be in the ON position with the heated/cooled seat switch set in the HEAT or COOL position for CCS system to activate.

Once a CCS system is activated, cabin air is drawn through the blower motor and distributed to each of the heated/cool seat ventilation modules located under the seat cushion and in the seat backrest. The copper fins on the ventilation modules then heat or cool the passing air. The conditioned air is then directed into the bottom of the foam pad and along the surface of the seat to the occupant. The CCSM uses a set of algorithms to control the temperature of the heating/cooling modes.

Heated/Cooled Seat Switch and HVAC Control Module

The driver and passenger climate control seats can be operated independently of one another, and each is activated by a separate heated/cooled seat switch. Both switches are located in the HVAC control module. When a switch is pressed once, the HVAC module illuminates the HI HEAT temperature indicator and sends a pulse width modulated signal to the CCSM. The CCSM then turns on the seat temperature to high heat in response to the switch signal. When the switch is pressed a second time, the HVAC module illuminates the LO HEAT temperature indicator and sends a signal to the CCSM indicating the low heat request. When the switch is pressed a third time, the HVAC module will turn off the temperature indicator and signal the CCSM to turn off the system. If, after a slight pause, the switch is pressed a fourth time, the HVAC module illuminates the HI COOL temperature indicator and sends a signal to the CCSM indicating the high cool request. When the switch is pressed a fifth time, the HVAC module illuminates the LO COOL temperature indicator and sends a signal to the CCSM indicating the low cool temperature request. When the switch is pressed a sixth time, the HVAC module will turn off the temperature indicator and signal the CCSM to turn off the system.

CCSM Power and Ground

Battery positive voltage is supplied at all times to each CCSM through the battery positive voltage circuit and the HEATED SEAT LH Fuse and the HEATED SEAT RH Fuse located in the IP fuse block. This voltage is used by each module to supply power to the ventilation modules and the blower motor. Battery positive voltage is also supplied to each module through the ignition 1 voltage circuit and the RPA/H/C SEAT Fuse 11 located in the body control module (BCM). The RPA/H/C SEAT voltage is used to power up each module and allows the CCS system to operate only with the ignition in the ON position. Each CCSM is grounded through the module ground circuit to the ground stake.

Heated/Cooled Seat Ventilation Modules

Each heated/cooled seat has two heated/cooled seat ventilation modules, which are Thermo-Electronic Devices (TEDs), mounted downstream of the blower motor. These modules are controlled by the CCSM. Each ventilation module consists of a circuit of positive and negative connections sandwiched between two ceramic plates. Each ceramic plate is equipped with copper fins for heat exchange. The air flowing past these fins is either directed as conditioned air to the seat cushion and seat back, or directed to the cabin as waste air.

The ventilation module is essentially a solid state heat pump that is used to heat or cool the air supply to the seat cushion and seat back. When voltage is applied to the ventilation module, one side of the module releases energy as heat, while the opposite side absorbs energy and gets cool. When the polarity of the current flow is switched, the hot and cool sides reverse.

Temperature Sensors

The seat temperature sensors are thermistors which are attached directly to the fins of each ventilation module. The CCSM supplies a 5 volt reference voltage through the temperature sensor signal circuit and ground through the temperature sensor low reference circuit to the respective seat cushion and seat back temperature sensors. As the temperature of the ventilation module changes, the resistance of the thermistor varies changing the feedback voltage of the temperature sensor signal circuit. This voltage varies from 0.5 volts to 4.0 volts. The CCSM monitors this voltage signal to determine the fin temperature so that it can adjust the seat temperature to the selected switch input.

Heated Seat Operation

When the heated/cooled seat switch is pressed for HI Heat, the Temperature Set Point, the CCSM will transition to the HEAT state. In the heat state, the module applies a pre-determined voltage through the heat control circuit to the ventilation module while providing a ground through the cool control circuit to the ventilation module. A pre-determined voltage is also applied through the blower speed control circuit to the blower motor. The CCSM uses the following sequence, beginning with the Heat SoftStart Mode, to achieve the Set Point Temperature before it can enter the Control Heat Mode. If the fin temperature is already above the Temperature Set Point, the CCSM will skip the Heat SoftStart Mode and proceed to the Control Heat Mode.

- **Heat SoftStart Mode:** While transitioning to the heat mode, the CCSM will initiate the SoftStart Mode. The intent of the Heat SoftStart Mode is for the module to bring the ventilation module fin temperature up to the pre-determined Temperature Set Point of the High Heat Mode. The module does this by setting the blower motor speed control voltage to 3.0 volts, while ramping up the ventilation module voltage from 0 volts to the maximum available voltage at which point the system transitions to High Heat Mode.
- **High Heat Mode:** The intent of the HIGH Heat Mode is to increase the fin temperature to the pre-determined Temperature Set Point in order for the CCSM to go into the Control Heat Mode. The module does this by maintaining the ventilation module at the maximum voltage, while maintaining the minimum required airflow across the fins. After a maximum duration of 3 minutes, or upon achieving the pre-determined temperature set point, the system transitions to the Control Heat Mode.
- **Control Heat Mode:** At the completion of high heat mode the CCSM will initiate Control Heat Mode. The intent of the Control Heat Mode is to maintain the desired fin temperature. The CCSM does this by; first, adjusting the voltage supply to the blower motor to control blower motor speed, and second, by controlling the voltage supplied to the ventilation module. The CCSM updates these voltages once every second. Increasing the blower motor speed will decrease the fin temperature. If the maximum blower motor speed is achieved and the fin temperature is still above the set point of high heat, the module will then begin to control the ventilation module voltage to achieve temperature set point. Decreasing the ventilation module voltage decreases the fin temperature.

If the CCSM is trying to raise the fin temperature to set point by raising the ventilation module voltage, and the fin temperature can not be raised because the ventilation module voltage is at the maximum, the CCSM will reduce the blower motor speed to achieve the temperature set point.

Cooled Seat Operation

When the heated/cooled seat switch is pressed for HI Cool, the CCSM will transition to the COOL state. In response to this command, the module applies a pre-determined voltage through the cool control circuit to the ventilation module while providing a ground through the heat control circuit to the ventilation module. A pre-determined voltage is also applied to the blower motor. The CCSM uses the following sequence, beginning with

the Cool SoftStart Mode, to achieve the Set Point Temperature before it can enter the Control Cool Mode.

- **Cool SoftStart Mode:** The intent of the Cool SoftStart Mode is for the CCSM to bring the ventilation module fin temperature up to the pre-determined Temperature Set Point of the high cool mode. The CCSM does this by setting the blower motor speed control voltage to 9.5 volts, while ramping up the ventilation module voltage from 0 volts to 8.7 volts at which point the system transitions to High Cool Mode.

If the heated/cooled seat switch was Initially set to LO COOL at this point the system would by-pass the high cool mode and transition directly to the Control Cool Mode.

- **High Cool Mode:** The intent of the High Cool Mode is to increase the fin temperature to the pre-determined Temperature Set Point of the control cool mode. The CCSM does this by setting the blower speed voltage to 6.1 volts and the ventilation module voltage to 7.1 volts. After 12 minutes the system transitions to the Control Cool Mode.
- **Control Cool Mode:** At the completion of High Cool Mode the CCSM will initiate Control Cool Mode. The intent of the control cool mode is to maintain the fin temperature; first, by adjusting the speed of the blower motor by controlling the voltage supplied to the motor, second, by controlling the ventilation module voltage. The CCSM updates these voltages once every second.

MEMORY SEATS DESCRIPTION AND OPERATION

The memory seat system consists of the following components:

- Seat adjuster switch
- Memory function switch
- Memory seat module (MSM)
- Seat horizontal motor
- Seat front vertical motor
- Seat rear vertical motor
- Seat recline motor
- Seat horizontal position sensor
- Seat front vertical position sensor
- Seat rear vertical position sensor
- Seat recline position sensor
- POWER SEATS circuit breaker 30 A
- TILT/TELE SW/MEM SEAT MOD fuse 10 A

The memory seat module (MSM) is referenced in the Tech 2 as the driver position module (DPM).

Seat Adjuster Switch

Battery positive voltage is supplied at all times to the seat adjuster switch from the TILT/TELE SW/MEM

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

SEAT MOD S fuse located in the body control module (BCM) fuse block. When a seat switch is pressed, battery positive voltage is applied through the switch contacts and the switch signal circuit to the memory seat module (MSM). The MSM then commands the selected seat motor to move in response to the switch signal.

Memory Function Switch

Battery positive voltage is supplied at all times to the memory function switch from the TILT/TELE SW/MEM SEAT MOD fuse located in the body control module (BCM) fuse block. When a memory recall switch is pressed battery positive voltage is applied through the switch contacts and the switch signal circuit to the memory seat module (MSM). The MSM then commands the appropriate seat motors to move to the pre-recorded seat position stored in memory in response to the switch signal.

MSM Power and Ground

Battery positive voltage is supplied at all times to the memory seat module (MSM) through the battery positive voltage circuit from the POWER SEATS circuit breaker located instrument panel (I/P) fuse block. This voltage is used to power up MSM and also to apply power to the seat motors when commanded. Battery positive voltage from the TILT/TELE SW/MEM SEAT MOD fuse located in the body control module (BCM) fuse block that supplies voltage to the seat adjuster switch and the memory function switch, also supplies voltage to the MSM. The MSM monitors this voltage circuit in order to determine if battery voltage is supplied to the seat adjuster switch. The MSM is grounded through the module ground circuit and G301.

Seat Motors

The memory seat module (MSM) controls the movement of each of the above mentioned seat directional motors. All of the seat motors operate independently of each other. Each motor contains a electronic circuit breaker (PTC), that opens in the event of a circuit overload and will reset only after voltage has been removed from the circuit.

There are 4 motors that move the position of the seat. These are the seat horizontal motor, front vertical motor, rear vertical motor, and the recline motor. The horizontal motor moves the entire seat forward and rearward. The seat vertical motors may operate independently to tilt the front or rear of the seat cushion up or down. Both vertical motors can also run simultaneously to move the entire seat up or down. The recline motor moves the angle of the seat back forward or rearward.

All motors are reversible. For example, when the seat switch is operated to moved the entire seat forward, battery positive voltage is applied through the horizontal forward switch contacts and the power seat horizontal forward switch signal circuit to the MSM. In response to this signal, the MSM applies battery positive voltage through the driver seat horizontal motor forward control circuit to the horizontal motor. The MSM supplies ground to the motor through the driver seat horizontal motor rearward control circuit. The motor runs to drive the entire seat forward until the switch is released. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery positive voltage and ground are applied on the opposite circuits causing the motor to run in the opposite direction. All other seat motors are also powered this way.

The MSM provides each seat motor with a soft stop. The module will actually stop the motor just before the physical end-of-travel for that motor. This decreases the stress on each motor. If a motor reaches the end-of-travel due a soft stop and the seat switch is released and then activated again, the seat will move a short distance

2005 Cadillac XLR

2005 ACCESSORIES & EQUIPMENT Seats - XLR

farther to it's physical travel limit.

Position Sensors

The seat position sensors are potentiometers which are either attached directly to the motor's transmission cable or are an internal part of the motor. The memory seat module (MSM) supplies a 5-volt reference voltage through the 5-volt reference circuit and ground through the low reference circuit to the respective seat position sensors. When the motor or cable rotates, the resistance of the potentiometer varies changing the feedback voltage of the position sensor signal circuit. This voltage varies from 0.25 volts to 4.75 volts. The MSM monitors this voltage signal to determine the position of the seat.

When a memory set command is received, the MSM records the seat position by storing the feedback voltage from each position sensor. Then, when a memory recall command is received, the MSM moves the motors until the position sensor feedback voltages equals the feedback voltages stored in memory.

Memory Functions

The current seat position may be recorded for 2 different drivers. To record a position, adjust the drivers seat to a comfortable position, then press and hold button 1 until a chime is heard. A second seat position may be programmed by repeating the above steps and pressing button 2. When the memory seat module (MSM) receives a memory set message, it records the feedback voltages from all 4 seat position sensors for the appropriate driver. The easy exit position is programmed by moving the seat to the desired exit position and then press and hold the exit button until the chime is heard. Two easy exit positions can be programmed, one for each driver. When the MSM receives a set exit message, it records the feedback voltages from all 4 seat position sensors for the appropriate driver.

When the memory 1 or 2 button is pressed, the MSM applies battery positive voltage to run the seat motors until the position sensor feedback voltages equal the feedback voltages stored in memory for the appropriate driver. When the EXIT button is pressed, the MSM applies battery positive voltage to run the seat motors until the position sensor feedback voltages equal the feedback voltages stored in memory for the appropriate driver exit position.

Memory recall will not work if the shift lever is out of NEUTRAL (N) or PARK (P).

Recall Personalization

Specific drivers are recognized by the vehicle through the keyless entry transmitters. When the transmitter is used in order to unlock the vehicle doors, it sends a radio frequency to the remote control door lock receiver (RCDLR). The RCDLR interprets the signal, then communicates the unlock command and which driver performed the command via a class 2 message over the serial data line to the appropriate modules and the memory seat module (MSM). The MSM will then recall any previously programed personalization easy exit or memory seat positions. For more information concerning the programing of the personalization feature refer to **Driver Personalization** in Personalization.

Memory Inhibit/Enable

The memory seat module (MSM) receives the ignition switch signal and the gear selector position via class 2

2005 Cadillac XLR
2005 ACCESSORIES & EQUIPMENT Seats - XLR

messages. When the ignition switch is in the OFF position, memory record, memory recall, personalization recall, and exit recall functions are all allowed. When the ignition switch is in the ON position and the gear selector is in PARK, the personalization recall function is deactivated, while all other memory functions are allowed. When the ignition switch is in the ON position and the gear selector is out of the PARK position, all memory seat recall functions are inhibited, only memory set is allowed.

After an air bag deployment, the sensing and diagnostic module (SDM) will send out a post air bag deployment signal via the class 2 serial data line. After receiving this message, the MSM will inhibit all memory recall functions, or cancel any memory recall function in process.