

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

2006 ACCESSORIES & EQUIPMENT

Roof - HHR

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Luggage Rack Bolts	4 N.m	35 lb in
Sunroof Motor/Actuator Bolts	5 N.m	44 lb in
Sunroof Module to Roof Nuts	10 N.m	89 lb in
Sunroof Window Panel Screws	6 N.m	53 lb in

SCHEMATIC AND ROUTING DIAGRAMS

POWER SUNROOF SCHEMATICS

Fig. 1: Power Sunroof Schematic
Courtesy of GENERAL MOTORS CORP.

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

COMPONENT LOCATOR

POWER ROOF SYSTEMS COMPONENT VIEWS

 C:\DOCUME~1\User\LOCALS~1\Temp\mric_tmp\~od1F4.jpg (2092 x 1874) @ 564.48px

Fig. 2: Headliner Components - Top
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 2

Callout	Component Name
1	Sunroof Control Module (CF5)
2	Cellular Navigation Antenna (UE1)
3	Digital Radio Antenna (U2K)
4	Inside Rearview Mirror
5	Headliner

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

✖ C:\DOCUME~1\User\LOCALS~1\Temp\mric_tmp\~od1F5.jpg (2080 x 2080) @ 564.48px

Fig. 3: Headliner Components - Bottom
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 3

Callout	Component Name
1	Headliner
2	Dome Lamp
3	Cellular Microphone (UE1)
4	OnStar Button Assembly (UE1)
5	Inside Rearview Mirror
6	Sunroof Switch (CF5)

POWER ROOF SYSTEMS CONNECTOR END VIEWS

Sunroof Control Module (CF5)

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

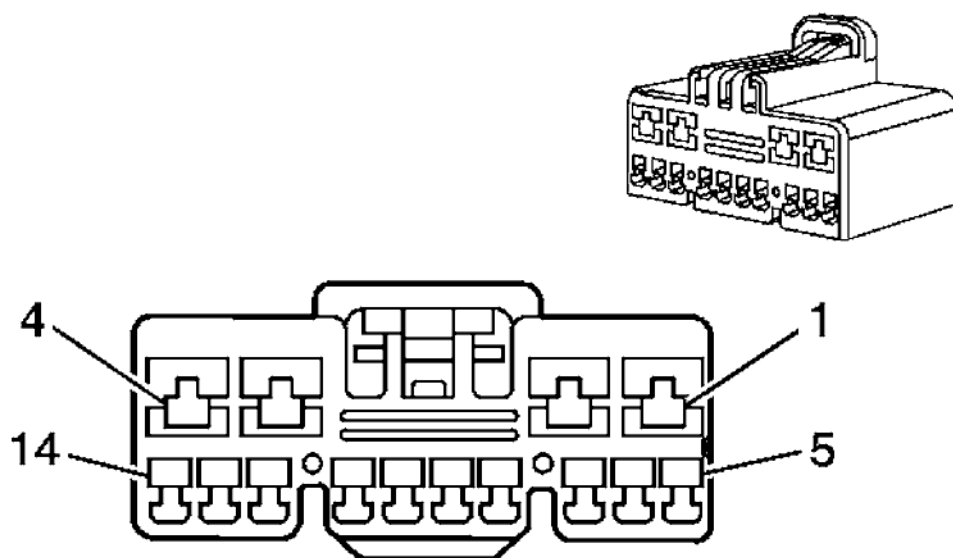


Fig. 4: Sunroof Control Module (CF5) Connector
Courtesy of GENERAL MOTORS CORP.

Power Roof Systems Connector End Views

Connector Part Information

- OEM: 7283-8398-40
- Service: Serviced by Complete Sunroof Harness
- Description: 14-Way F (L-GY)

Terminal Part Information

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

Sunroof Control Module (CF5)

Pin	Wire Color	Circuit No.	Function
1	RD/WH	540	Battery Positive Voltage
2	TN	755	RAP Relay Coil Control
3	-	-	Not Used

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

4	BK	750	Ground
5	OG	5029	Sunroof Switch Data (3)
6	L-BU	5027	Sunroof Switch Data (1)
7	BN	5028	Sunroof Switch Data (2)
8	PU	5032	Sunroof Switch Data (6)
9	L-GN	5030	Sunroof Switch Data (4)
10	PK	5031	Sunroof Switch Data (5)
11	-	-	Not Used
12	WH/RD	943	Sunroof Switch Data (4)
13	WH/BU	944	Sunroof Switch Data (5)
14	WH/GN	945	Sunroof Switch Data (6)

Sunroof Switch (CF5)

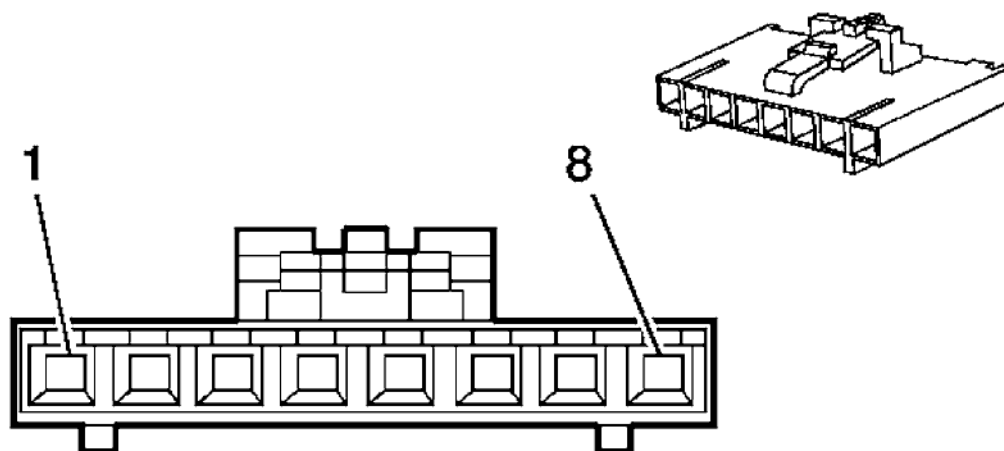


Fig. 5: Sunroof Switch (CF5) Connector
Courtesy of GENERAL MOTORS CORP.

Power Roof Systems Connector End Views

Connector Part Information

- OEM: 50-57-9408
- Service: 89046705
- Description: 8-Way F GT 280 Series (BK)

Terminal Part Information

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

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

Sunroof Switch (CF5)

Pin	Wire Color	Circuit No.	Function
1	PK	5031	Sunroof Switch Data (5)
2	L-BU	5027	Sunroof Switch Data (1)
3	-	-	Not Used
4	PU	5032	Sunroof Switch Data (6)
5	BK	750	Ground
6	L-GN	5030	Sunroof Switch Data (4)
7	BN	5028	Sunroof Switch Data (2)
8	OG	5029	Sunroof Switch Data (3)

POWER SUNROOF DISASSEMBLED VIEW

Fig. 6: Power Sunroof Disassembled View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 6

Callout	Component Name
1	Sunroof Drain Hose Retainer

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

2	Sunroof Window Panel
3	Sunroof Window Bolt/Screw
4	Sunroof Module Assembly
5	Sunroof Rear Drain Hose
6	Sunroof Module Assembly to Roof Nut
7	Sunroof Sunshade
8	Sunroof Opening Bezel/Lace
9	Sunroof Switch Bezel
10	Sunroof Switch
11	Sunroof Motor/Actuator Bolt/Screw
12	Sunroof Motor/Actuator
13	Sunroof Front Drain Hose

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - ROOF

Before you begin any diagnostic procedure, always review the system Description and Operation. Reviewing the Description and Operation will help you determine the correct 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.

After reviewing the system description and operation, always begin the system 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.

SYMPTOMS - ROOF

IMPORTANT: Complete the following procedures before using the symptom tables.

1. Perform the **Diagnostic System Check - Vehicle** in Vehicle DTC Information in order to verify that all of the following conditions are true:
 - No DTCs are set.
 - The control modules can communicate via the serial data link.

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

2. Review the system description and operation in order to learn the system functions. Refer to **Sunroof Description and Operation**.

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the power sunroof system. Refer to **Checking Aftermarket Accessories** in Wiring Systems.
- Inspect the accessible system components for obvious damage or for conditions which can cause the symptom.

Intermittent

Faulty electrical connections or wiring may be the cause 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 Sunroof Express Open/Close Features Inoperative**
- **Power Sunroof Inoperative**
- **Power Sunroof Does Not Open**
- **Power Sunroof Express Vent Open/Close Features Inoperative**
- **Power Sunroof Does Not Open to Vent Position**
- **Power Sunroof Does Not Close**
- **Power Sunroof Does Not Close from Vent Position**
- **Retained Accessory Power (RAP) On After Timeout** in Retained Accessory Power, if the power sunroof should operate longer than the RAP time-out.

POWER SUNROOF EXPRESS OPEN/CLOSE FEATURES INOPERATIVE

Diagnostic Aids

If the sunroof is experiencing an intermittent inoperative condition, check the sunroof switch ground circuit for an open. If the sunroof switch ground circuit is open, the switch may take a redundant path to ground through the switch illumination circuit. When the lights are turned On, the redundant path to ground is removed and the sunroof will become inoperative.

If the sunroof switch express signal circuit is found to be short to voltage, the sunroof switch will most likely be open.

Test Description

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

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

5: This step determines if the fault is the sunroof switch or the sunroof control module. It also tests the integrity of the roof express signal circuit. If the fuse in the jumper wire opens when you perform this test, a short to battery voltage may have occurred.

Power Sunroof Express Open/Close Features Inoperative

Step	Action	Values	Yes	No
Schematic Reference: Power Sunroof Schematics Connector End View Reference: Power Roof Systems Connector End Views DEFINITION: The sunroof express open or close feature is inoperative. All other sunroof functions operate OK.				
1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	Attempt to operate the power sunroof through its full range of functions in order to verify that the power sunroof express open/close features are inoperative. Does the Power Sunroof System operate normally?	-	Go to Testing for Intermittent Conditions and Poor Connections in Wiring Systems	Go to Step 3
3	Are both the roof express open and express close functions inoperative?	-	Go to Step 4	Go to Step 6
4	1. Disconnect the sunroof switch. 2. Turn ON the ignition, with the engine OFF. 3. Measure the voltage from the roof express signal circuit of the sunroof switch harness connector to a good ground. Does the voltage measure near the specified value?	B+	Go to Step 5	Go to Step 7
	1. Connect the harness connector to the sunroof switch. 2. Close the sunroof.			

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

5	3. Disconnect the sunroof switch. 4. Connect a jumper wire between the roof express signal circuit of the switch connector and the roof open switch signal circuit of the switch connector. 5. Connect one end of a 3-amp fused jumper wire to one end the previously connected jumper wire. 6. Momentarily connect the other end of the 3-amp fused jumper wire to a good ground. Did the roof express open?	-	Go to Step 9	Go to Step 10
6	1. Disconnect the sunroof switch. 2. Turn ON the ignition, with the engine OFF. 3. Measure the voltage from the inoperative roof open or close switch signal circuit of the sunroof switch harness connector to a good ground. Does the voltage measure near the specified value?	B+	Go to Step 9	Go to Step 8
7	Test the roof express signal circuit 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 13	Go to Step 10
8	Test the appropriate roof open or close switch signal circuit 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 13	Go to Step 10
	Inspect for poor connections at the harness connector of the sunroof switch. Refer to Testing for			

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

9	<u>Intermittent Conditions and Poor Connections and Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 13	Go to Step 11
10	Inspect for poor connections at the harness connectors of the sunroof control module. Refer to <u>Testing for Intermittent Conditions and Poor Connections and Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 13	Go to Step 12
11	Replace the sunroof switch. Refer to <u>Sunroof Switch Replacement</u> . Did you complete the replacement?	-	Go to Step 13	-
12	Replace the sunroof 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 13	-
13	Operate the system in order to verify the repair. Did you find and correct the condition?	-	System OK	Go to Step 2

POWER SUNROOF INOPERATIVE**Diagnostic Aids**

If the sunroof is experiencing an intermittent inoperative condition, check the sunroof switch ground circuit for an open. If the sunroof switch ground circuit is open, the switch may take a redundant path to ground through the switch illumination circuit. When the lights are turned On, the redundant path to ground is removed, and the sunroof will become inoperative.

A short to voltage in any one of the sunroof switch signal circuits will most likely open the switch.

By performing sunroof control module circuit tests at the inline harness connectors behind the right rear sail panel, may prevent the removal of the headliner.

Test Description

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

3: This step tests the integrity of the ground circuit of the sunroof switch. If the switch illuminates when the headlamps are turned ON, the switch ground circuit is OK. Also, turning on the headlamps eliminates the possibility of the switch finding an alternative path to ground through the illumination circuit.

4: This step tests the integrity sunroof switch, if the roof operates when performing this test, the switch is at fault. If the fuse in the jumper wire opens when you perform this test, a short to battery voltage may have occurred.

5: This step tests for voltage in the battery positive voltage circuit at the inline connector.

7: This step tests the integrity of the sunroof enable signal circuit. If the fuse in the jumper wire opens when you perform this test, a short to battery voltage may have occurred.

Power Sunroof Inoperative

Step	Action	Values	Yes	No
Schematic Reference: Power Sunroof Schematics Connector End View Reference: Power Roof Systems Connector End Views DEFINITION: All functions of the power sunroof system 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	Attempt to operate the power sunroof through its full range of functions in order to verify that the power sunroof inoperative fault is present. Does the Power Sunroof System operate normally?	-	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. Observe the sunroof switch illumination. 3. Turn ON the headlamps. Does the sunroof switch illuminate?	-	Go to Step 4	Go to Step 8

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

4	1. Turn OFF the ignition. 2. Disconnect the sunroof switch. 3. Turn ON the ignition, with the engine OFF. 4. Connect a 3-amp fused jumper wire between any one of the roof or vent switch signal circuits and the ground circuit of the switch harness connector. Did the sunroof move in the direction as tested?	-	Go to Step 12	Go to Step 5
5	1. Turn OFF the ignition. 2. Remove the right rear sail panel to access the inline harness connector C310. 3. At the inline harness connector, measure the voltage from the battery positive voltage circuit of sunroof control module to a good ground. Does the voltage measure near the specified value?	B+	Go to Step 6	Go to Step 17
6	At the inline harness connector C310, measure the voltage between the battery positive voltage circuit of the sunroof module and the ground circuit of the sunroof module. Does the voltage measure near the specified value?	B+	Go to Step 7	Go to Step 18
7	1. Connect a 3-amp fused jumper wire from the sunroof enable signal circuit of the inline harness connector to a good ground. 2. Press the appropriate sunroof switch. Did the sunroof move in the intended direction?	-	Go to Step 11	Go to Step 10

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

8	Test the illumination circuit of the sunroof switch for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 22	Go to Step 9
9	Test the ground circuit of the sunroof switch for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 22	Go to Step 14
10	Test the sunroof enable signal circuit between the inline harness connector C310 and the sunroof control module for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 22	Go to Step 13
11	Test the sunroof enable signal circuit between the sunroof control module and the rear integration module for a short to battery voltage or an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 22	Go to Step 16
12	Test all of the sunroof switch signal and express circuits 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 22	Go to Step 14
13	Test the battery positive voltage circuit and the ground circuit between the sunroof control module and the inline harness connector C310 for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 22	Go to Step 15

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

14	Inspect for poor connections at the harness connector of the sunroof 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 22	Go to Step 19
15	Inspect for poor connections at the harness connectors of the sunroof control module. 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 22	Go to Step 20
16	Inspect for poor connections at the harness connectors of the rear integration module. 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 22	Go to Step 21
17	Repair the short to ground or open in the battery positive circuit of the sunroof control module. Refer to Wiring Repairs and Connector Repairs in Wiring Systems. Did you complete the repair?	-	Go to Step 22	-
18	Repair the open in the ground circuit of the sunroof control module. Refer to Wiring Repairs and Connector Repairs in Wiring Systems. Did you complete the repair?	-	Go to Step 22	-
19	Replace the sunroof switch. Refer to Sunroof Switch Replacement . Did you complete the replacement?	-	Go to Step 22	-
20	Replace the sunroof control module. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming.	-		

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

	Did you complete the replacement?		Go to Step 22	-
21	Replace the rear integration module (RIM). Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 22	-
22	Operate the system in order to verify the repair. Did you find and correct the condition?	-	System OK	Go to Step 2

POWER SUNROOF DOES NOT OPEN

Diagnostic Aids

If the sunroof is experiencing an intermittent inoperative condition, check the sunroof switch ground circuit for an open. If the sunroof switch ground circuit is open, the switch may take a redundant path to ground through the switch illumination circuit. When the lights are turned ON, the redundant path to ground is removed and the sunroof will become inoperative.

If the sunroof open switch signal circuit is found to be short to voltage, the sunroof switch will most likely be open.

Test Description

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

3: This step tests the integrity sunroof open switch. If the sunroof opens from the closed position when performing this test, the switch is at fault. If the fuse in the jumper wire opens when you perform this test, a short to battery voltage may have occurred.

Power Sunroof Does Not Open

Step	Action	Values	Yes	No
Schematic Reference: Power Sunroof Schematics Connector End View Reference: Power Roof Systems Connector End Views DEFINITION: The sunroof open feature is inoperative, all other sunroof functions operate OK.				
1	Did you perform the Diagnostic System Check - Vehicle?	-		Go to Diagnostic System Check -

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

			Go to Step 2	Vehicle
2	Attempt to operate the power sunroof through its full range of functions in order to verify that the power sunroof does not open feature is inoperative. Does the power sunroof system operate normally?	-	Go to Testing for Intermittent Conditions and Poor Connections	Go to Step 3
3	1. Disconnect the sunroof switch. 2. Turn ON the ignition, with the engine OFF. 3. Connect a 3-amp fused jumper wire between the roof open switch signal circuit of the switch connector and the ground circuit of the sunroof switch connector. Did the power sunroof move to the open position?	-	Go to Step 6	Go to Step 4
4	1. Disconnect the 3-amp fused jumper wire. 2. Measure the voltage from the sunroof open switch signal circuit of the switch connector to a good ground. Does the voltage measure near the specified value?	B+	Go to Step 7	Go to Step 5
5	Test the sunroof open switch signal circuit for a short to ground or an open. Refer to Circuit Testing and Wiring Repairs . Did you find and correct the condition?	-	Go to Step 10	Go to Step 7
6	Inspect for poor connections at the harness connector of the sunroof switch. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs . Did you find and correct the condition?	-	Go to Step 10	Go to Step 8

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

7	Inspect for poor connections at the harness connector of the sunroof control module. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs . Did you find and correct the condition?	-	Go to Step 10	Go to Step 9
8	Replace the sunroof switch. Refer to Sunroof Switch Replacement . Did you complete the replacement?	-	Go to Step 10	-
9	Replace the sunroof control module. Refer to Control Module References . Did you complete the replacement?	-	Go to Step 10	-
10	Operate the system in order to verify the repair. Did you find and correct the condition?	-	System OK	Go to Step 2

POWER SUNROOF EXPRESS VENT OPEN/CLOSE FEATURES INOPERATIVE**Diagnostic Aids**

If the sunroof is experiencing an intermittent inoperative condition, check the sunroof switch ground circuit for an open. If the sunroof switch ground circuit is open, the switch may take a redundant path to ground through the switch illumination circuit. When the lights are turned ON, the redundant path to ground is removed and the sunroof will become inoperative.

If the sunroof open vent switch signal circuit is found to be short to voltage, the sunroof switch will most likely be open.

Test Description

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

5: This step determines if the fault is the sunroof switch or the sunroof control module. It also tests the integrity of the vent express signal circuit. If the fuse in the jumper wire opens when you perform this test, a short to battery voltage may have occurred.

Power Sunroof Express Vent Open/Close Features Inoperative

Step	Action	Value(s)	Yes	No
Schematic Reference: <u>Power Sunroof Schematics</u>				

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

Connector End View Reference: Power Roof Systems Connector End Views

DEFINITION: The sunroof vent express open or close feature is inoperative. All other sunroof functions operate OK.

1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Attempt to operate the roof vent through its full range of functions in order to verify that the vent express open/close features are inoperative. Does the power sunroof vent express feature operate normally?	-	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	Are both the vent express open and close functions inoperative?	-	Go to Step 4	Go to Step 6
4	1. Disconnect the sunroof switch. 2. Turn ON the ignition, with the engine OFF. 3. Measure the voltage from the vent express signal circuit of the sunroof switch harness connector to a good ground. Does the voltage measure near the specified value?	B+	Go to Step 5	Go to Step 7
5	1. Connect the harness connector to the sunroof switch. 2. Close the sunroof. 3. Disconnect the sunroof switch. 4. Connect a jumper wire between the vent express signal circuit of the switch connector and the vent open switch signal circuit of the switch connector. 5. Connect one end of a 3-amp fused jumper wire to one end the previously connected jumper wire. 6. Momentarily connect the other end of the 3-amp fused jumper	-		

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

	wire to a good ground.			
	Did the roof express open to the vent position?		Go to Step 9	Go to Step 10
6	1. Disconnect the sunroof switch. 2. Turn ON the ignition, with the engine OFF. 3. Measure the voltage from the inoperative vent open or close switch signal circuit of the sunroof switch harness connector to a good ground. Does the voltage measure near the specified value?	B+	Go to Step 9	Go to Step 8
7	Test the vent express signal circuit for a short to ground or an open. Refer to Circuit Testing and Wiring Repairs. Did you find and correct the condition?	-	Go to Step 13	Go to Step 10
8	Test the appropriate vent open or close switch signal circuit for a short to ground or an open. Refer to Circuit Testing and Wiring Repairs. Did you find and correct the condition?	-	Go to Step 13	Go to Step 10
9	Inspect for poor connections at the harness connector of the sunroof switch. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs. Did you find and correct the condition?	-	Go to Step 13	Go to Step 11
10	Inspect for poor connections at the harness connectors of the sunroof control module. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs. Did you find and correct the	-		Go to Step

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

	condition?		Go to Step 13	12
11	Replace the sunroof switch. Refer to Sunroof Switch Replacement . Did you complete the replacement?	-	Go to Step 13	-
12	Replace the sunroof control module. Refer to Control Module References . Did you complete the replacement?	-	Go to Step 13	-
13	Operate the system in order to verify the repair. Did you find and correct the condition?	-	System OK	Go to Step 2

POWER SUNROOF DOES NOT OPEN TO VENT POSITION**Diagnostic Aids**

If the sunroof is experiencing an intermittent inoperative condition, check the sunroof switch ground circuit for an open condition. If the sunroof switch ground circuit is open, the switch may take a redundant path to ground through the illumination circuit. When the lights are turned ON, the redundant path to ground is removed, and the sunroof will become inoperative.

If the sunroof open vent switch signal circuit is found to be short to voltage, the sunroof switch will most likely be open.

Test Description

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

3: This step tests the integrity sunroof vent open switch. If the sunroof opens to the vent position when performing this test, the switch is at fault. If the fuse in the jumper wire opens when you perform this test, a short to battery voltage may have occurred.

Power Sunroof Does Not Open to Vent Position

Step	Action	Values	Yes	No
Schematic Reference: Power Sunroof Schematics Connector End View Reference: Power Roof Systems Connector End Views DEFINITION: The sunroof vent open feature is inoperative, all other sunroof functions operate OK.				
1	Did you perform the Diagnostic System Check - Vehicle?	-		Go to Diagnostic System Check -

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

			Go to Step 2	Vehicle in Vehicle DTC Information
2	Attempt to operate the power sunroof through its full range of functions in order to verify that the power sunroof does not open to the vent position is inoperative. Does the power sunroof open to the vent position?	-	Go to Testing for Intermittent Conditions and Poor Connections in Wiring Systems	Go to Step 3
3	1. Disconnect the sunroof switch. 2. Turn ON the ignition, with the engine OFF. 3. Connect a 3-amp fused jumper wire between the vent open switch signal circuit of the switch connector and the ground circuit of the switch connector. Did the power sunroof open to the vent position?	-	Go to Step 6	Go to Step 4
4	1. Disconnect the 3-amp fused jumper wire. 2. Measure the voltage from the vent open switch signal circuit of the sunroof switch connector to a good ground. Does the voltage measure near the specified value?	B+	Go to Step 7	Go to Step 5
5	Test the sunroof vent open switch signal circuit 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 10	Go to Step 7
6	Inspect for poor connections at the harness connector of the sunroof switch. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs	-		

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

	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 connectors of the sunroof control module. 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 10	Go to Step 9
8	Replace the sunroof switch. Refer to Sunroof Switch Replacement . Did you complete the replacement?	-	Go to Step 10	-
9	Replace the sunroof control module. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 10	-
10	Operate the system in order to verify the repair. Did you find and correct the condition?	-	System OK	Go to Step 2

POWER SUNROOF DOES NOT CLOSE**Diagnostic Aids**

If the sunroof is experiencing an intermittent inoperative condition, check the sunroof switch ground circuit for an open. If the sunroof switch ground circuit is open, the switch may take a redundant path to ground through the switch illumination circuit. When the lights are turned ON, the redundant path to ground is removed, and the sunroof will become inoperative.

If the sunroof close switch signal circuit is found to be short to voltage, the sunroof switch will most likely be open.

Test Description

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

3: This step tests the integrity sunroof close switch. If the sunroof closes from the open position when performing this test, the switch is at fault. If the fuse in the jumper wire opens when you perform this test, a short to battery voltage may have occurred.

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

Power Sunroof Does Not Close

Step	Action	Value(s)	Yes	No
Schematic Reference: Power Sunroof Schematics Connector End View Reference: Power Roof Systems Connector End Views DEFINITION: The sunroof will not close from the open position using the roof close switch. However, the roof will close from the open position by using the vent close switch or vent express close switch. All other sunroof functions operate OK.				
1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to Step 2	Go to Diagnostic System Check - Vehicle
2	Attempt to operate the power sunroof through its full range of functions in order to verify that the power sunroof does not close from the open position. Does the power sunroof system operate normally?	-	Go to Testing for Intermittent Conditions and Poor Connections	Go to Step 3
3	1. Disconnect the sunroof switch. 2. Turn ON the ignition, with the engine OFF. 3. Connect a 3-amp fused jumper wire between the roof close switch signal circuit of the switch connector and the ground circuit of the switch connector. Did the power sunroof move to the closed position?	-	Go to Step 6	Go to Step 4
4	1. Disconnect the 3-amp fused jumper wire. 2. Measure the voltage from the sunroof close switch signal circuit of the sunroof switch connector to a good ground. Does the voltage measure near the specified value?	B+	Go to Step 7	Go to Step 5
5	Test the sunroof close switch signal circuit for a short to ground or an open. Refer to Circuit Testing and Wiring Repairs .	-		

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

	Did you find and correct the condition?		Go to Step 10	Go to Step 7
6	Inspect for poor connections at the harness connector of the sunroof switch. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs . Did you find and correct the condition?	-	Go to Step 10	Go to Step 8
7	Inspect for poor connections at the harness connectors of the sunroof control module. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs . Did you find and correct the condition?	-	Go to Step 10	Go to Step 9
8	Replace the sunroof switch. Refer to Sunroof Switch Replacement . Did you complete the replacement?	-	Go to Step 10	-
9	Replace the sunroof control module. Refer to Control Module References for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 10	-
10	Operate the system in order to verify the repair. Did you find and correct the condition?	-	System OK	Go to Step 2

POWER SUNROOF DOES NOT CLOSE FROM VENT POSITION**Diagnostic Aids**

If the sunroof is experiencing an intermittent inoperative condition, check the sunroof switch ground circuit for an open. If the sunroof switch ground circuit is open, the switch may take a redundant path to ground through the switch illumination circuit. When the lights are turned ON, the redundant path to ground is removed and the sunroof will become inoperative.

If the sunroof close vent switch signal circuit is found to be short to voltage, the sunroof switch will most likely be open.

Test Description

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

3: This step tests the integrity sunroof vent close switch. If the sunroof closes from the vent open position when performing this test, the switch is at fault. If the fuse in the jumper wire opens when you perform this test, a short to battery voltage may have occurred.

Power Sunroof Does Not Close from Vent Position

Step	Action	Values	Yes	No
Schematic Reference: Power Sunroof Schematics Connector End View Reference: Power Roof Systems Connector End Views DEFINITION: The sunroof will not close from the vent position using the vent close switch. However, the roof will close from the vent position by using the roof close switch or roof express close switch. All other sunroof functions operate OK.				
1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	Attempt to operate the power sunroof through its full range of vent functions in order to verify that the power sunroof does not close from the vent position. Does the power sunroof vent system operate normally?	-	Go to Testing for Intermittent Conditions and Poor Connections in Wiring Systems	Go to Step 3
3	1. Disconnect the sunroof switch. 2. Turn ON the ignition, with the engine OFF. 3. Connect a 3-amp fused jumper wire between the sunroof vent close switch signal circuit of the sunroof switch connector and the ground circuit of the sunroof switch connector. Did the power sunroof close from the vent position?	-	Go to Step 6	Go to Step 4

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

4	1. Disconnect the 3-amp fused jumper wire. 2. Measure the voltage from the vent close switch signal circuit of the switch connector to a good ground. Does the voltage measure near the specified value?	B+		Go to Step 7	Go to Step 5
5	Test the sunroof vent close switch signal circuit 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 10	Go to Step 7
6	Inspect for poor connections at the harness connector of the sunroof 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 10	Go to Step 8
7	Inspect for poor connections at the harness connector of the sunroof control module. 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 10	Go to Step 9
8	Replace the sunroof switch. Refer to Sunroof Switch Replacement. Did you complete the replacement?	-		Go to Step 10	-
9	Replace the sunroof control module. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	-		Go to Step 10	-
10	Operate the system in order to verify the repair. Did you find and correct the	-			

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

condition?

System OK

Go to **Step 2**

REPAIR INSTRUCTIONS

SUNROOF WINDOW HEIGHT AND OPENING FIT ADJUSTMENT

1. Open the sunshade.
2. Close the sunroof window.

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

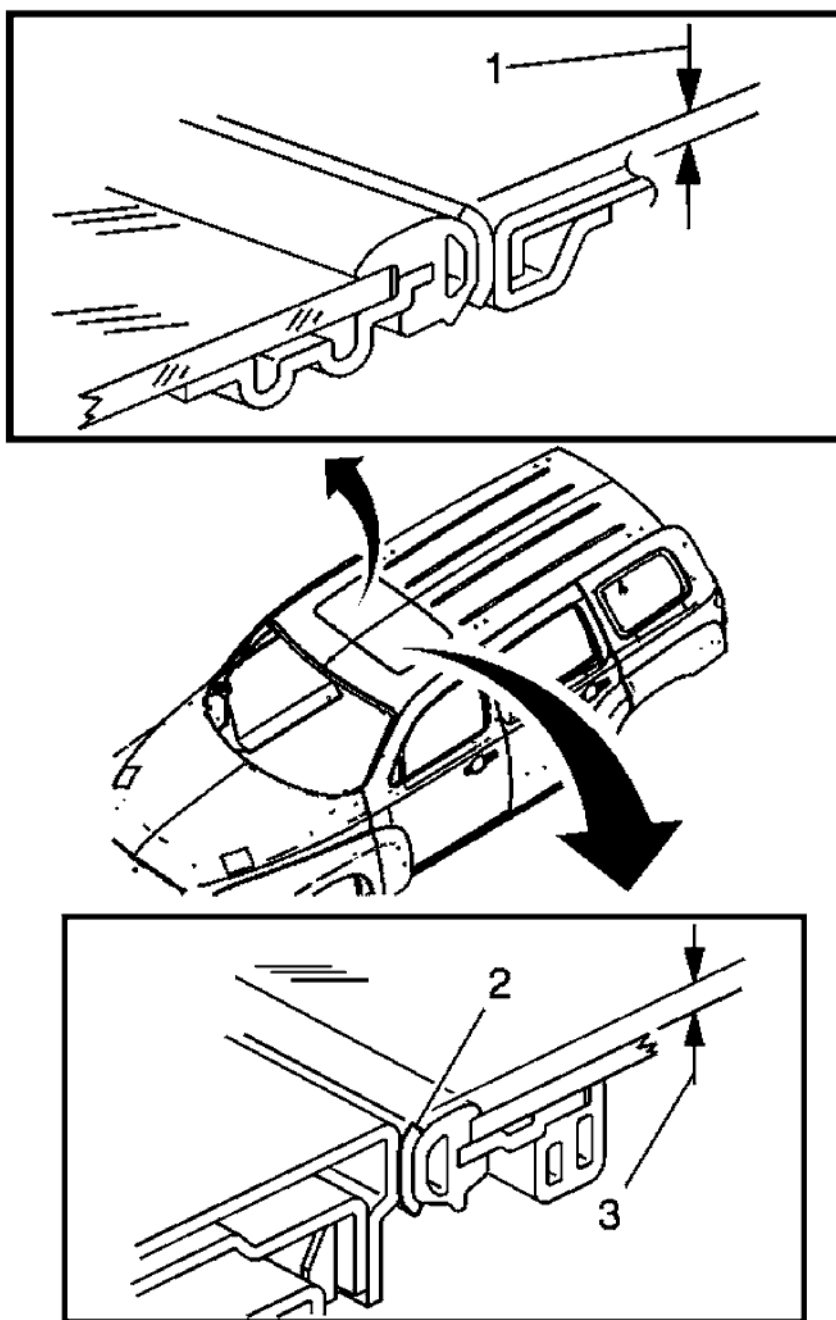


Fig. 7: Sunroof Window

Courtesy of GENERAL MOTORS CORP.

3. Loosen the adjusting screws.
4. Adjust the corners of the glass panel (3) using the following guidelines:
 - Adjust the front of the sunroof window (2) flush to 1 mm (0.04 in) below the top

surface of the roof panel.

- Adjust the rear of the sunroof window (1) flush to 1 mm (0.04 in) above the top surface of the roof panel.

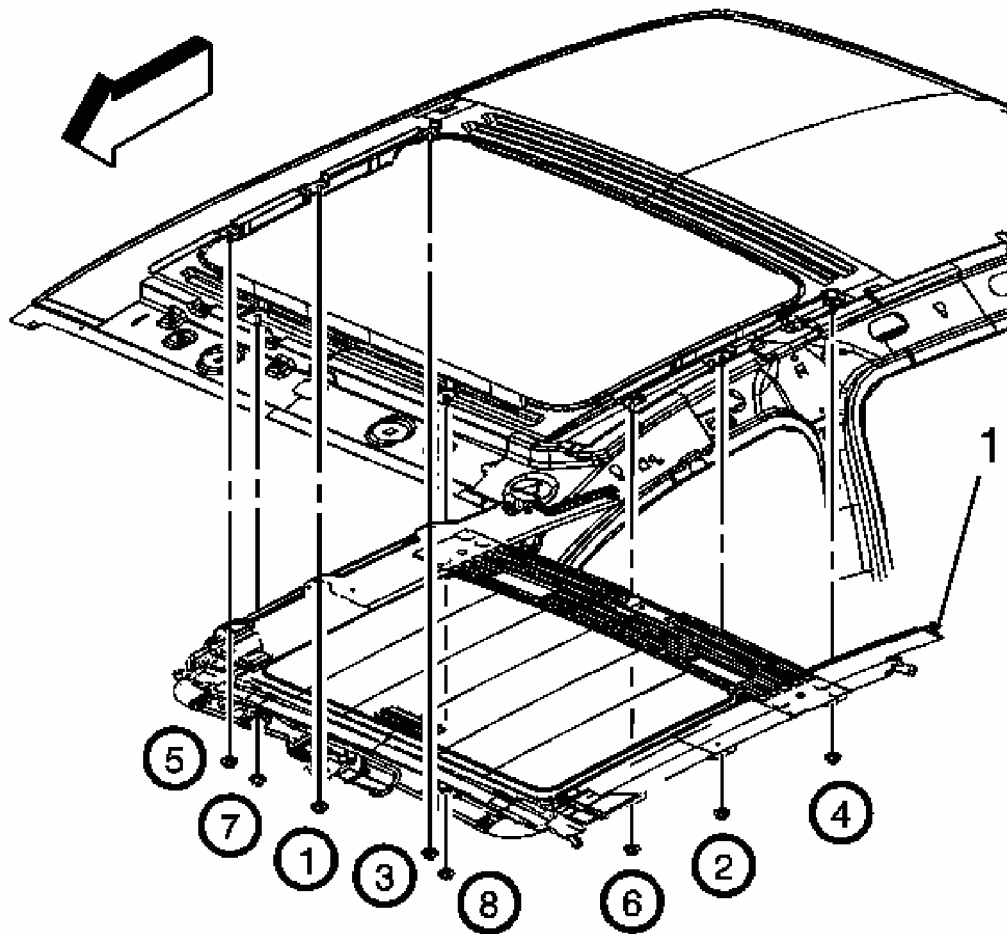


Fig. 8: Sunroof Module To Roof Nut Tightening Sequence
Courtesy of GENERAL MOTORS CORP.

5. Install the sunroof window adjustment screws.

Tighten: Tighten the sunroof window adjusting screws to 6 N.m (53 lb in).

SUNROOF TRACK TIMING/SYNCHRONIZATION

1. Before Retiming the module, the actuator /motor must be remove. Refer to **Sunroof Motor/Actuator Replacement**.

IMPORTANT: If the sunroof actuator is the only part being serviced, follow the power sunroof actuator replacement procedure for the sunroof actuator to sunroof window timing. Refer to Sunroof Motor/Actuator Replacement.

A new replacement power sunroof actuator is set to the fully closed and flush position at the factory.

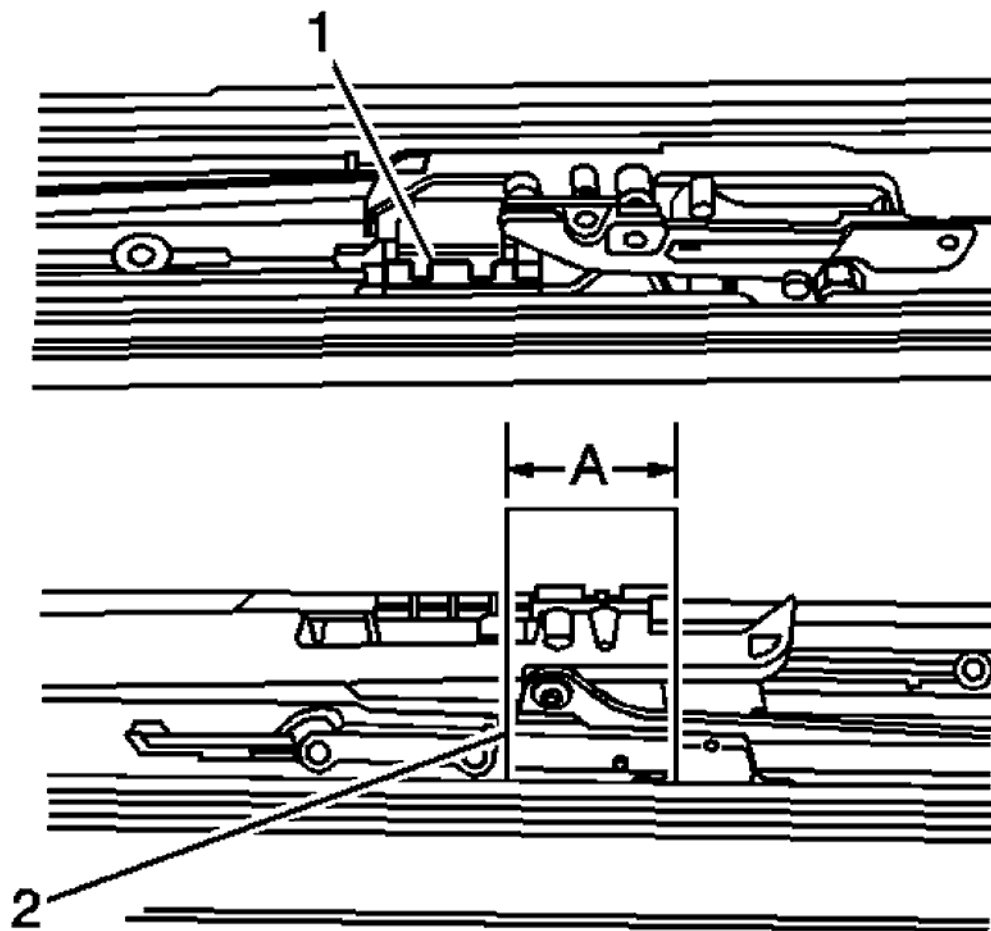


Fig. 9: View of Gage and Move Driver Slide
Courtesy of GENERAL MOTORS CORP.

2. Remove the sunroof window. Refer to Sunroof Window Replacement.
3. Fabricate a gage (2) 46.8 +/- 0.5 mm (1.84 in) wide (A).

A piece of thick paper will work.

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

4. Set the gage into the track near the rear of the opening between the move drive slide (1) and the bracket.
5. Move the drive slide fore or aft in order to get the proper setting.
6. Repeat steps 3 and 4 for the other side.
7. Install the sunroof window. Refer to **Sunroof Window Replacement**.
8. Install the sunroof actuator. Refer to **Sunroof Motor/Actuator Replacement**.
9. Operate the sunroof through all functions to ensure proper operation.

SUNROOF DRAIN HOSE REPLACEMENT - FRONT

Fig. 10: Sunroof Drain Hose Replacement - Front
Courtesy of GENERAL MOTORS CORP.

Sunroof Drain Hose Replacement - Front

Callout	Component Name
Fastener Tightening Specifications: Refer to Fastener Tightening Specifications .	
Preliminary Procedures	
1. Remove the sunshade. Refer to Sunshade Replacement. 2. Remove the door opening upper frame garnish molding. Refer to Garnish Molding Replacement - Rear Door Opening Upper Frame. 3. Remove the front garnish moldings. Refer to Windshield Garnish Molding Replacement. 4. Remove the coat hook. Refer to Coat Hook Replacement. 5. Remove the rear corner garnish molding. Refer to Garnish Molding Replacement - Rear Corner.	

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

6. Remove the headliner. Refer to **Headliner Replacement** .

1	Retainer, Sunroof Clip Front (Qty: 3) Tip: Remove the retainer clips from the side of the A pillar.
2	Grommet, Sunroof Hose Drain Front Tip: Use care when removing the drain hose grommet end from the cowl panel. The grommet presses in and pulls out of the cowl panel.
3	Hose, Sunroof Drain Front Tip: Disconnect the drain hose from the module by pulling rearward.

SUNROOF DRAIN HOSE REPLACEMENT - REAR

Fig. 11: Sunroof Drain Hose Replacement - Rear
Courtesy of GENERAL MOTORS CORP.

Sunroof Drain Hose Replacement - Rear

Callout	Component Name
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
Preliminary Procedures	
1. Remove the sunshade. Refer to <u>Sunshade Replacement</u> .	
2. Remove the door opening upper frame garnish molding. Refer to <u>Garnish Molding Replacement - Rear Door Opening Upper Frame</u> .	
3. Remove the front garnish moldings. Refer to <u>Windshield Garnish Molding</u>	

Replacement .

4. Remove the coat hook. Refer to **Coat Hook Replacement .**
5. Remove the rear corner garnish molding. Refer to **Garnish Molding Replacement - Rear Corner .**
6. Remove the headliner. Refer to **Headliner Replacement .**

1	Retainer, Sunroof Clip Rear (Qty: 7) Tip: Remove the retainer clips from the side of the C pillar.
2	Grommet, Sunroof Hose Drain Rear Tip: Use care when removing the drain hose grommet end from the quarter panel. The grommet presses in and pulls out of the cowl panel.
3	Hose, Sunroof Drain Rear Tip: Disconnect the drain hose from the module by pulling rearward.

SUNROOF DRAIN INSPECTION AND CLEANING

IMPORTANT: The drain hoses are pushed on as an interference fit and are not clamped or cemented. Do NOT disconnect the hose from the drain channel spouts while cleaning.

A drain trough encircles the sliding panel which leads to the drain spouts and into the hoses. The drain hoses are located at each corner of the housing. The two front drain hoses route down the windshield pillars and exit out the hinge pillars between the door hinges. The two rear drain hoses route down the rear sail and the quarter panels and exit the inner wheelhouse panels.

If you encounter a wet headliner or other water leak, inspect the following areas for the source of the leak:

- The windshield
- The rear window

Verify the drainage system is not plugged or restricted. Use the following procedure:

1. With the sunroof open use a one pint container, pour water into the drain trough.
2. Open the front doors.
3. Inspect for water drainage exiting through the grommets at the hinge pillar.
4. Look at the rear of the inner wheelhouse panels for water exiting the rear drain hoses.
5. If the water flow is restricted, use a low volume of compressed air in order to clear the drainage system.
6. Retest the system.
7. If water drips from the headliner above the door, lower the headliner refer **Headliner**

Replacement in Interior Trim as required, in order to inspect for a proper drain tube connections at the drain spouts.

8. If necessary, secure the tubes onto the housing drain spouts.
9. If blockage is still present, replace the restricted drain hose. Refer to **Sunroof Drain Hose Replacement - Front** or **Sunroof Drain Hose Replacement - Rear**.

SUNROOF SUNSHADE PANEL REPLACEMENT

Removal Procedure

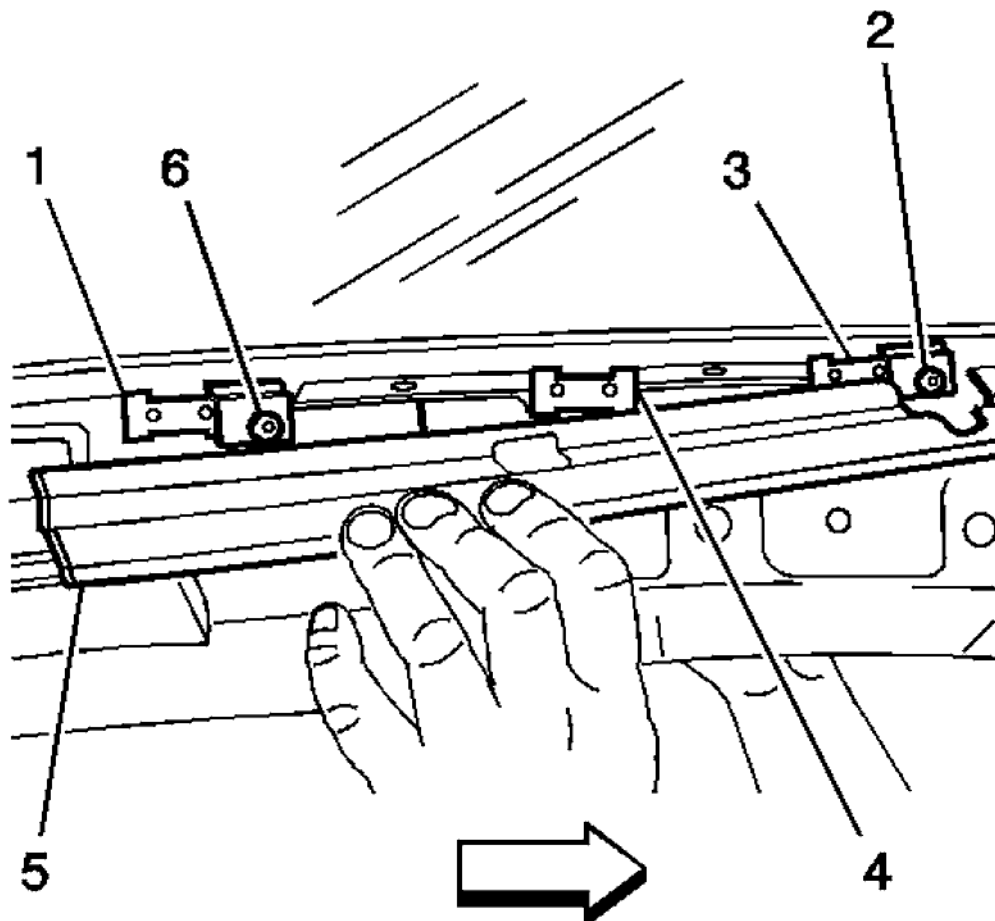


Fig. 12: Identifying Sunroof Panel Side Opening Closeout Panel Cover
Courtesy of GENERAL MOTORS CORP.

1. Cycle the sunroof window to the vent position in order to ease in the removal of the forward adjusting screws (2).

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

2. Slide the sunshade rearward.
3. Disconnect the sunroof panel side opening closeout covers (5) from the retention clips (1,3,4) in order to access the sunroof window screws (2,6).

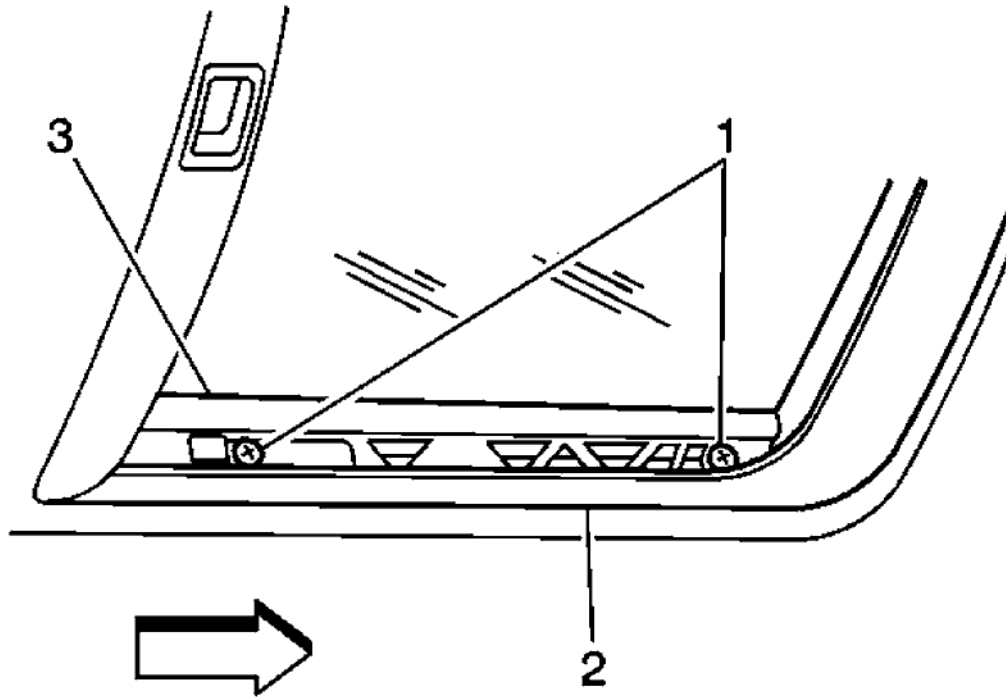


Fig. 13: Identifying Sunroof, Housing And Adjusting Screws
Courtesy of GENERAL MOTORS CORP.

4. Remove the sunroof window screws (1) from both sides.
5. Carefully lift the sunroof window from the sunroof opening.

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

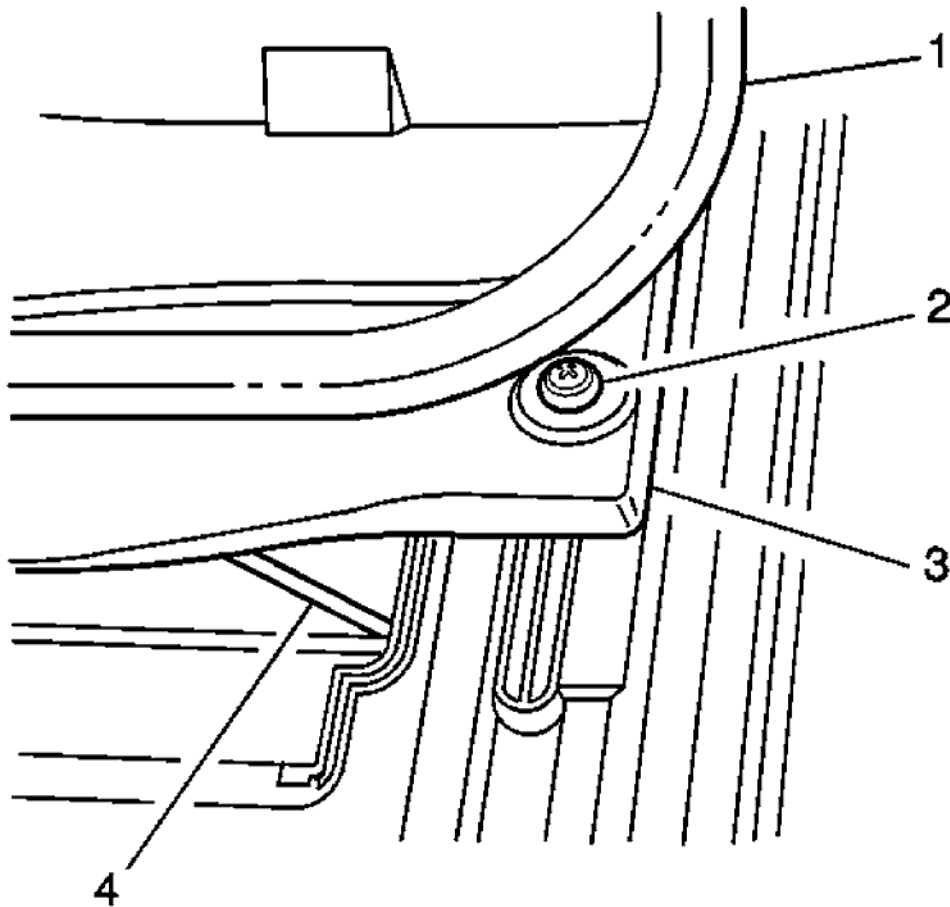


Fig. 14: Removing & Installing Screws At Each End Of The Drain Channel
Courtesy of GENERAL MOTORS CORP.

6. Remove the screws (2) from each end of the drain channel (3).
7. Move one edge of the drain channel forward.
8. Remove the drain channel from the sunroof module opening.

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

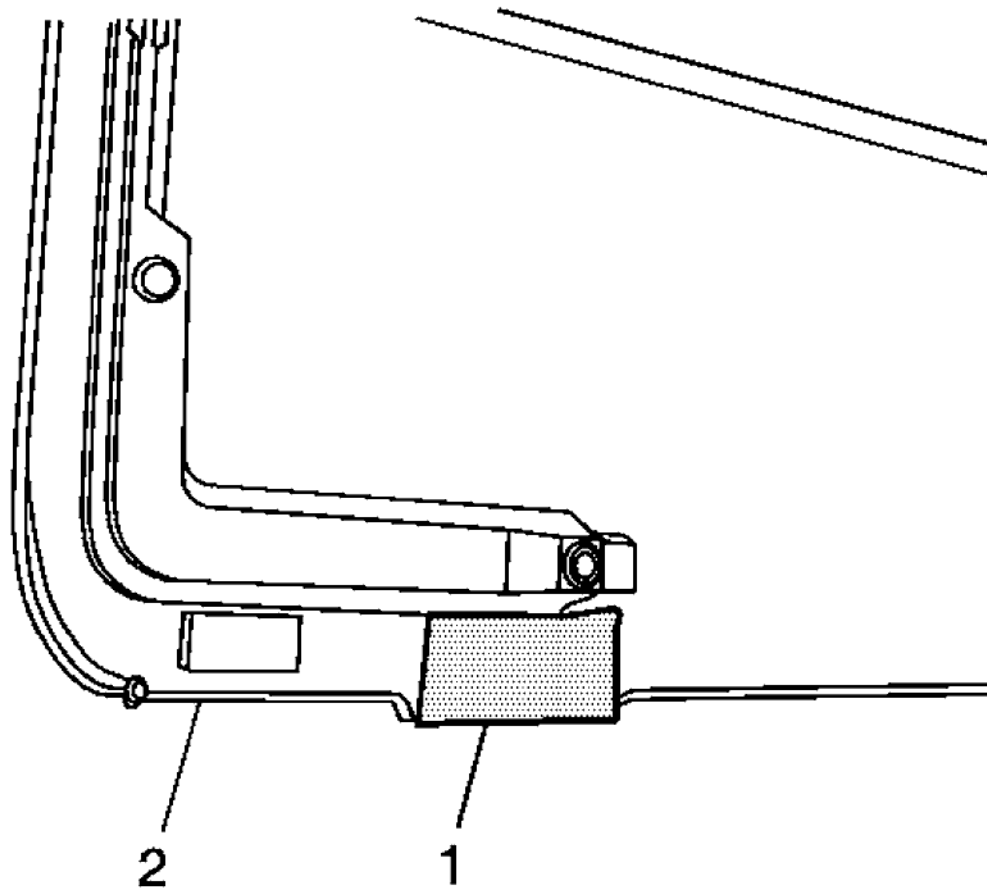


Fig. 15: Sunshade

Courtesy of GENERAL MOTORS CORP.

9. Carefully arch the sunshade upward at the forward center edge.
10. Carefully lift the front edge of the sunshade (4) upward out of the opening to release tabs from the track.
11. Slightly rotate the sunshade panel in order to remove the panel from the track assembly.
12. Carefully remove the sunshade panel upward from the sunroof module.

Installation Procedure

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

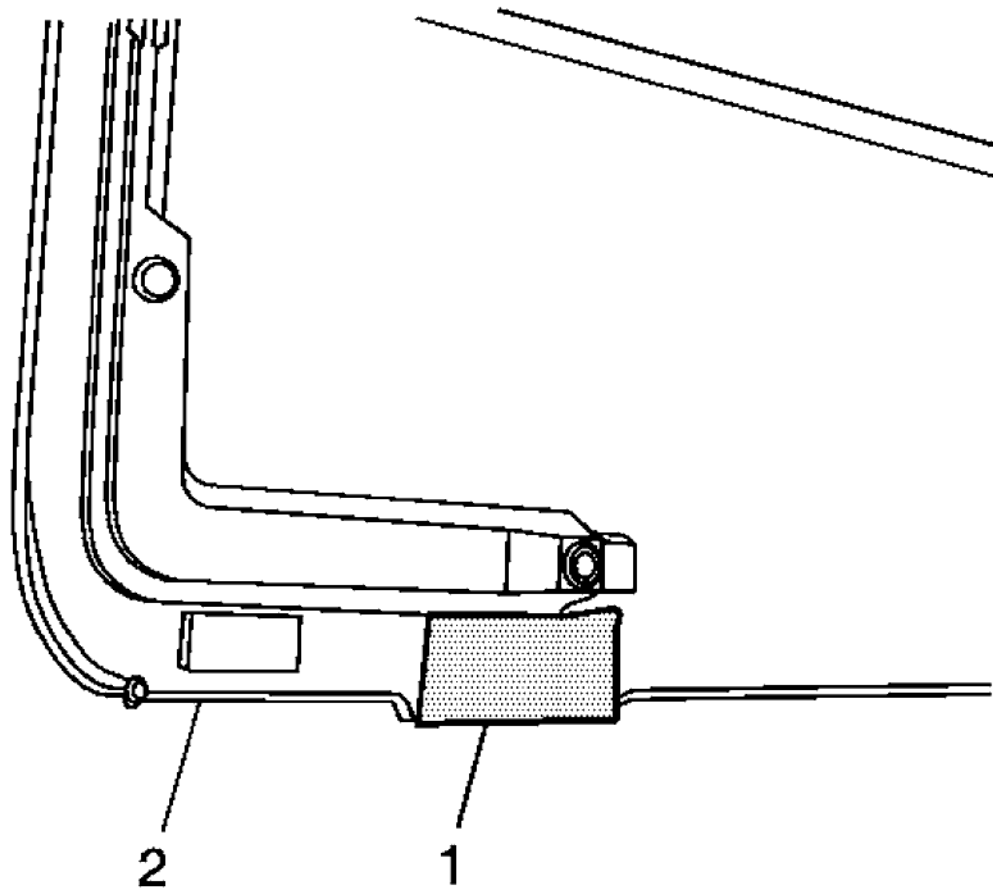


Fig. 16: Sunshade

Courtesy of GENERAL MOTORS CORP.

1. Position rear edge of the sunshade panel to the track.
2. Ensure the retention tab at the rear is positioned into the track.
3. Arch the forward edge of the sunshade in order to locate the retention clip into the sunshade track.
4. Locate the tabs into the tracks and release.
5. Slide the sunshade panel forward and rearward to ensure free operation is present.

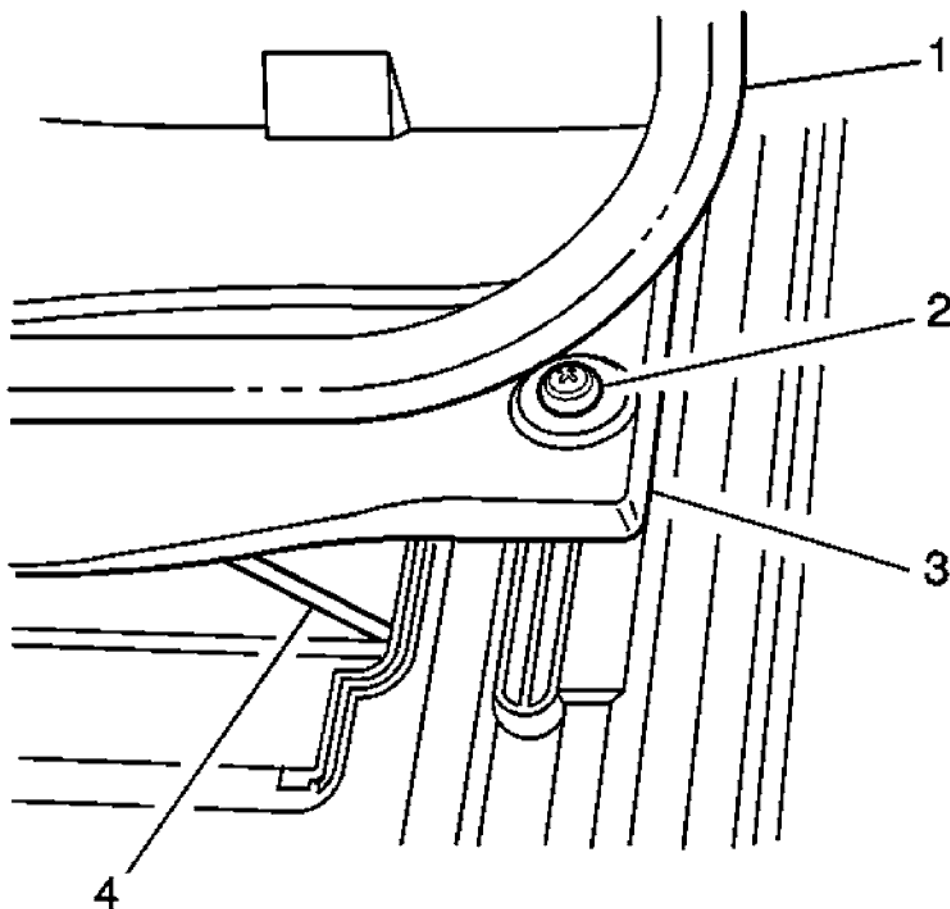


Fig. 17: Removing & Installing Screws At Each End Of The Drain Channel
Courtesy of GENERAL MOTORS CORP.

6. Position the sunroof drain channel (3) to the sunroof module (4).

NOTE: Refer to in Cautions and Notices.

7. Install the screws (2).

Tighten: Tighten the screws to 2 N.m (18 lb in).

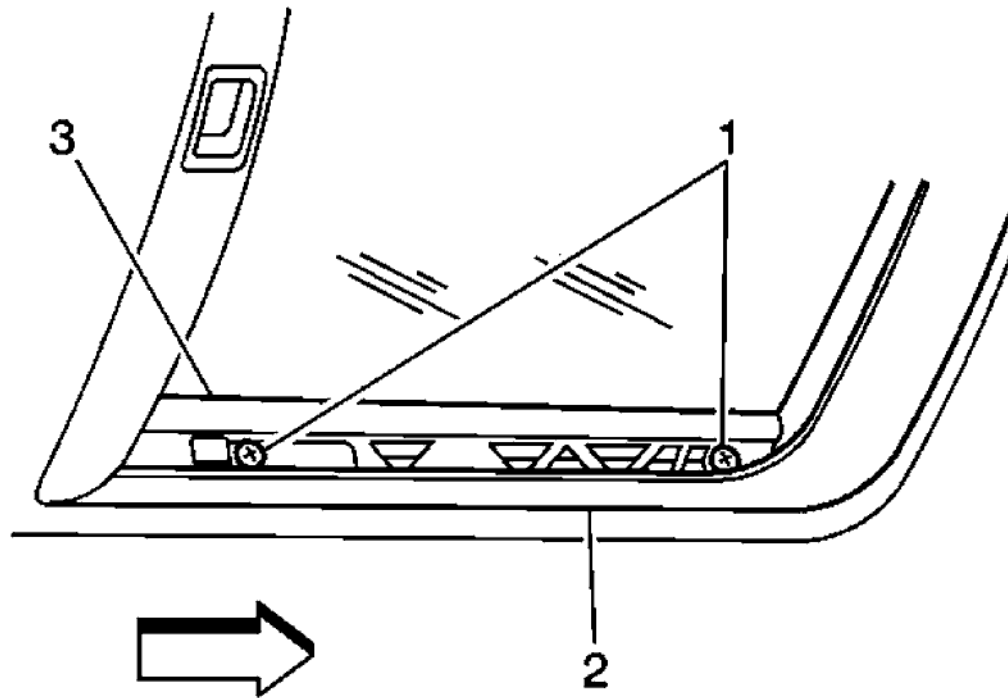


Fig. 18: Identifying Sunroof, Housing And Adjusting Screws
Courtesy of GENERAL MOTORS CORP.

8. Position the sunroof window (3) into the opening.
9. Install the sunroof window screws (1).

Tighten: Tighten the screws to 2 N.m (18 lb in).

10. Finger tighten the screws. Do Not tighten at this time.
11. Cycle the sunroof window to the closed position.
12. Adjust the sunroof window. Refer to.

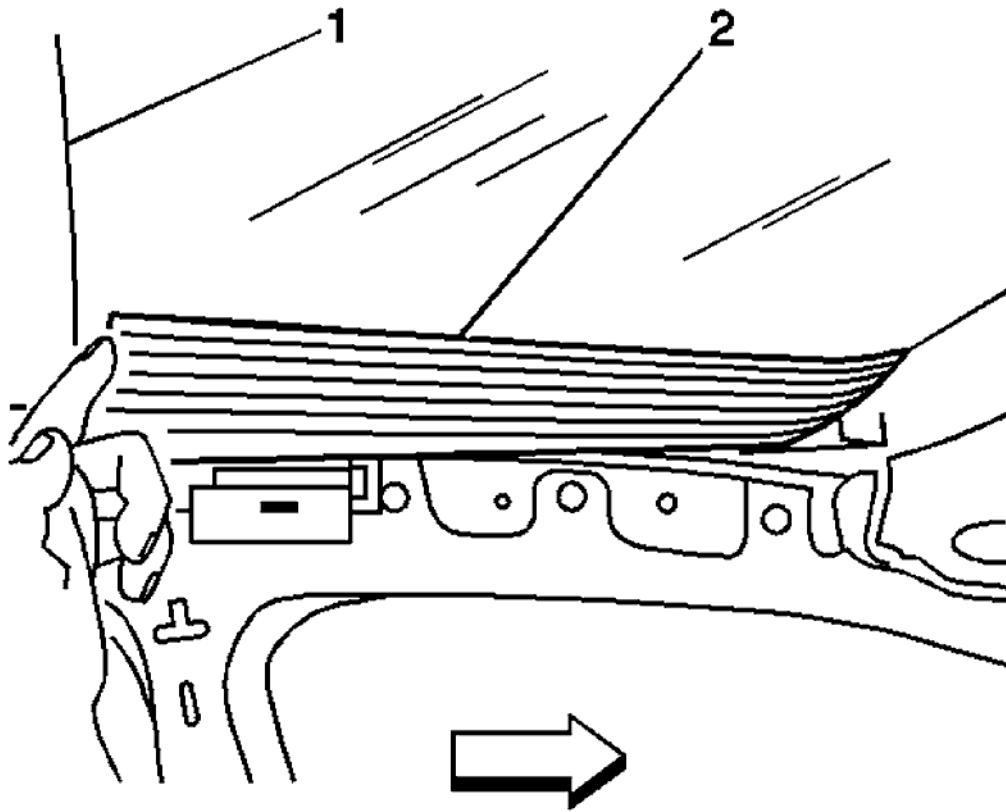


Fig. 19: Identifying Sunroof Panel Side Opening Closeout Cover
Courtesy of GENERAL MOTORS CORP.

13. Secure the sunroof panel side opening closeout covers (2) into 3 retention clips on the each side of the window.
14. Close the sunshade (1).

SUNROOF WINDOW REPLACEMENT

Removal Procedure

1. Slide the sunshade rearward.

NOTE: In order to prevent damage to the paint, mask the roof panel in front of the sunroof opening using masking tape and paper.

2. Cycle the sunroof window (3) to the vent position.

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

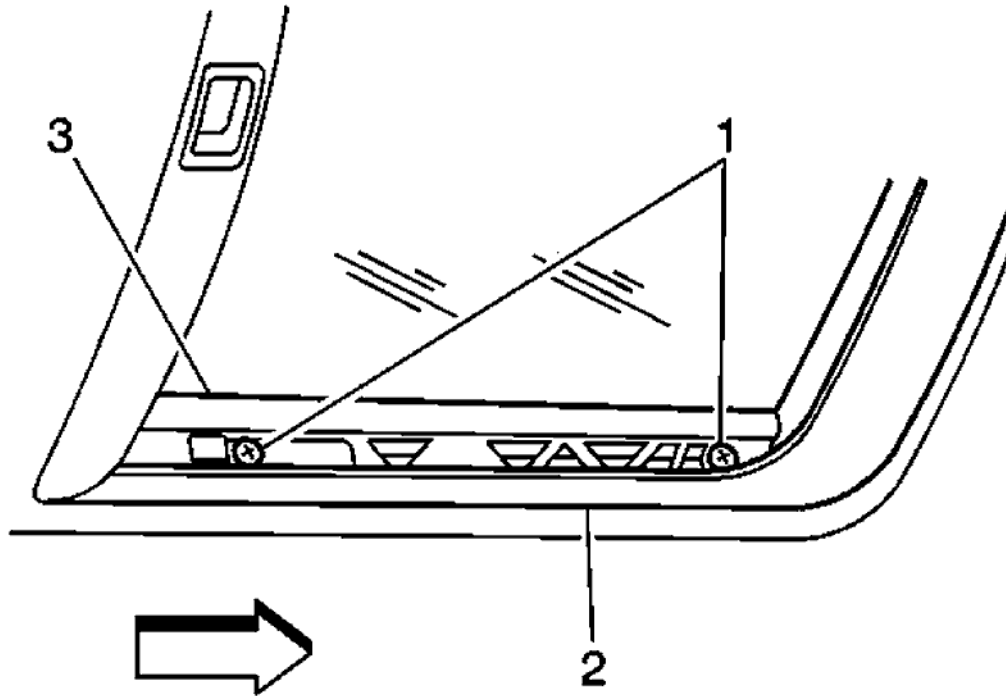


Fig. 20: Identifying Sunroof, Housing And Adjusting Screws
Courtesy of GENERAL MOTORS CORP.

3. Remove the sunroof window screws (1) from the window.

IMPORTANT: Do NOT scratch the roof surface or the sunroof window.

4. Lift the sunroof window from the sunroof opening.

Installation Procedure

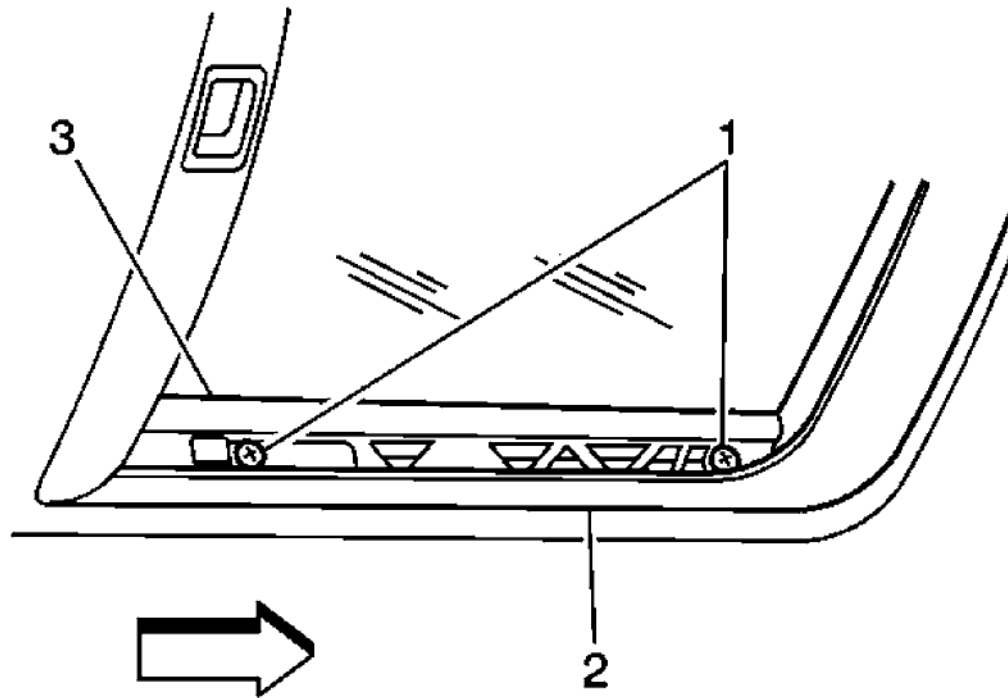


Fig. 21: Identifying Sunroof, Housing And Adjusting Screws
Courtesy of GENERAL MOTORS CORP.

1. Position the sunroof window into the opening.
2. Ensure that the window trade mark is to the rear of the opening and that sunroof window attachment tabs are to the inboard side of the mounting arms.

NOTE: Refer to Fastener Notice .

3. Install the sunroof window screws (1) to the window. Do not tighten the screws.

Tighten: Tighten the screws to 6 N.m (53 lb in).

4. Carefully close the sunroof window (3) from the vent position to the full closed position.
5. Adjust the sunroof window. Refer to Sunroof Window Height and Opening Fit Adjustment.
6. Close the sunshade.
7. Cycle the sunroof window to ensure proper operation and fit.

SUNROOF SWITCH REPLACEMENT

 C:\DOCUME~1\User\LOCALS~1\Temp\mric_tmp\~od208.jpg (2094 x 1412) @ 564.48px

Fig. 22: Sunroof Switch Replacement
Courtesy of GENERAL MOTORS CORP.

Sunroof Switch Replacement

Callout	Component Name
NOTE: Refer to <u>Fastener Notice</u> .	
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
1	Bezel, Sunroof Switch Tip: Disconnect the electrical connector to the microphone.
2	Screw, Sunroof Switch (Qty: 2) Tighten: 2 N.m (18 lb in)
3	Switch Assembly, Sunroof

SUNROOF MOTOR/ACTUATOR REPLACEMENT

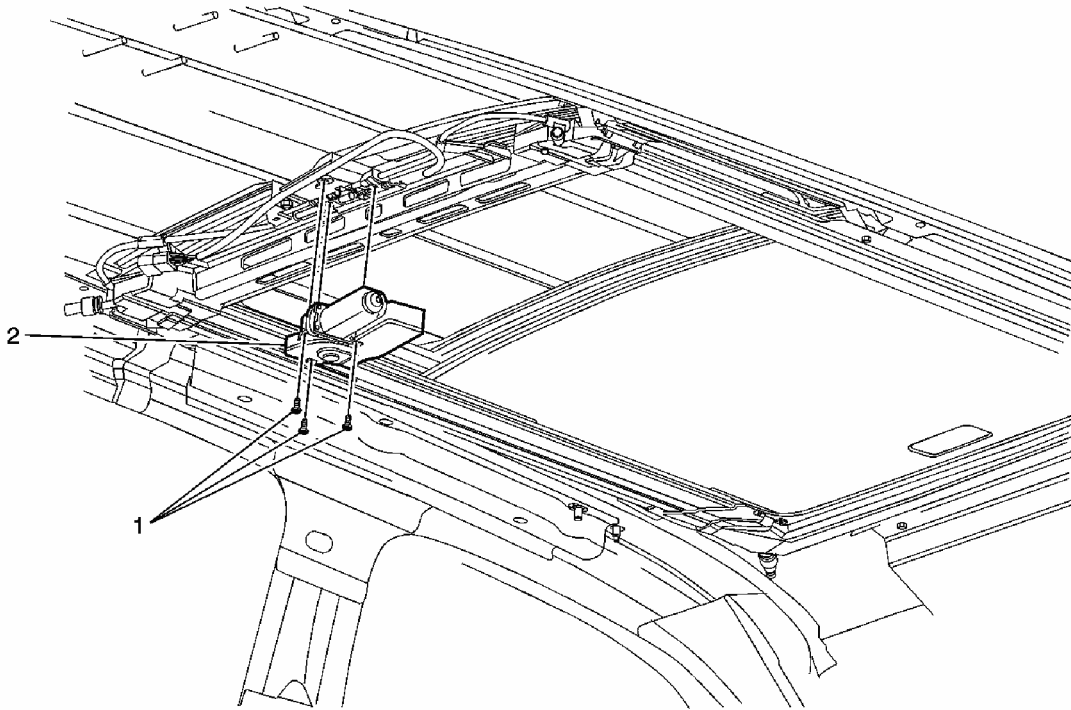


Fig. 23: Sunroof Motor/Actuator Replacement
 Courtesy of GENERAL MOTORS CORP.

Sunroof Motor/Actuator Replacement

Callout	Component Name
NOTE: Refer to <u>Fastener Notice</u> . Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u>. Preliminary Procedures 1. Remove the sunshade. Refer to <u>Sunshade Replacement</u> . 2. Remove the door opening upper frame garnish molding. Refer to <u>Garnish Molding Replacement - Rear Door Opening Upper Frame</u> . 3. Remove the front garnish moldings. Refer to <u>Windshield Garnish Molding Replacement</u> . 4. Remove the rear corner garnish molding. Refer to <u>Garnish Molding Replacement - Rear Corner</u> . 5. Remove the headliner. Refer to <u>Headliner Replacement</u> .	
1	Screws, Motor/Actuator Sunroof (Qty: 3) Tip: Disconnect the plug from the motor/actuator.

	Tighten: 5 N.m (50 lb in)
2	Motor/Actuator, Sunroof Tip: Pull downward to disengage.

SUNROOF MOTOR/ACTUATOR INITIALIZATION/TEACH PROCESS (EARLY)

Perform the Initialization/Teach Procedure any time the sunroof motor/actuator is removed from the sunroof.

1. Ensure that the electrical harness on the headliner is connected.
2. Turn the ignition to the ON position.
3. Press and hold the sunroof switch to the open vent position.
 - The window reaches the soft vent stop.
 - The vent will be in the fully open position.
 - Release the switch.
4. Press and hold the switch in the open position for 10 seconds. The sunroof will stall at the hard stop and move back slightly to the soft stop position. Release the button.
5. Press and hold the sunroof slider close switch. The sunroof window will move toward the close position, if not return to step 3 and repeat.
6. Hold the switch until the sunroof window stops at the closed position. Release the switch.

IMPORTANT: The Initialization/Teach Procedure is not complete if any of the following actions take place before the initialization cycle is done:

- The ignition and/or battery power has been removed.
- The glass panel has not reached the closed position.

The Initialization/Teach Process must be restarted if the procedure is not carried out completely.

7. Verify the operation of the sunroof in all positions.

SUNROOF MOTOR/ACTUATOR INITIALIZATION/TEACH PROCESS (LATE)

Perform the Initialization/Teach Procedure any time a new sunroof motor/actuator is installed in the vehicle.

1. Ensure that the electrical harness on the headliner is connected.
2. Turn the ignition to the ON position.

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Roof - HHR

3. Press and hold the sunroof switch to the open vent position until the window stalls in the hard vent stop.
 1. Open the sunroof window to the fully open vent position.
 2. Slightly move the window toward the soft stop position.
 3. Release the switch after 5 seconds.
4. Ensure that the window is flush to the roof skin and the screws are tight.

IMPORTANT: The Initialization/Teach Procedure is not complete if any of the following actions take place before the initialization cycle is done:

The Initialization/Teach Process must be restarted if the procedure is not carried out completely.

5. Verify the operation of the sunroof in all positions.

SUNROOF MODULE ASSEMBLY REPLACEMENT

Removal Procedure

IMPORTANT: A new sunroof module assembly does not include the sunroof window or the sunshade as components. You must install the old sunroof window and sunshade to the new sunroof module assembly.

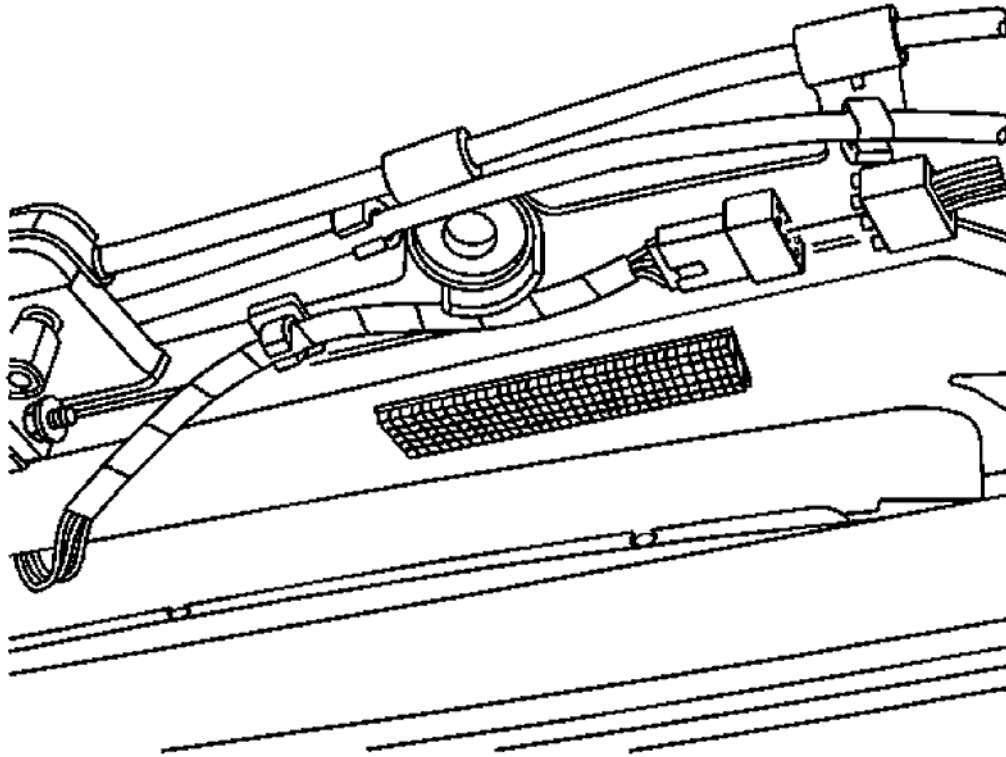


Fig. 24: View Of Sunroof Motor/Actuator Electrical Connector
Courtesy of GENERAL MOTORS CORP.

1. Remove the sunshade panel. Refer to **Sunroof Sunshade Panel Replacement**.
2. Remove the sunroof window. Refer to **Sunroof Window Replacement**.
3. Remove the headliner. Refer to **Headliner Replacement**.
4. Disconnect the electrical connector on the sunroof actuator.
5. Disconnect the electrical connector from the sunroof module.

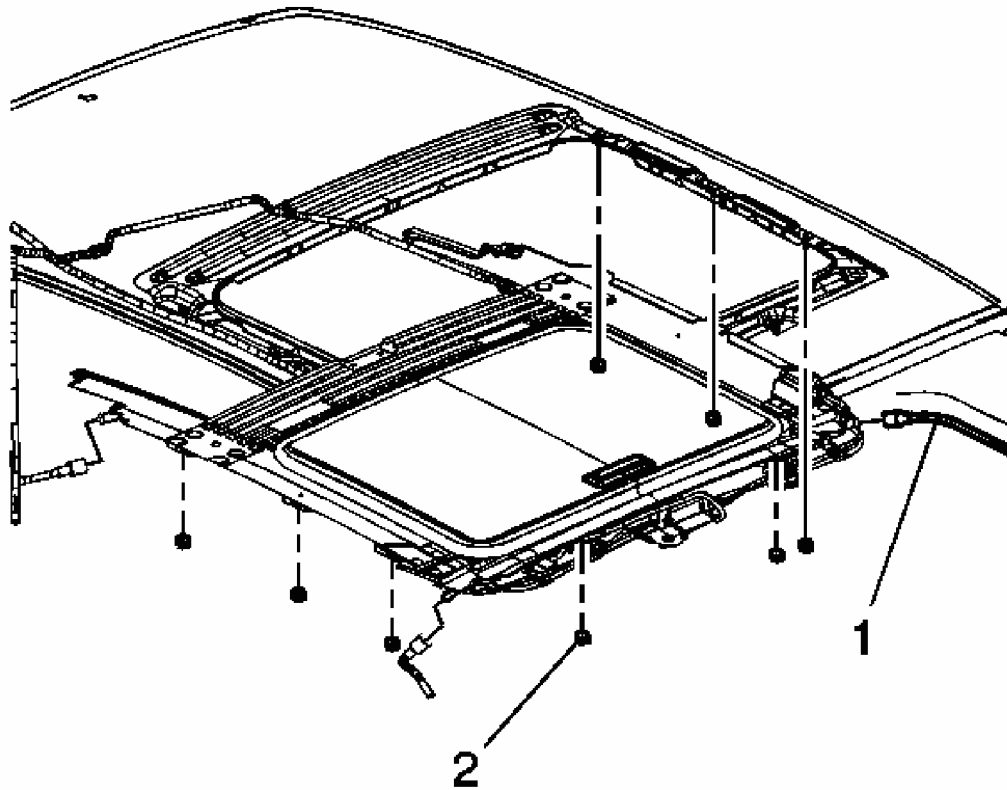


Fig. 25: Sunroof Module Assembly
Courtesy of GENERAL MOTORS CORP.

6. Disconnect the front and rear drain hoses (1) from the drain spouts on the sunroof module.

IMPORTANT: Remove the 2 center nuts last in order to help support the sunroof module to the roof ring.

7. Remove the sunroof module nuts (2) from the roof.
8. Remove the center nuts from the sunroof module.
9. With an assistant, lower and remove the sunroof module assembly out through the passenger side door.

Installation Procedure

1. With an assistant, position the new sunroof module assembly to the studs located on the roof ring.

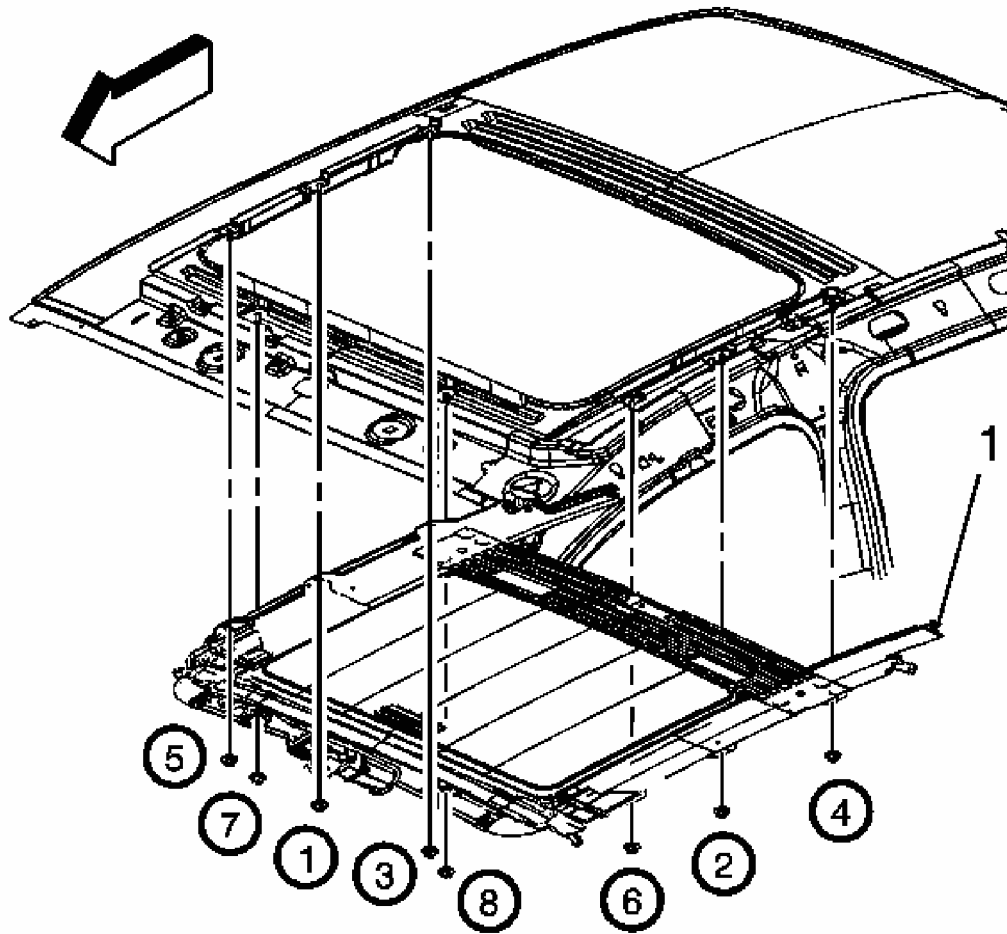


Fig. 26: Sunroof Module To Roof Nut Tightening Sequence
Courtesy of GENERAL MOTORS CORP.

2. Install the center sunroof module to roof nuts (1, 2) and tighten by hand.

NOTE: Refer to Fastener Notice .

3. Install the remaining sunroof module (1) nuts to the module in sequence (3, 4, 5, 6, 7, 8).

Tighten: Tighten all of the nuts to 10 N.m (89 lb in).

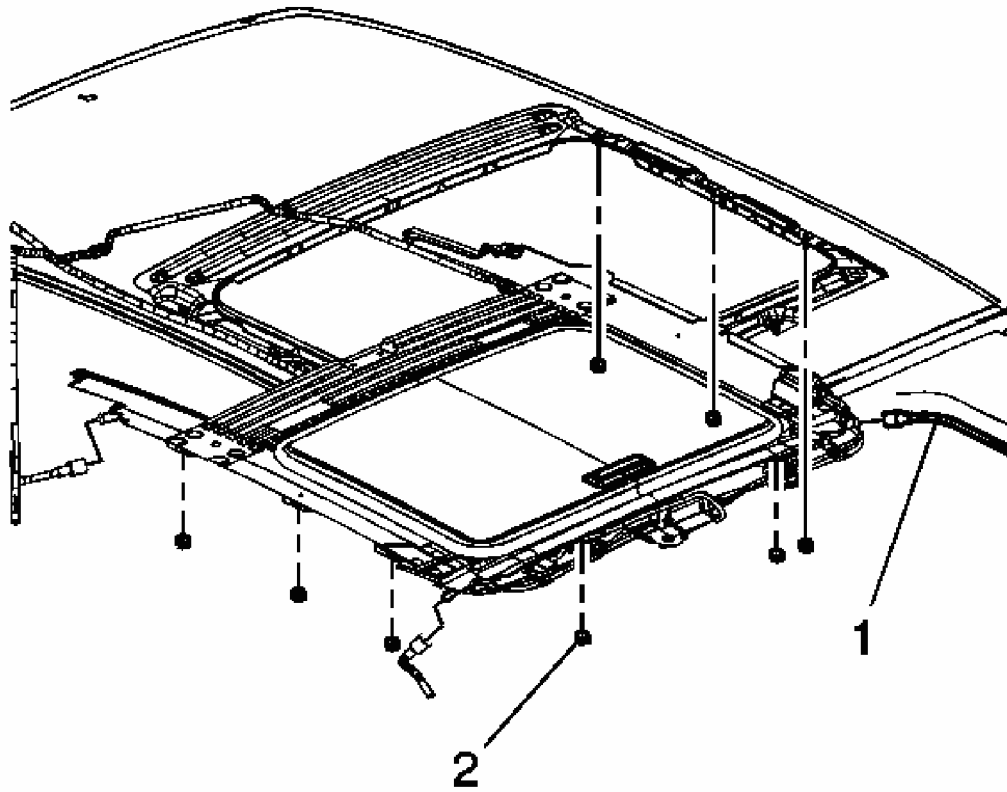


Fig. 27: Sunroof Module Assembly
Courtesy of GENERAL MOTORS CORP.

4. Connect the front and rear drain hoses (1) to the drain spouts on the sunroof module.
5. Install the sunroof window to the new sunroof module. Refer to **Sunroof Window Replacement**.
6. Install the sunshade panel to the new sunroof module. Refer to **Sunroof Sunshade Panel Replacement**.

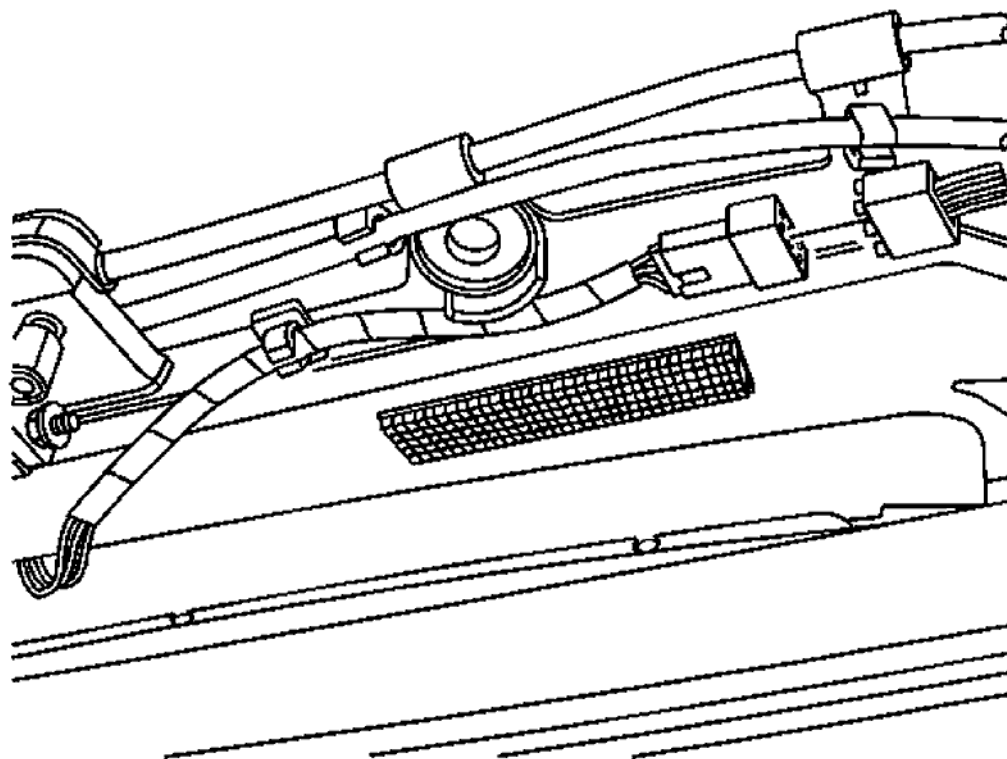


Fig. 28: View Of Sunroof Motor/Actuator Electrical Connector
Courtesy of GENERAL MOTORS CORP.

7. Connect the electrical connector to the sunroof motor/actuator.
8. Secure the harness to the sunroof module.
9. Verify the proper operation of the sunroof before securing the headliner.
10. Install the headliner. Refer to **Headliner Replacement** .

SUNROOF MOTOR SYNCHRONIZATION

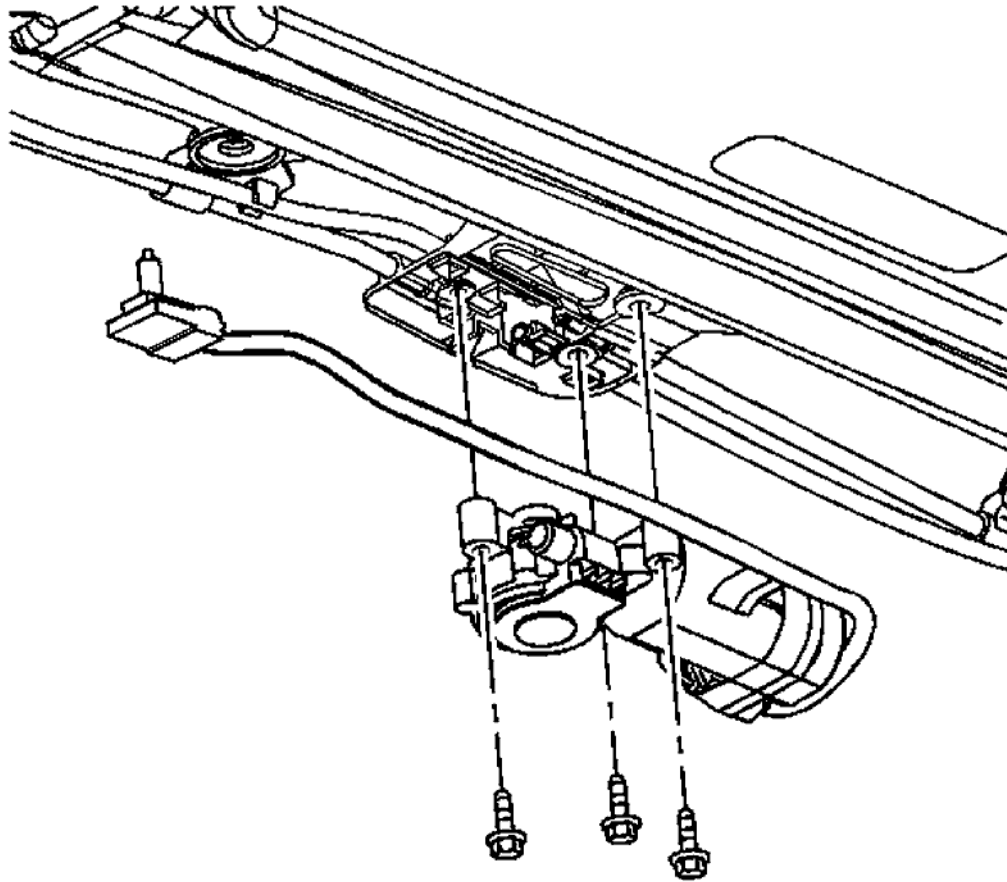


Fig. 29: View Of Sunroof Motor/Actuator
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Verify that both the sunroof motor/actuator and the sunroof guide mechanisms are in the vent position before you begin the synchronization procedure.

1. Plug the motor/actuator into the harness and provide power. Using the vehicle sunroof switch, position it in the vent detent mode only.
2. If the sunroof window is in the closed position, remove the sunroof window. Refer to **Sunroof Window Replacement**.
3. Verify that the sunroof guide mechanisms are fully forward and in the vent position.
4. Install the sunroof motor/actuator. Refer to **Sunroof Motor/Actuator Replacement**.
5. Install the sunroof window, if necessary. Refer to **Sunroof Window Replacement**.
6. Operate the sunroof to verify proper operation.

LUGGAGE CARRIER REPLACEMENT

Fig. 30: View Of Luggage Carrier
 Courtesy of GENERAL MOTORS CORP.

Luggage Carrier Replacement

Callout	Component Name
NOTE: Refer to <u>Fastener Notice</u> . Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
1	Cover, Carrier Luggage
2	Screw, Carrier Luggage (Qty: 4) Tighten: 4 N.m (35 lb in)
3	Carrier, Luggage

DESCRIPTION AND OPERATION**SUNROOF DESCRIPTION AND OPERATION****Power Sunroof System Components**

The Power Sunroof System consists of the following components:

- Sunroof control module
- Sunroof switch
- Sunroof glass, tilt/slide style, with glass sliding between the headliner and roof
- Rail and track assembly upon which the sunroof glass rides
- SUNROOF Fuse 20 A
- Rear integration module (RIM)

Power and Grounds

Battery positive voltage is supplied at all times to the sunroof motor/control module assembly from the 20 A SUNROOF fuse located in the right rear fuse block. Ground is supplied to the sunroof module through the module ground circuit and G401.

Ground is supplied to the sunroof switch through the switch ground circuit and G402.

Power Sunroof Operation

The Power Sunroof System will operate only with the ignition turned to the RUN or Accessory positions, this allows for retained accessory power (RAP) control of the sunroof through the rear integration module (RIM). With the ignition in the run or accessory positions, the RIM pulls the sunroof enable circuit of the sunroof module low allowing sunroof operation. Once the ignition switch is turned to OFF the sunroof will continue to operate until any door is opened or when the RAP timer reaches its shut-off limit. For a description and operation of the RAP operation, refer to **Retained Accessory Power (RAP)** **Description and Operation** in Computer/Integrating Systems.

Sunroof Switch

The sunroof switch assembly contains two rocker type switches that are used to control the following sunroof functions:

- Roof open/close-A supervised press to the first detente of the switch
- Roof express open/close-A momentary press to the second detente of the switch
- Vent open/close-A supervised press to the first detente of the switch
- Vent express open/close-A momentary press to the second detente of the switch

The sunroof switch can be used to control roof movement in an assortment of different ways from any one of the following positions:

- Press and hold the roof switch rearward to the first detente or momentarily to the second detente for the express position will move the roof as follows:
 - From the roof closed position to the roof open position
 - From the vent open position to the roof open position
- Press and hold the roof switch forward to the first detente or momentarily to the second detente for the express position will move the roof as follows:
 - From the roof open position to the roof closed position
 - From the vent open position to the roof closed position
- Press and hold the vent switch rearward to the first detente or momentarily to the second detente for the express position will move the roof as follows:
 - From the roof closed position to the vent open position

- From the roof open position to the vent open position
- Press and hold the vent switch forward to the first detente or momentarily to the second detente for the vent express position will move the roof as follows:
 - From the vent open position to the vent closed position
 - From the roof open position to the roof closed position

Roof Express Open/Close Operation

The roof express or vent express features allow for movement of the roof glass to desired positions in unsupervised modes. When the roof or vent open switch is momentarily pressed rearward to the second detente, the roof/vent open and roof/vent express signal circuits are simultaneously pulled low through the switch contacts signaling the sunroof control module of the roof/vent express open request. The module then commands the motor to move the roof glass to the requested full open position. To stop the roof in a desired position other than the full open position, momentarily press the sunroof switch in either direction to stop the movement.

The roof/vent express close feature is similar to the roof/vent express open feature, except that the roof/vent close switch signal circuit is simultaneously pulled low with the express signal circuit. The sunroof control module will then command the motor to move the roof glass to the closed position.

Roof Supervised Open/Close Operation

Supervised operation of the power sunroof system allows for the roof to be moved to a specific or desired position. When you press and hold the desired roof or vent open switch to the first detente of the switch, the roof/vent open switch signal circuit is pulled low through the switch contacts signaling the sunroof module of the roof/vent open request. The module then commands the motor to move the roof glass towards the open position until the switch is released. Closing the roof glass works similar to opening the roof, except that the roof/vent close switch signal circuit is pulled low signaling the module of the roof close request.

Sunroof Motor

The sunroof motor/module assembly has a bi-directional motor. The sunroof motor understands when it has driven the sunroof glass to the vent, close and full open positions based on the internal hall effect sensors within the sunroof motor/control module assembly. The sunroof motor/control module assembly interprets the hall effect sensor combinations and controls the sunroof motor to soft stop the sunroof glass at the positions.