

2007 Hummer H3

2007 ACCESSORIES & EQUIPMENT Sunroof - H3

2007 ACCESSORIES & EQUIPMENT

Sunroof - H3

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Sunroof Sunshade Handle Screws	2 N.m	18 lb in
Sunroof Air Deflector	3 N.m	27 lb in
Sunroof Drain Weeper	2 N.m	18 lb in
Sunroof Module Retaining Bolts	9 N.m	80 lb in
Sunroof Module Retaining Nuts	9 N.m	80 lb in
Sunroof Motor Bolts	6 N.m	53 lb in
Sunroof Window	4 N.m	35 lb in
Sunshade Panel Rubber Stoppers	3 N.m	27 lb in

SCHEMATIC AND ROUTING DIAGRAMS

SUNROOF SCHEMATICS

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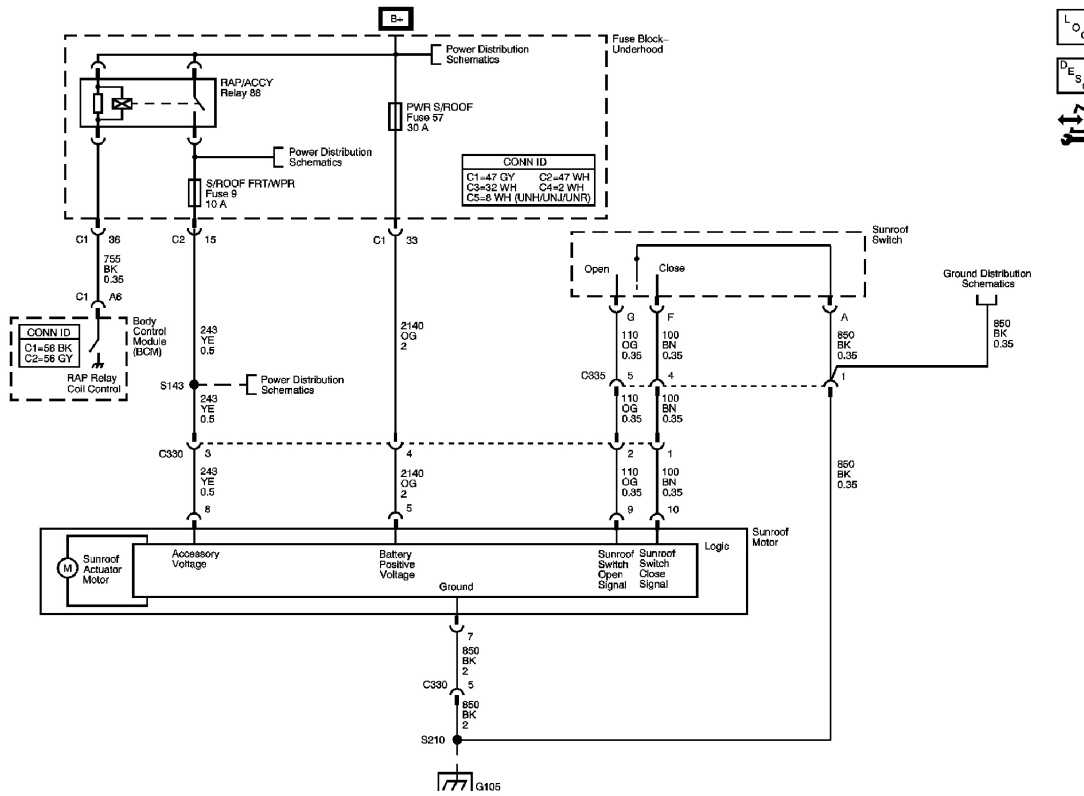


Fig. 1: Sunroof Circuit Schematic
 Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

SUNROOF COMPONENT VIEWS

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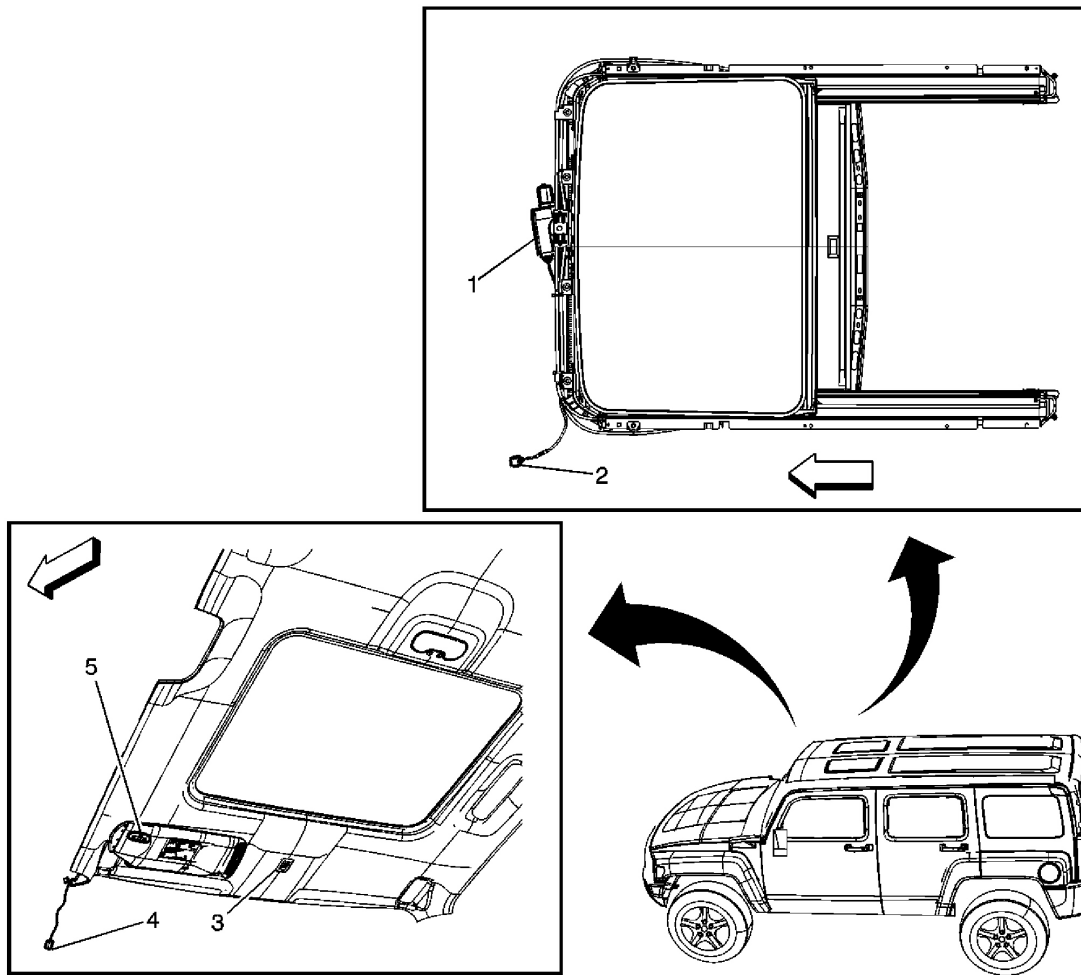


Fig. 2: Sunroof Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 2

Callout	Component Name
1	Sunroof Motor
2	C330 Sunroof Jumper Harness to Body Harness
3	Sunroof Switch
4	C335 Sunroof Jumper Harness to Body Harness
5	Garage Door Opener

SUNROOF CONNECTOR END VIEWS

Sunroof Motor

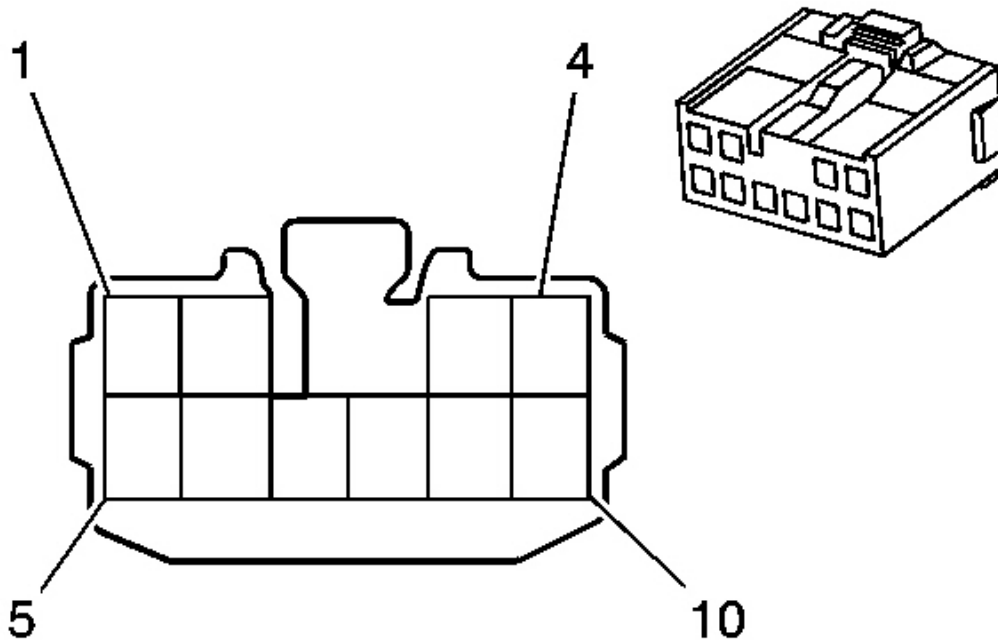


Fig. 3: Sunroof Motor Connector End View
Courtesy of GENERAL MOTORS CORP.

Sunroof Motor Connector Parts Information

Connector Part Information

- OEM: 6240-5196
- Service: 15201885
- Description: 10-Way F 090 MT Series (NA)

Terminal Part Information

- Pins: 5, 7
- Terminal/Tray: 8240-4942/22
- Core/Insulation Crimp: 2/1
- Release Tool/Test Probe: 15315247/J-35616-18 (BK)
- Pins: 8-10

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- Terminal/Tray: 8240-4882/22
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-18 (BK)

Sunroof Motor Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1-4	-	-	Not Used
5	OG	2140	Battery Positive Voltage
6	-	-	Not Used
7	BK	850	Ground
8	YE	243	Accessory Voltage
9	OG	110	Sunroof Switch Open Signal
10	BN	100	Sunroof Switch Close Signal

Sunroof Switch

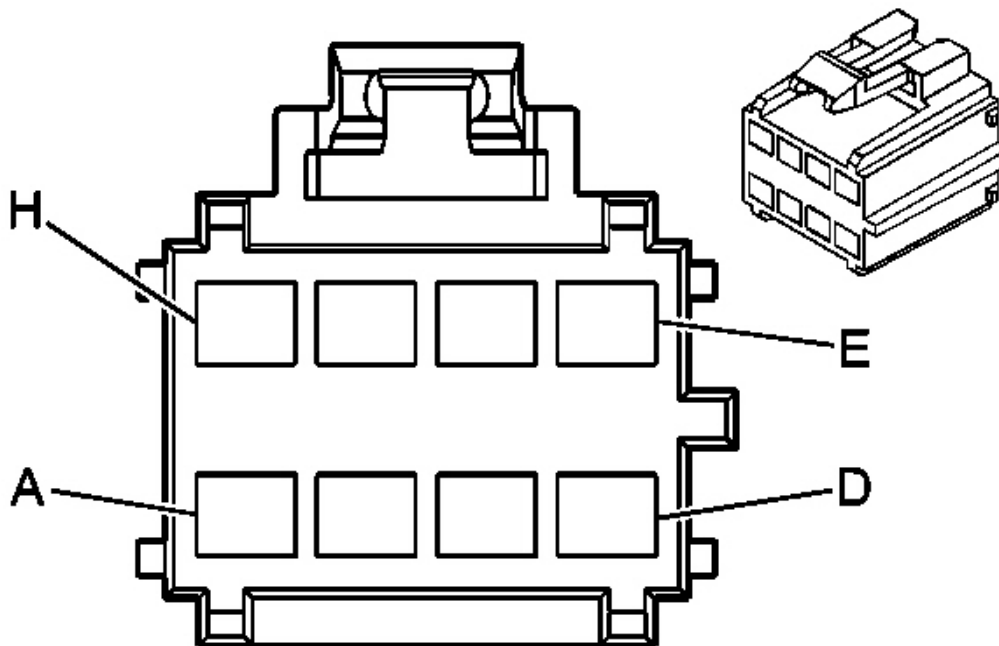


Fig. 4: Sunroof Switch Connector End View

Courtesy of GENERAL MOTORS CORP.

Sunroof Switch Connector Parts Information

Connector Part Information

- OEM: 12191825
- Service: 15306048
- Description: 8-Way F GT 280 Series (BN)

Terminal Part Information

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

Sunroof Switch Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	BK	850	Ground
B	GY	8	Instrument Panel Lamps Dimmer Switch Signal
C	BK	850	Ground
D-E	-	-	Not Used
F	BN	100	Sunroof Switch Close Signal
G	OG	110	Sunroof Switch Open Signal
H	-	-	Not Used

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - ROOF

Begin the system diagnosis by reviewing the system Description and Operation. Reviewing the Description and Operation information will help you determine the correct symptom diagnostic procedure when a malfunction exists. Reviewing the Description and Operation information will also help you determine if the condition described by the customer is normal operation. Refer to **Symptoms - Roof** in order to identify the correct procedure for diagnosing the system and where the procedure is located.

SYMPTOMS - ROOF

IMPORTANT: Review the system description in order to familiarize yourself with the system functions. Refer to Sunroof Description and Operation.

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the Sunroof System. Refer to Checking Aftermarket Accessories .
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

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

Symptom List

Refer to Power Sunroof Inoperative in order to diagnose the symptom.

POWER SUNROOF INOPERATIVE

Diagnostic Instructions

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

Circuit/System Description

The sunroof motor/actuator supplies voltage to the contacts of the sunroof switch through the sunroof switch close signal circuit and the sunroof switch open signal circuit. When the switch is operated, the contacts and signal circuit for the selected mode are closed to ground, the voltage is pulled low in the sunroof motor/actuator and the appropriate signal is recognized. The sunroof motor/actuator then internally applies battery positive voltage and ground to the appropriate circuits of the reversible power sunroof motor in order to move the sunroof glass panel to the open, close or vent position.

Reference Information

Schematic Reference

Sunroof Schematics

Connector End View Reference

Sunroof Connector End Views

Description and Operation:

Sunroof Description and Operation

Electrical Information Reference

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

Circuit/System Verification

1. With the sunroof in the closed position, press the sunroof open switch. The sunroof should open.
2. With the sunroof in the open position, press the sunroof close switch. The sunroof should close.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the sunroof motor.
2. Ignition OFF, test for less than 1 ohm of resistance between the ground circuit terminal 7 and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp illuminates between the ignition circuit terminal 8 and ground.
 - If the test lamp does not illuminate, test the ignition circuit for a short to ground or an open/high resistance. If the circuit tests normal, refer to **Retained Accessory Power (RAP) Inoperative** .
4. Verify that a test lamp illuminates between the B+ circuit terminal 5 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for an open/high resistance. If the B+ circuit fuse is open, test the B+ circuit for a short to ground. If the circuit tests normal, replace the sunroof motor.

5. Ignition OFF, connect the harness connector at the sunroof motor. Disconnect the harness connector at the sunroof switch.
6. Ignition OFF, test for less than 1.0 ohm of resistance between the ground circuit terminal A and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
7. Ignition ON, test for B+ between the signal circuit terminal G and ground.
 - If not the specified value, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, test or replace the sunroof motor.
8. Test for B+ between the signal circuit terminal F and ground.
 - If not the specified value, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, test or replace the sunroof motor.
9. If all circuits test normal, test or replace the sunroof switch.

Component Testing

Sunroof Switch

1. Ignition OFF, disconnect the harness connector at the sunroof switch.
2. Test for infinite resistance between the following terminals at the sunroof switch with the switch in the neutral position:
 - Signal circuit terminal G
 - Signal circuit terminal F
 - Ground circuit terminal A
 - If not the specified value, replace the sunroof switch.
3. Test for less than 2.0 ohms of resistance between the signal circuit terminal G and the low reference circuit terminal B at the sunroof switch with the switch in the Sunroof Open position.
 - If greater than the specified range, replace the sunroof switch.
4. Test for less than 2.0 ohms of resistance between the signal circuit terminal F and the low reference circuit terminal A at the sunroof switch with the switch in the Sunroof Close position.
 - If greater than the specified range, replace the sunroof switch.

Repair Procedures

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

- Sunroof Switch Replacement
- Sunroof Motor/Actuator Replacement

REPAIR INSTRUCTIONS

SUNROOF DRAIN INSPECTION AND CLEANING

Drain Hose Routing

A drain trough encircles the sunroof window panel and water is drained off by the drain hoses located at each corner of the housing. A drain channel spans across the sunroof module at the rear of the window panel and directs water into the trough.

1. Check to ensure the front drain hoses are routed down the windshield pillars and out the center of the pillar between the door hinges. Make sure the hoses are not kinked.
2. Check to ensure the rear drain hoses are routed through the rear pillars and out of the rocker panel. Make sure the rear hoses are properly routed in the metal roof slot and taped in place.

Plugged Drain Hose

If a waterleak has occurred check for a plugged drain hose at each corner of drainage system.

1. Open the sunroof window.
2. To test for blockage, pour a small container of water into the module housing drain trough. Check each corner to confirm the drain hose is draining water.

CAUTION: Wear safety glasses in order to avoid eye damage.

3. Use compressed air, 241 kPa (35 psi) or less to blow out any drain hose that is plugged.
4. Test the system again.
5. If the hose remains plugged, check to see it is properly routed and does not have a kink. Refer to Drain Hose Routing.
6. Remove the blockage using the following steps.
 - Push mechanics wire through the hose to remove the obstruction.
 - Use compressed air in order to blow out any remaining material.

Disconnected Drain Hose

Inspect the drainage system for disconnected drain hoses. Complete the following steps in order

to obtain partial access to drain hoses and check for a disconnected hose.

1. Open the sunroof window panel.
2. Lower the headliner as needed. Refer to **HEADLINING TRIM PANEL REPLACEMENT** .
3. Connect any disconnected hoses.
4. Ensure that the rear drain hoses are properly routed in the metal roof slot and taped in place.

SUNROOF AIR DEFLECTOR REPLACEMENT

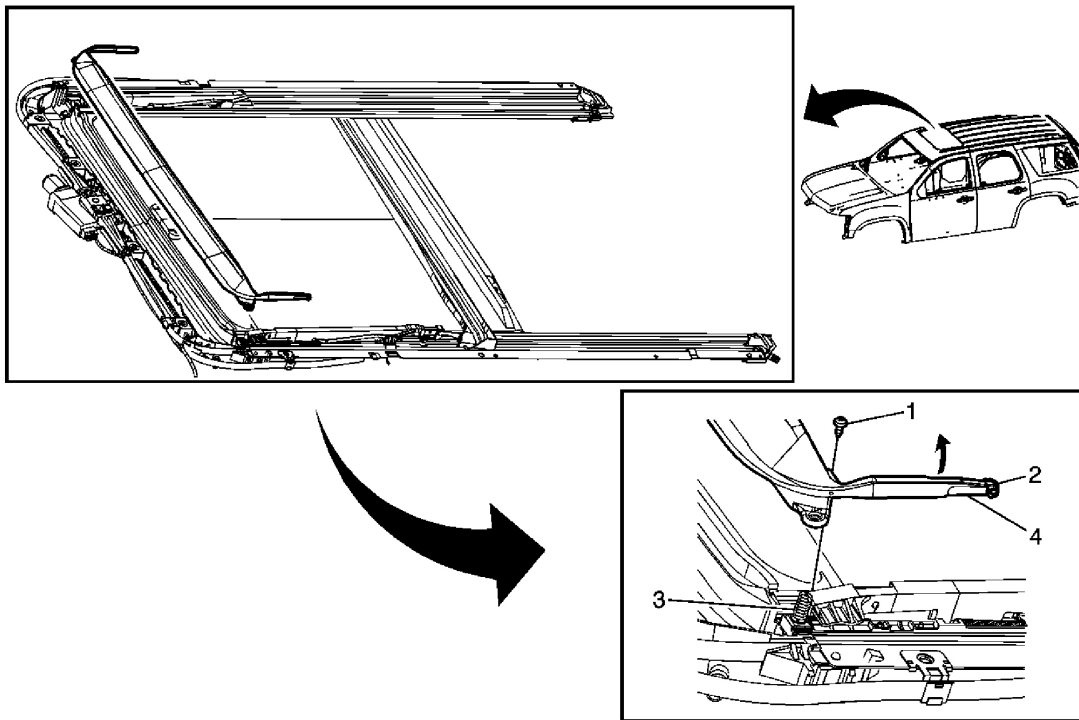


Fig. 5: Sunroof Air Deflector Replacement
 Courtesy of GENERAL MOTORS CORP.

Sunroof Air Deflector Replacement

Callout	Component Name
<p>Preliminary Procedure: Open the sunshade and sunroof to the fully opened position.</p>	
	<p>Sunroof Air Deflector Screw</p> <p>NOTE:</p>

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1	Refer to Fastener Notice . Tip: One screw at each corner. Tighten: 3 N.m (27 lb in)
2	Sunroof Air Deflector Retainer Tip: Push inward on the lower arm of the air deflector to release it from the track.
3	Air Deflector Spring
4	Sunroof Air Deflector

SUNROOF SUNSHADE HANDLE REPLACEMENT

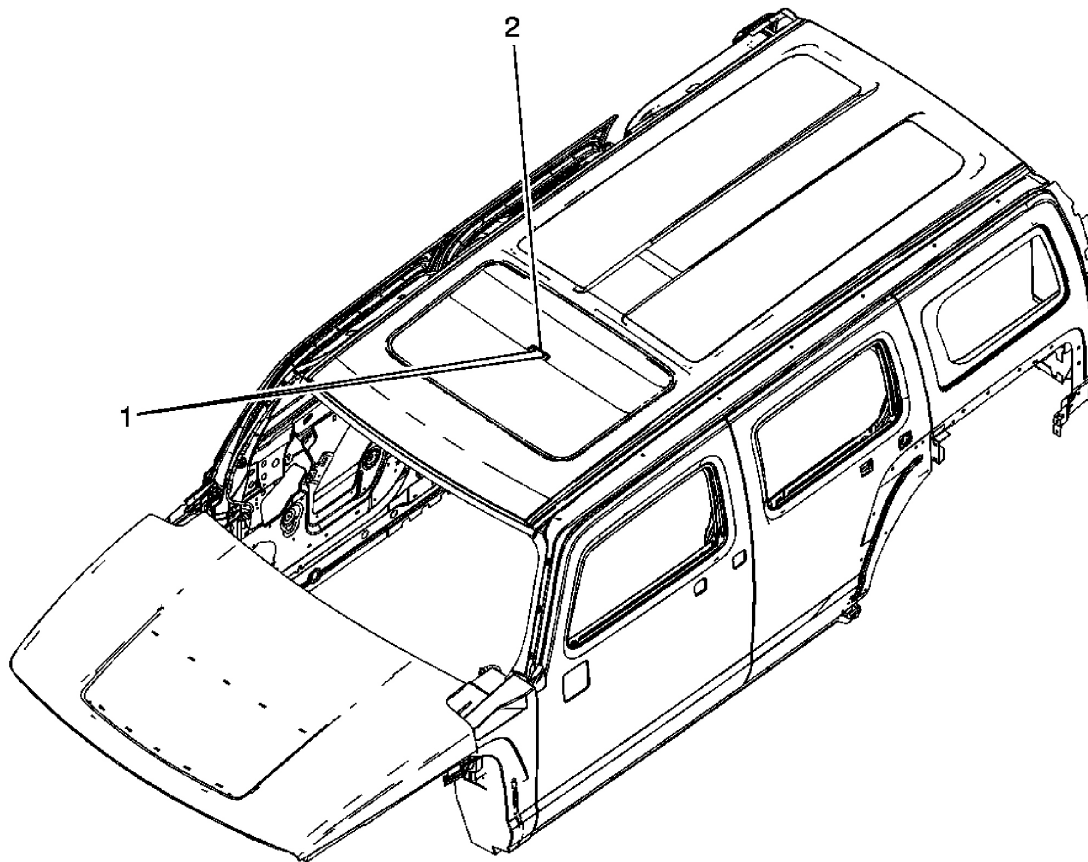


Fig. 6: Sunroof Sunshade Handle Replacement
Courtesy of GENERAL MOTORS CORP.

Sunroof Sunshade Handle Replacement

Callout	Component Name
<p>NOTE: Refer to <u>Fastener Notice</u> .</p>	
<p>Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u>.</p>	
<p>1</p>	<p>Screws, Handle Sunshade (Qty: 2) Tip: The screws are located across the inside top center. Tighten: 2 N.m (18 lb in)</p>
<p>2</p>	<p>Handle, Sunshade</p>

SUNROOF HOUSING FRONT DRAIN HOSE REPLACEMENT

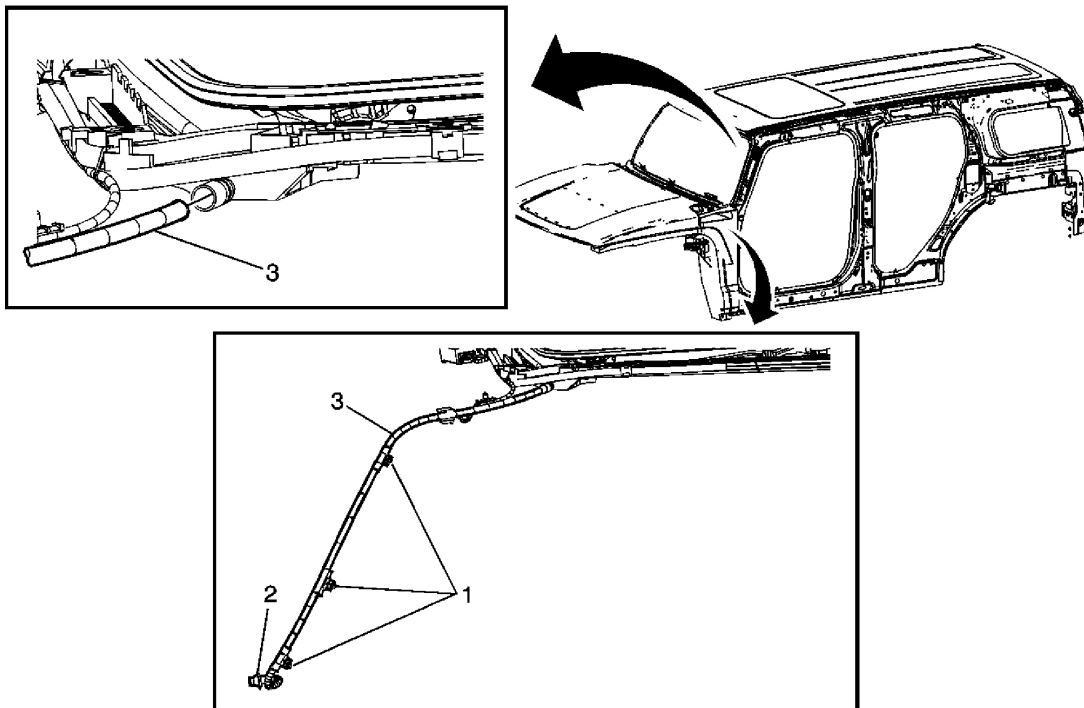


Fig. 7: Sunroof Drain Hose Replacement - Front
Courtesy of GENERAL MOTORS CORP.

Sunroof Housing Front Drain Hose Replacement

Callout	Component Name
<p>Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u>.</p>	

Preliminary Procedures

1. Remove the headliner. Refer to **Headlining Trim Panel Replacement** .
2. Remove the front garnish moldings. Refer to **Windshield Pillar Garnish Molding 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 remove the drain hose grommet end from the cowl panel. The grommet press 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 HOUSING REAR DRAIN HOSE REPLACEMENT

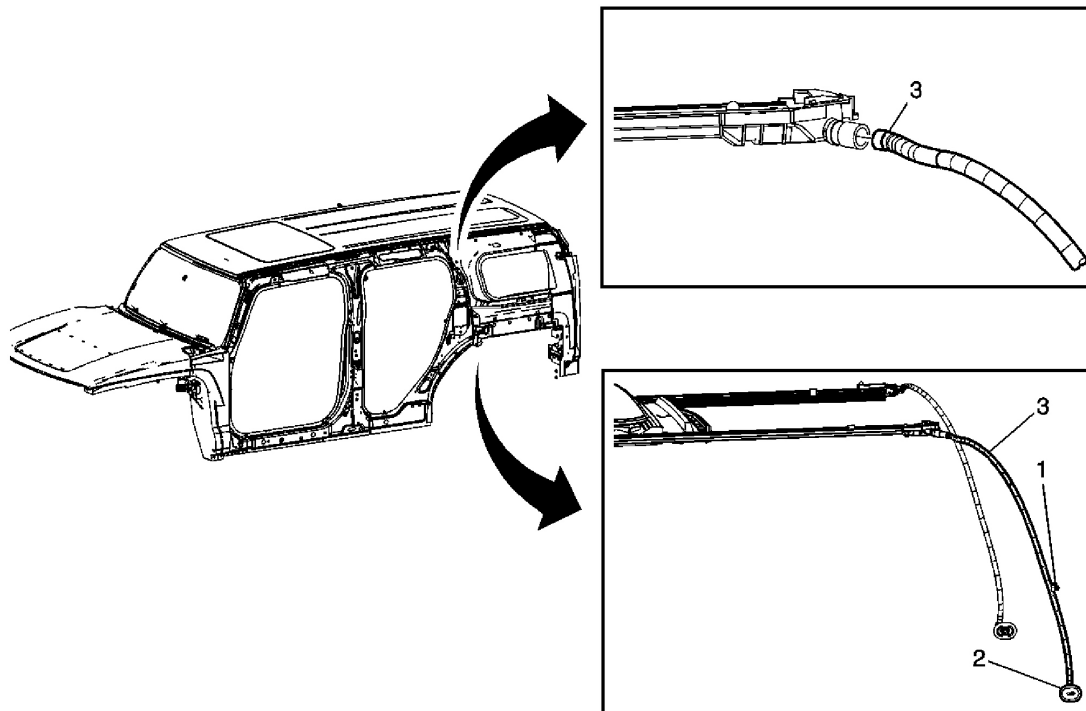


Fig. 8: Sunroof Drain Hose Replacement - Rear
 Courtesy of GENERAL MOTORS CORP.

Sunroof Housing Rear Drain Hose Replacement

Callout	Component Name

Fastener Tightening Specifications: Refer to **Fastener Tightening Specifications.**

Preliminary Procedures

1. Remove the headliner. Refer to **Headlining Trim Panel Replacement .**
2. Remove the upper quarter trim. Refer to **Body Side Rear Upper Garnish Molding Replacement .**
3. Remove the left lower quarter trim. Refer to **Body Side Trim Panel Replacement - Left Side .**
4. Remove the right lower quarter trim. Refer to **Body Side Trim Panel Replacement - Right Side .**

1	Retainer, Sunroof Clip Rear (Qty: 2) Tip: Remove the retainer clips from the side of the C pillar.
2	Grommet, Sunroof Hose Drain Rear Tip: Use care when remove the drain hose grommet end from the quarter panel. The grommet press 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 OPENING TRIM FINISH LACE REPLACEMENT

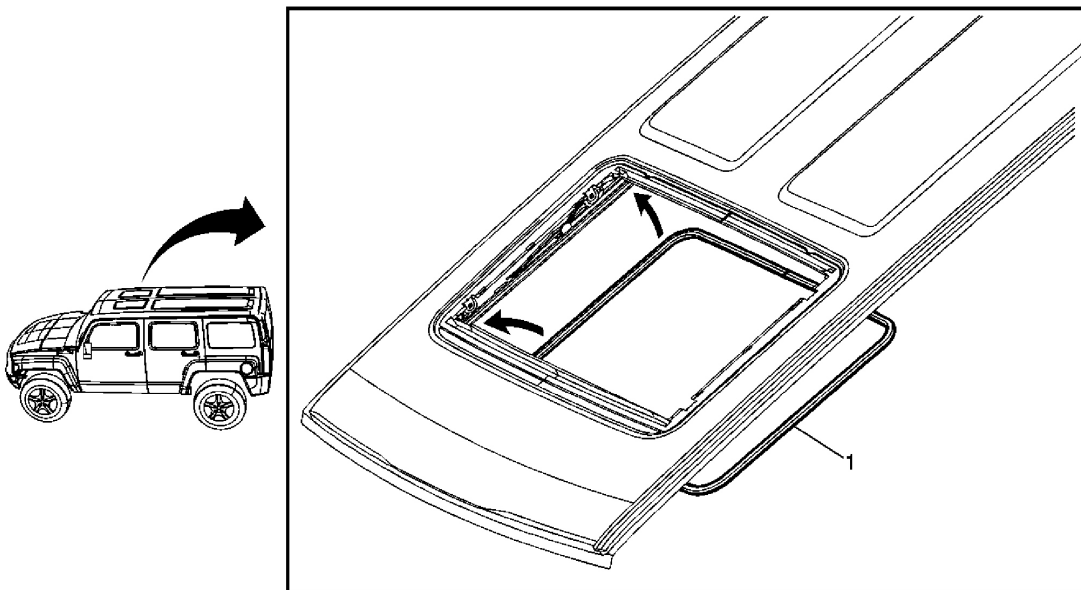


Fig. 9: Sunroof Finishing Lace Replacement
Courtesy of GENERAL MOTORS CORP.

Sunroof Opening Trim Finish Lace Replacement

Callout	Component Name
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
1	Lace, Sunroof Tip: Starting in the center rear, pull down and away from the headliner until the lace is fully released.

SUNROOF MODULE ASSEMBLY REPLACEMENT

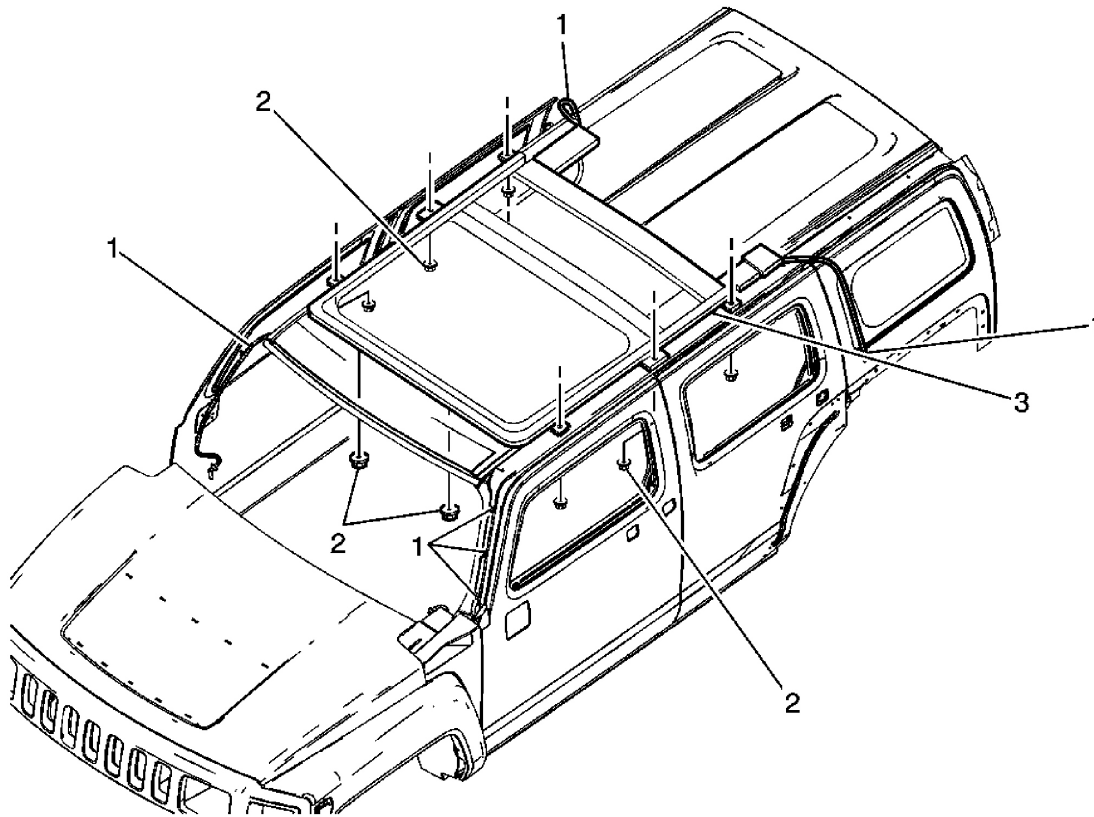


Fig. 10: Sunroof Module Assembly Replacement
Courtesy of GENERAL MOTORS CORP.

Sunroof Module Assembly Replacement

Callout	Component Name
<p>NOTE: Refer to <u>Fastener Notice</u> .</p>	
<p>Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u>.</p>	

Preliminary Procedures

1. Remove the sunroof window. Refer to **Sunroof Window Replacement**.
2. Remove the headliner. Refer to **Headlining Trim Panel Replacement**.
3. Remove the sunroof motor/actuator. Refer to **Sunroof Motor/Actuator Replacement**.
4. Remove the sunshade. Refer to **Sunroof Sunshade Assembly Replacement**.

1	Hose, Sunroof Drain (Qty: 4) Tip: Unplug the drain hoses from each side of the drain weeper valve.
2	Nuts, Sunroof Module (Qty: 10) Tip: There are 3 nuts down each side and 4 across the front. Tighten: 9 N.m (80 lb in)
3	Module, Sunroof

SUNROOF MOTOR/ACTUATOR INITIALIZATION/TEACH PROCESS

Perform the initialization/teach procedure any time:

- A new sunroof motor/actuator has been installed.
- The existing sunroof motor/actuator has been removed and reinstalled.
- The sunroof system has suffered 3 interruptions for emergency events, i.e. anti-pinch, debris in tracks etc., and normal operation is canceled.

By performing the initialization/teach procedure, the sunroof motor/actuator records the open vent stop position. The motor/actuator will then understand the other positions, closed and full open soft stop, and allow express and obstacle detection functions.

1. Ensure that all electrical harness connectors are connected.
2. Turn the ignition to ON.
3. Completely close the sunroof window with the manual close switch.
4. Press the sunroof vent switch to the vent open position until the sunroof window stops, and continue holding the switch for at least 10 seconds.

IMPORTANT: The initialization/teach procedure is not complete if the battery and/or ignition power has been interrupted during the process. 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 MOTOR/ACTUATOR REPLACEMENT

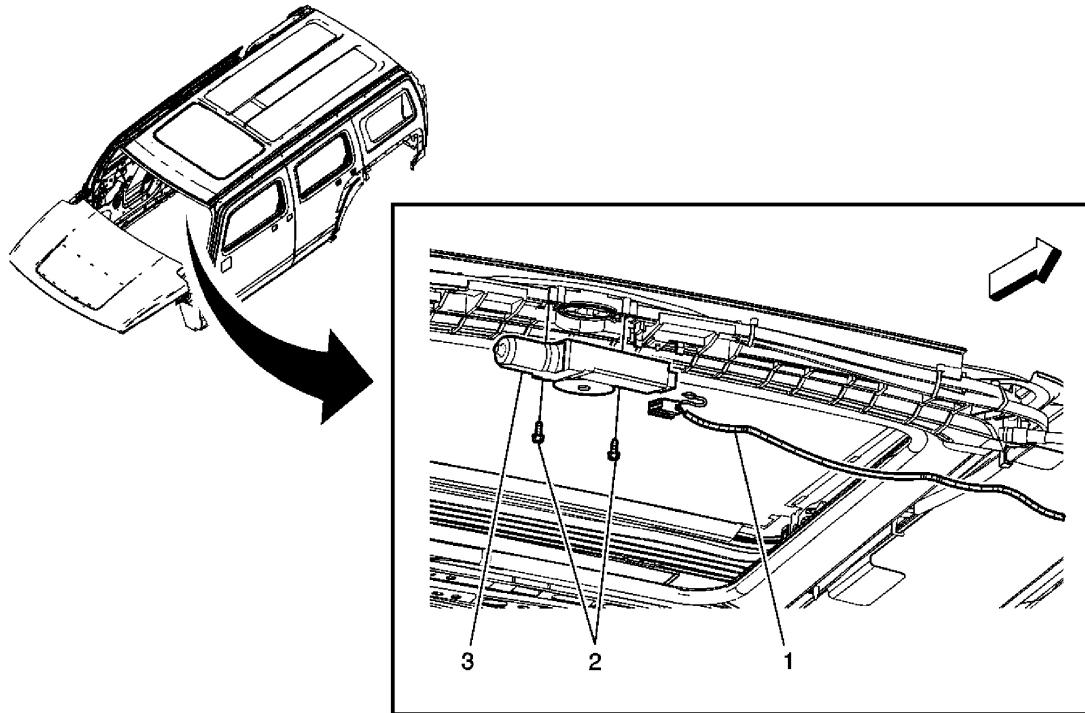


Fig. 11: Sunroof Motor/Actuator Replacement
 Courtesy of GENERAL MOTORS CORP.

Sunroof Motor/Actuator Replacement

Callout	Component Name
<p>NOTE: Refer to <u>Fastener Notice</u> .</p> <p>Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u>. Preliminary Procedures: Remove the headliner. Refer to <u>Headlining Trim Panel Replacement</u> .</p>	
1	Plug, Sunroof Motor/Actuator
2	Screws, Sunroof Motor/Actuator (Qty: 2) Tighten: 10 N.m (89 lb in)
	Motor/Actuator, Sunroof

3

Tip: Pull downward to disengage the motor/actuator from the sunroof module.

SUNROOF SUNSHADE ASSEMBLY REPLACEMENT

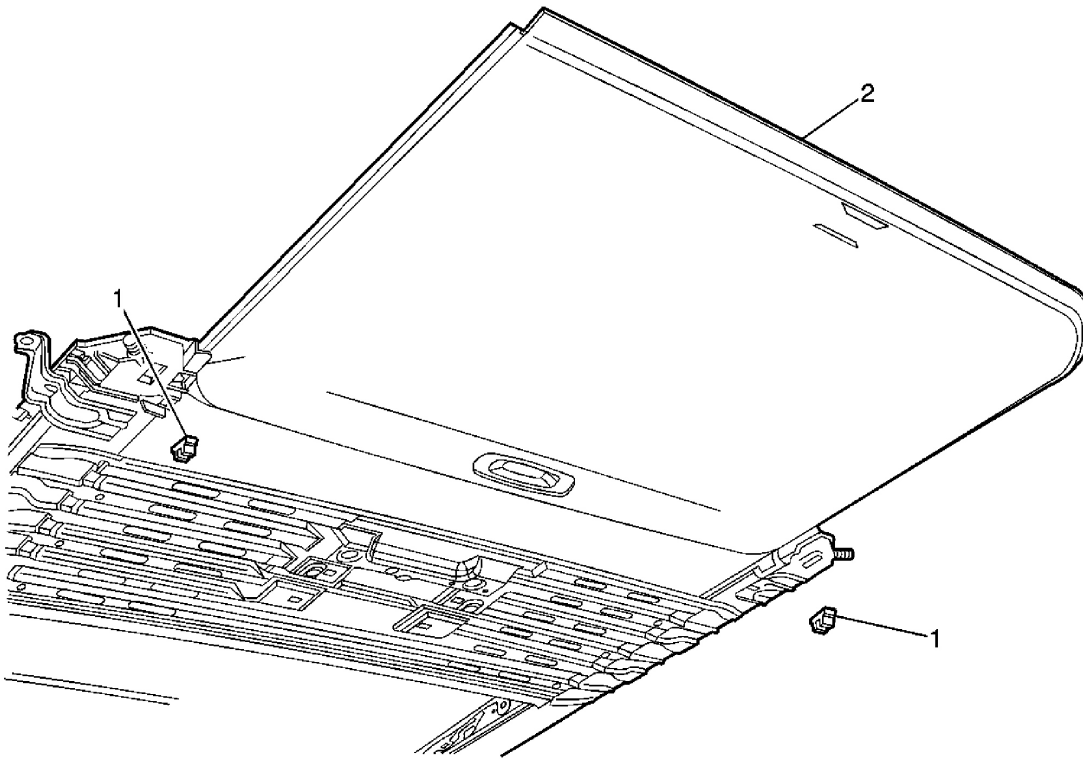


Fig. 12: Replacing Sunroof Sunshade Assembly
 Courtesy of GENERAL MOTORS CORP.

Sunroof Sunshade Assembly Replacement

Callout	Component Name
Preliminary Procedure: Lower the headliner. Refer to Headlining Trim Panel Replacement .	
1	Sunshade Stopper (Qty: 2)
2	Sunshade Tip: Pull rearward to remove the sunshade from the module.

SUNROOF SWITCH REPLACEMENT

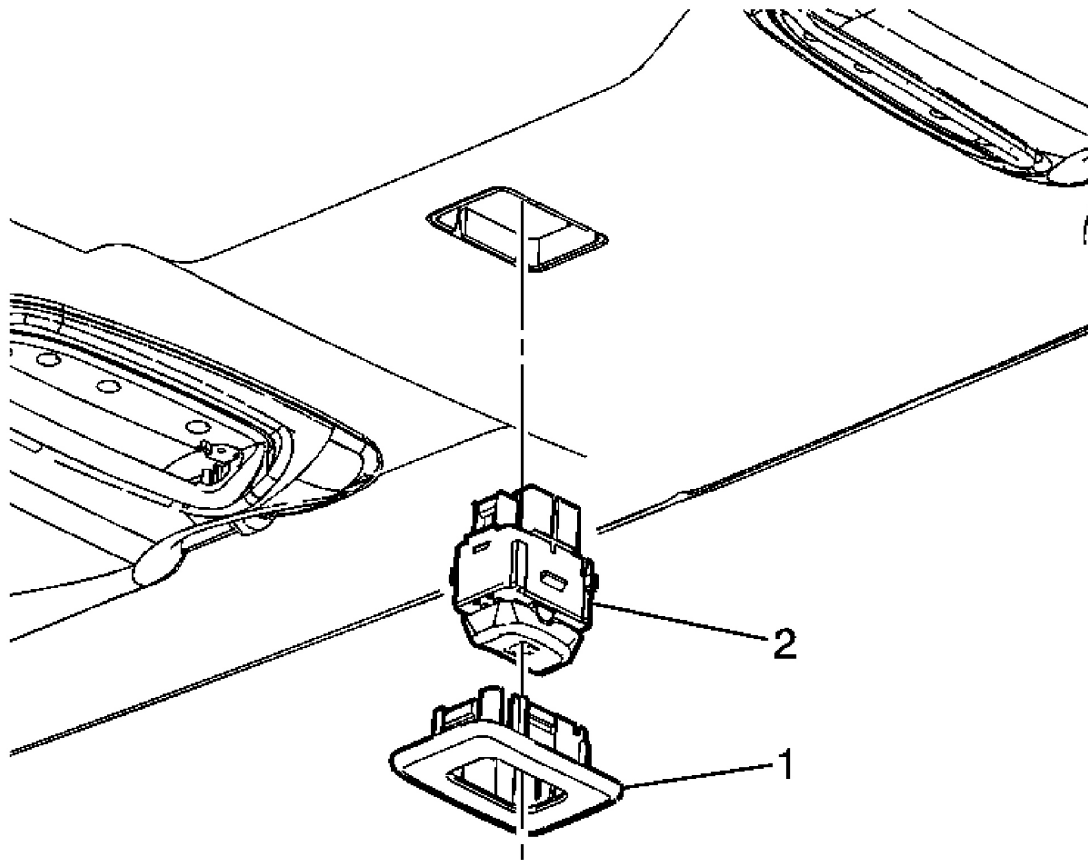


Fig. 13: Sunroof Switch Replacement
 Courtesy of GENERAL MOTORS CORP.

Sunroof Switch Replacement

Callout	Component Name
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
1	Bezel, Sunroof Switch Tip: Pry the bezel with a flat-bladed tool.
2	Switch, Sunroof Tip: Disconnect the electrical connector.

SUNROOF WINDOW WEATHERSTRIP REPLACEMENT

Removal Procedure

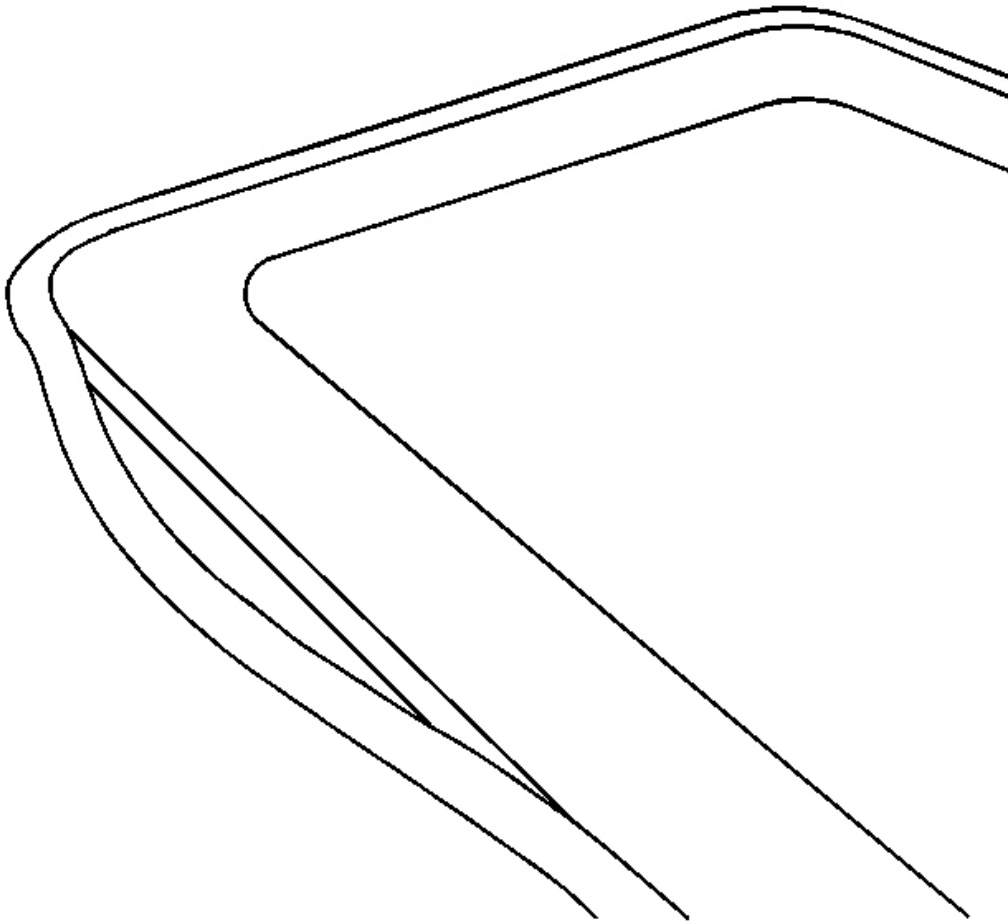


Fig. 14: Removing/Installing Sunroof Window Weatherstrip
Courtesy of GENERAL MOTORS CORP.

1. Remove the sunroof window. Refer to **Sunroof Window Replacement**.
2. Carefully remove the sunroof window weatherstrip from the perimeter of the sunroof window.

Installation Procedure

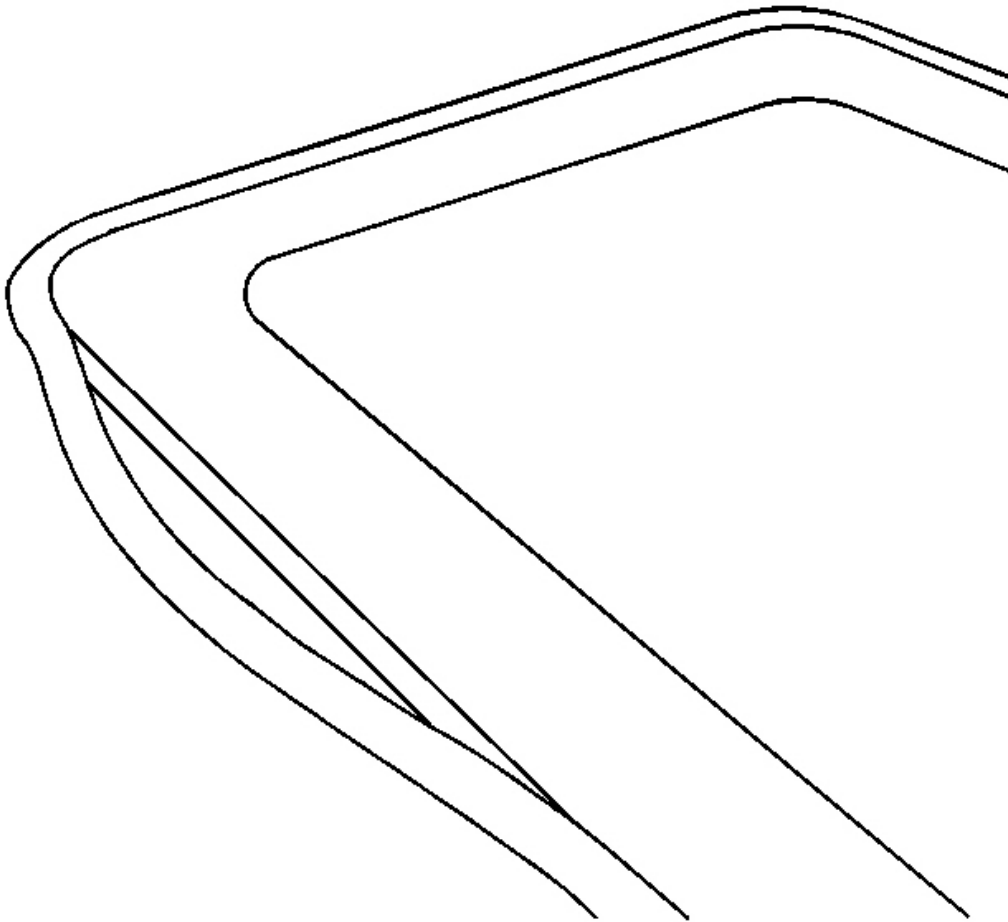


Fig. 15: Removing/Installing Sunroof Window Weatherstrip
Courtesy of GENERAL MOTORS CORP.

1. Carefully install the sunroof window weatherstrip to the perimeter of the sunroof window, ensuring that the weatherstrip is fully seated.
2. Install the sunroof window to the sunroof module assembly. Refer to **Sunroof Window Replacement**.
3. Ensure that the sunroof does not have any air or waterleaks.

SUNROOF WINDOW HEIGHT AND OPENING FIT ADJUSTMENT

Window Height Set

1. Slide the sunroof sunshade to the open position.
2. Adjust the sunroof to the fully closed position.
3. Loosen the sunroof window panel screws.

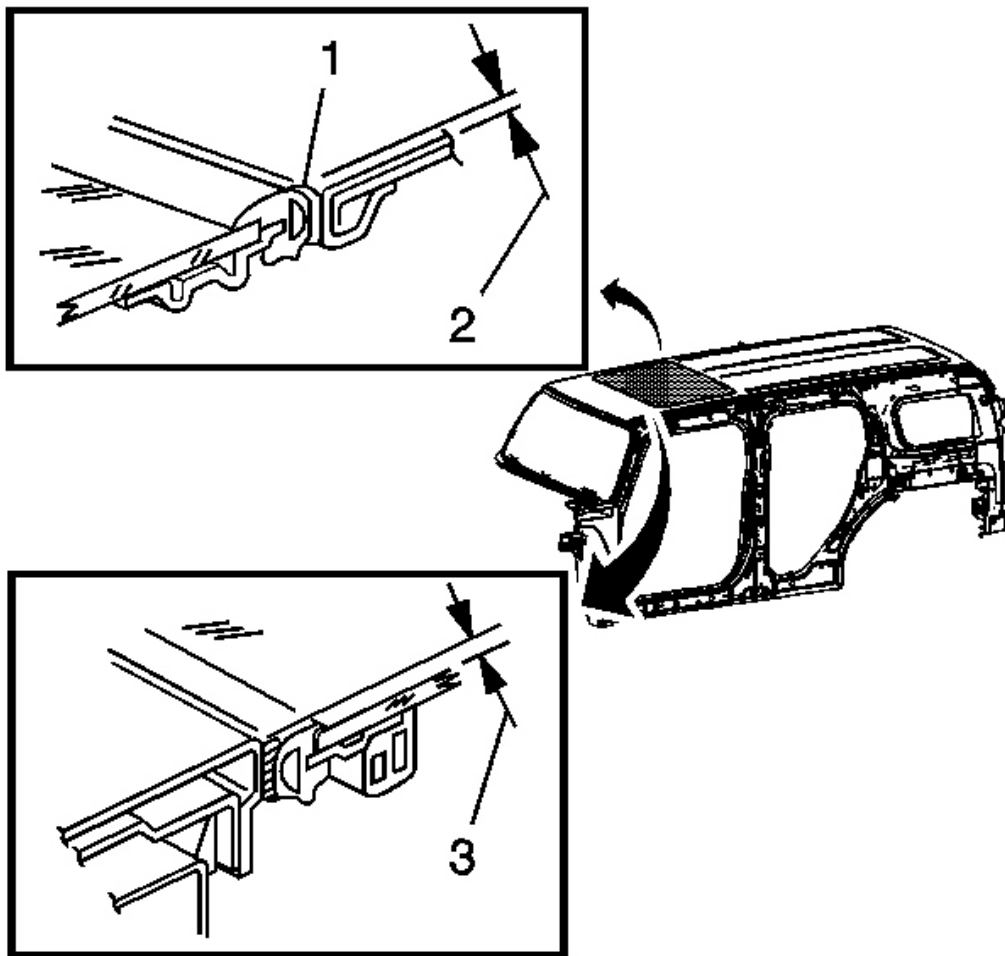


Fig. 16: Setting Sunroof Window Height
Courtesy of GENERAL MOTORS CORP.

4. Individually adjust the 4 corners of the sunroof window panel.
5. Adjust the front of the sunroof window panel to 0.5 mm (0.020 in) below the top surface (3) of the roof panel.

6. Adjust the rear of the sunroof window panel to 0.5 mm (0.020 in) above the top surface (2) of the roof panel.

NOTE: Refer to Fastener Notice .

7. Tighten the sunroof window panel screws.

Tighten: Tighten the sunroof window panel screws to 4 N.m (35 lb in).

8. Close the sunshade.

Drain Hose Routing

A drain trough encircles the sunroof window panel and water is drained off by the drain hoses located at each corner of the housing. A drain channel spans across the sunroof module at the rear of the window panel and directs water into the trough.

1. Check to ensure the front drain hoses are routed down the windshield pillars and out the center of the pillar between the door hinges. Make sure the hoses are not kinked.
2. Check to ensure the rear drain hoses are routed through the rear pillars and out of the rocker panel. Make sure the rear hoses are properly routed in the metal roof slot and taped in place.

Plugged Drain Hose

If a waterleak has occurred check for a plugged drain hose at each corner of drainage system.

1. Open the sunroof window.
2. To test for blockage, pour a small container of water into the module housing drain trough. Check each corner to confirm the drain hose is draining water.

CAUTION: Wear safety glasses in order to avoid eye damage.

3. Use compressed air, 241 kPa (35 psi) or less to blow out any drain hose that is plugged.
4. Test the system again.
5. If the hose remains plugged, check to see it is properly routed and does not have a kink. Refer to Drain Hose Routing.
6. Remove the blockage using the following steps.
 1. Push mechanics wire through the hose to remove the obstruction.

2. Use compressed air in order to blow out any remaining material.

Disconnected Drain Hose

Inspect the drainage system for disconnected drain hoses. Complete the following steps in order to obtain partial access to drain hoses and check for a disconnected hose.

1. Open the sunroof window panel.
2. Lower the headliner as needed. Refer to **Headlining Trim Panel Replacement** .
3. Connect any disconnected hoses.
4. Ensure that the rear drain hoses are properly routed in the metal roof slot and taped in place.

SUNROOF WINDOW REPLACEMENT

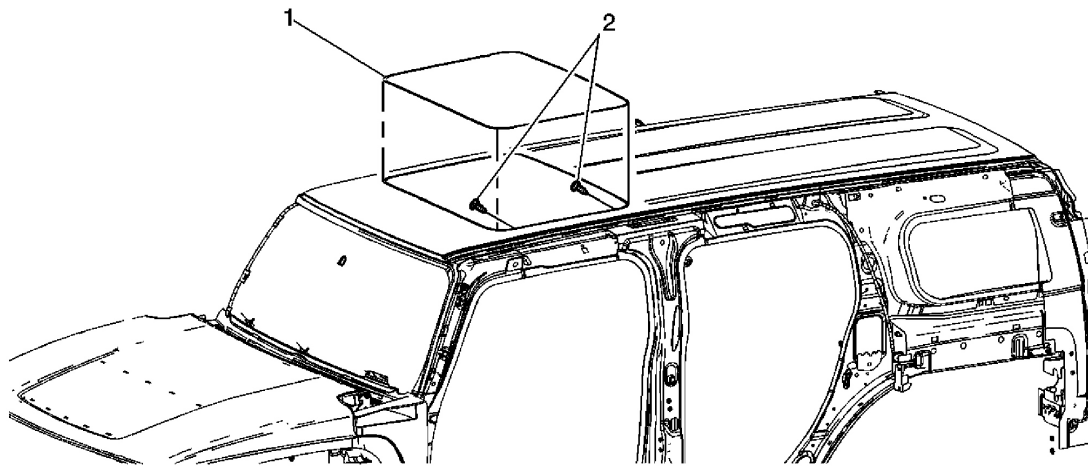


Fig. 17: Sunroof Window Replacement
 Courtesy of GENERAL MOTORS CORP.

Sunroof Window Replacement

Callout	Component Name
<p>NOTE: Refer to <u>Fastener Notice</u> .</p>	
<p>Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u>.</p>	
	<p>Screws, Sunroof Window (Qty: 4) Tip:</p> <ol style="list-style-type: none"> 1. Open the sunshade.

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1	2. Open the sunroof window. 3. Screws are located on the inside edge of each corner of the window. Tighten: 4 N.m (35 lb in)
2	Window, Sunroof Tip: Remove the window from the outside the vehicle.

DESCRIPTION AND OPERATION

SUNROOF DESCRIPTION AND OPERATION

The power sunroof is controlled by the sunroof switch through the open and close motor control circuits. Ignition voltage is supplied to the sunroof switch through the retained accessory power (RAP) relay and the sunroof 20A fuse in the underhood BEC. While the sunroof switch is in an inactive state both switch contacts are closed to the sunroof switch ground circuit. When an open or close button is pressed on the sunroof switch, its switch contact is closed to the voltage supply circuit. The motor is bi-directional and the direction of motor rotation is determined by which of the motor control circuits is switched to positive voltage while the other remains grounded.