

ACCESSORIES & EQUIPMENT Sunroof - Escalade, Suburban, Tahoe, Yukon

SPECIFICATIONS

FASTENER SPECIFICATIONS

Application	Specification	
	Metric	English
Sunroof Air Deflector Bolts	1.5-2.5 N.m	18-22 lb in
Sunroof Actuator Motor Bolts	9 N.m	80 lb in
Sunroof Drain Rear Spigot Screws	1.5 N.m	13 lb in
Sunroof Frame Bolts	9 N.m	80 lb in
Sunroof Module Bracket Screws	5 N.m	44 lb in
Sunroof Switch Fasteners	0.57 N.m	5 lb in
Sunroof Window Bolts	5 N.m	44 lb in

SCHEMATIC WIRING DIAGRAMS

SUNROOF SCHEMATICS

Sunroof (CF5)

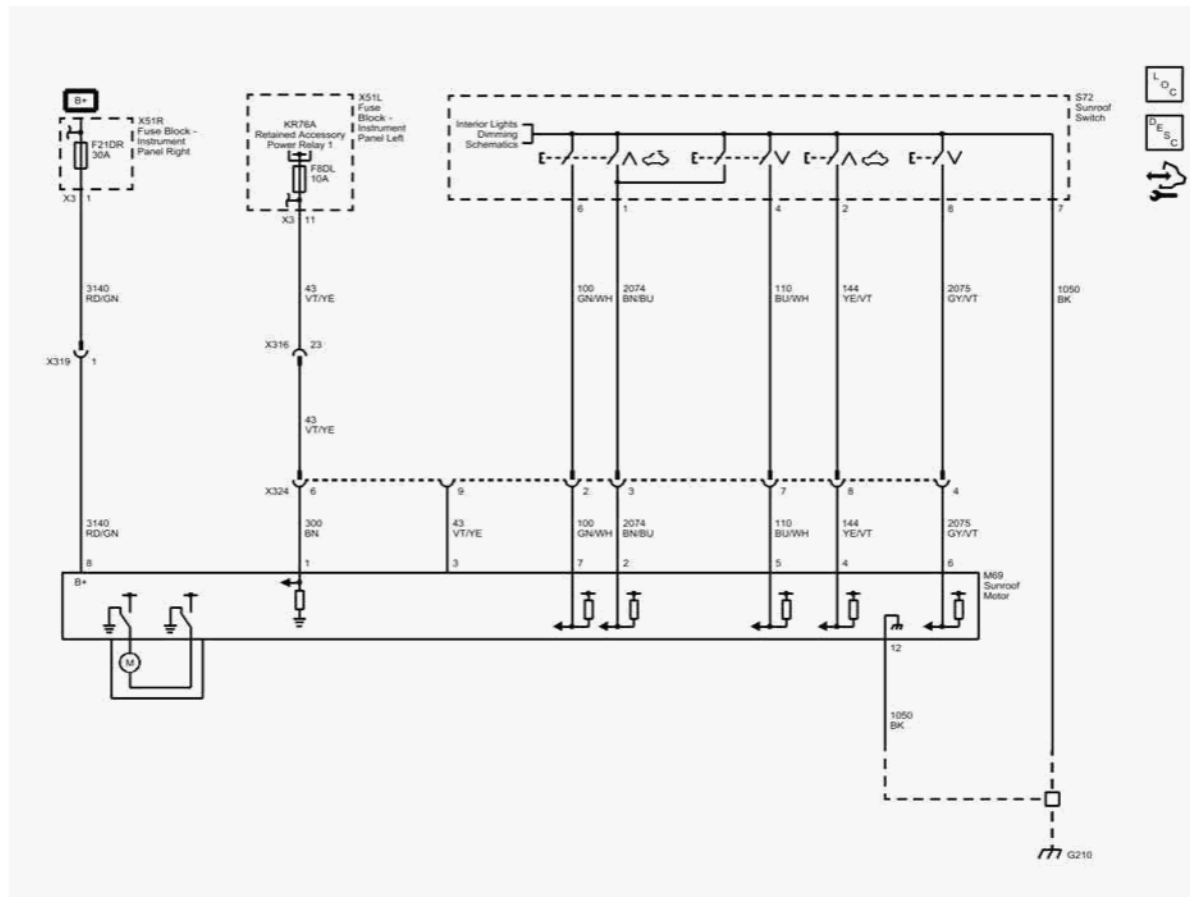


Fig. 1: Sunroof (CF5)

Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

SYMPTOMS - ROOF

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

1. Perform the **Diagnostic System Check - Vehicle** 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.

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](#).
- 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](#).

Symptom List

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

- [Power Sunroof Malfunction](#)
- [Retained Accessory Power Description and Operation \(Without BTM\)](#) [Retained Accessory Power Description and Operation \(With BTM\)](#), if the power sunroof should operate longer than the retained accessory power (RAP) time-out.

POWER SUNROOF MALFUNCTION

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.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+	1	1	-	-
Ignition	1	1	2	Â
Switch Signal	1	1	1	-
Switch Low Reference	-	1	1	-
Sunroof Module Ground	-	1	1	-

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
1. Power sunroof malfunction 2. Sunroof operates all the time				

Circuit/System Description

The sunroof motor is supplied with B+ and ignition voltage through the retained accessory power relay. The signal circuits are pulled high in the module and are pulled to ground when the appropriate sunroof switch button is pressed.

Diagnostic Aids

- The sunroof glass is controlled by an integrated motor/controller containing the motor, electronics, and position sensors. If the motor and sunroof mechanism get out of sync the sunroof may operate erratically. To re-synchronize the motor and sunroof mechanism, perform the [Sunroof Motor/Actuator Initialization/Teach Process](#).
- The sunroof motor/controller provides obstacle/blockage detection. If the [Sunroof Motor/Actuator Initialization/Teach Process](#) is not carried out completely, the sunroof may stop and reverse slightly when it gets to the location where it needs to push down the windscreen. Make sure to complete the process.

Reference Information

Schematic Reference

[Sunroof Schematics](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX](#)

Description and Operation

[Sunroof Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)

- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

1. Perform the sunroof motor initialization procedure. Refer to [Sunroof Motor/Actuator Initialization/Teach Process](#).
2. Ignition ON.
3. Verify the sunroof opens and closes when pressing the open and close sunroof switch.
 - **If the sunroof does not open or close**
Refer to Circuit/System Testing.
 - **If the sunroof opens and closes**
4. Verify the sunroof opens and closes to the vent position when pressing the open and close sunroof vent switch.
 - **If the sunroof does not open or close to the vent position**
Refer to Circuit/System Testing.
 - **If the sunroof opens and closes to the vent position**
5. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the M69 Sunroof Motor. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 12 and ground.
 - **If 10 Ω or greater**
 1. Ignition OFF, disconnect the harness connector at the M69 Sunroof Motor.
 2. Test for less than 2 Ω in the ground circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , repair the open/high resistance in the ground connection.

- **If less than 10 Ω**

3. Verify a test lamp illuminates between the B+ circuit terminal 8 and ground.

- **If test lamp does not illuminate and the circuit fuse is good**

1. Ignition OFF.

2. Test for less than 2 Ω in the B+ circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , verify the fuse is not open and there is voltage at the fuse.

- **If the test lamp does not illuminate and the circuit fuse is open**

1. Ignition OFF.

2. Test for infinite resistance between the B+ circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance, replace the M69 Sunroof Motor.

- **If the test lamp illuminates**

4. Ignition ON.

5. Verify a test lamp illuminates between the ignition circuit terminal 1 and ground.

- **If test lamp does not illuminate and the circuit fuse is good**

1. Ignition OFF.

2. Test for less than 2 Ω in the ignition circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , verify the fuse is not open and there is voltage at the fuse.

- **If the test lamp does not illuminate and the circuit fuse is open**

1. Ignition OFF.

2. Test for infinite resistance between the ignition circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance, replace the M69 Sunroof Motor.

- **If the test lamp illuminates**

6. Ignition OFF. Connect the harness connector at the M69 Sunroof Motor. Disconnect the harness connector at S72 Sunroof Switch. It may take up to 2 minutes for all vehicle systems to power down.

7. Test for less than 10 Ω between the ground circuit terminal 7 and ground.

- **If 10 Ω or greater**

1. Test for less than 2 Ω in the ground circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , repair the open/high resistance in the ground connection.

- **If less than 10 Ω**

8. Ignition ON.

9. Test for 10 - 12.3 V between the following signal circuit terminals and ground:

- Terminal 1
- Terminal 2
- Terminal 4
- Terminal 6
- Terminal 8

- **If less than 10 V**

1. Ignition OFF, disconnect the harness connector at the M69 Sunroof Motor.

2. Test for infinite resistance between the appropriate signal circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance

3. Test for less than 2 Ω in the appropriate signal circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , replace the M69 Sunroof Motor.

- **If greater than for 12.3 V**

1. Ignition OFF, disconnect the harness connector at the M69 Sunroof Motor, ignition ON.

2. Test for less than 1 V between the signal circuit and ground.

- If 1 V or greater, repair the short to voltage on the circuit.
- If less than 1 V, replace the M69 Sunroof Motor.

- **If between 10-12.3 V**

10. Test or replace the S72 Sunroof Switch.

Component Testing

1. Ignition OFF, disconnect the harness connector at the S72 Sunroof Switch.
2. Test for infinite resistance between the following signal circuit terminals and ground with the switch in the open position.
 - Terminal 1
 - Terminal 2
 - Terminal 4
 - Terminal 6
 - Terminal 8
 - **If less than infinite resistance**

Replace the S72 Sunroof Switch.
 - **If infinite resistance**
3. Test for less than 5 Ω between the signal terminal 1 and the ground terminal 7 with the sunroof open express or sunroof close express switch pressed.
 - **If 5 Ω or greater**

Replace the S72 Sunroof Switch.
4. Test for less than 5 Ω between the signal terminal 2 and the ground terminal 7 with the vent open switch pressed.
 - **If 5 Ω or greater**

Replace the S72 Sunroof Switch.
 - **If less than 5 Ω**
5. Test for less than 5 Ω between the signal terminal 4 and the ground terminal 7 with the sunroof close switch pressed.
 - **If 5 Ω or greater**

Replace the S72 Sunroof Switch.
 - **If less than 5 Ω**
6. Test for less than 5 Ω between the signal terminal 6 and the ground terminal 7 with the sunroof open switch pressed.
 - **If 5 Ω or greater**

Replace the S72 Sunroof Switch.

- **If less than 5 Ω**

7. Test for less than 5 Ω between the signal terminal 8 and the ground terminal 7 with the vent close switch pressed.

- **If 5 Ω or greater**

Replace the S72 Sunroof Switch.

- **If less than 5 Ω**

8. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Sunroof Actuator Motor Replacement**
- **Sunroof Switch Replacement**

REPAIR INSTRUCTIONS

SUNROOF PANEL SIDE OPENING CLOSEOUT COVER REPLACEMENT

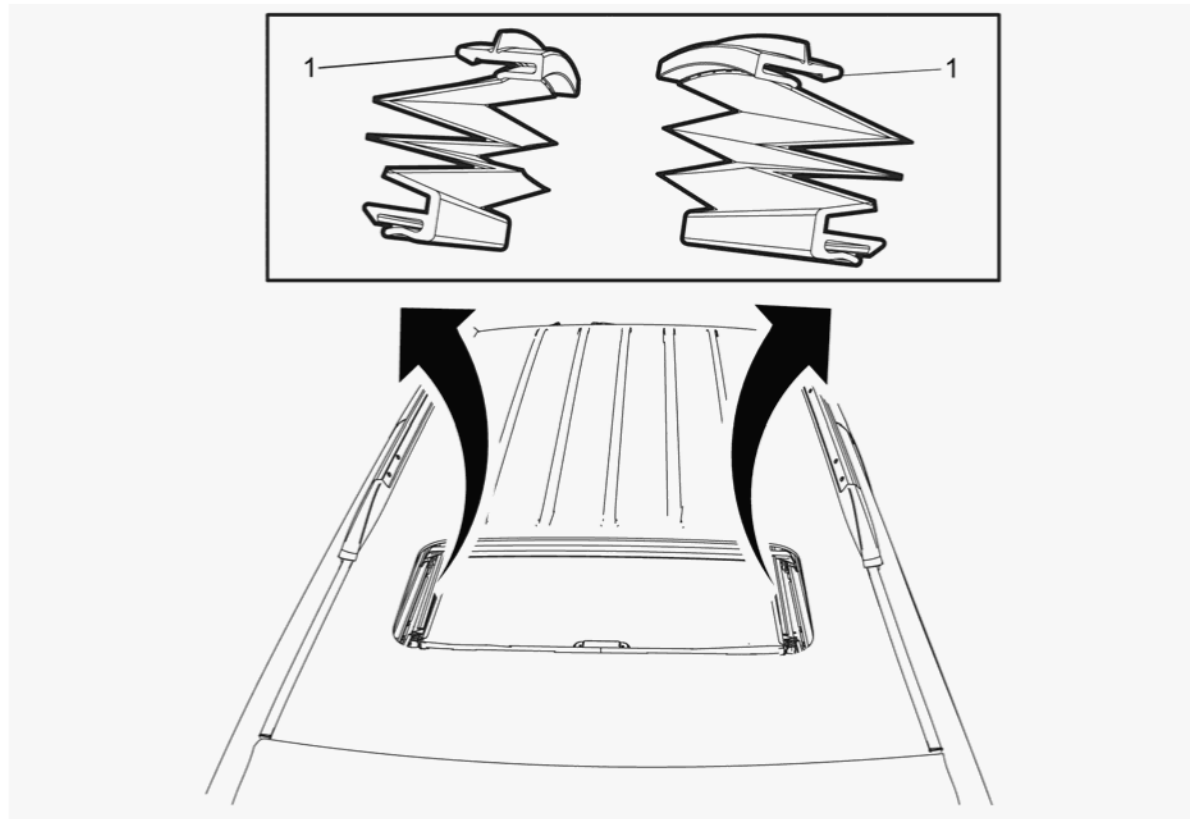


Fig. 2: Sunroof Panel Side Opening Closeout Cover

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Slide the sunshade to the full open position.	
1	Sunroof Panel Side Opening Closeout Cover (Qty: 2) Procedure Pull inboard on the lower edge of the cover to release it from the top of the track, then pull inboard on the top edge to release from the window reinforcement.

SUNROOF AIR DEFLECTOR REPLACEMENT

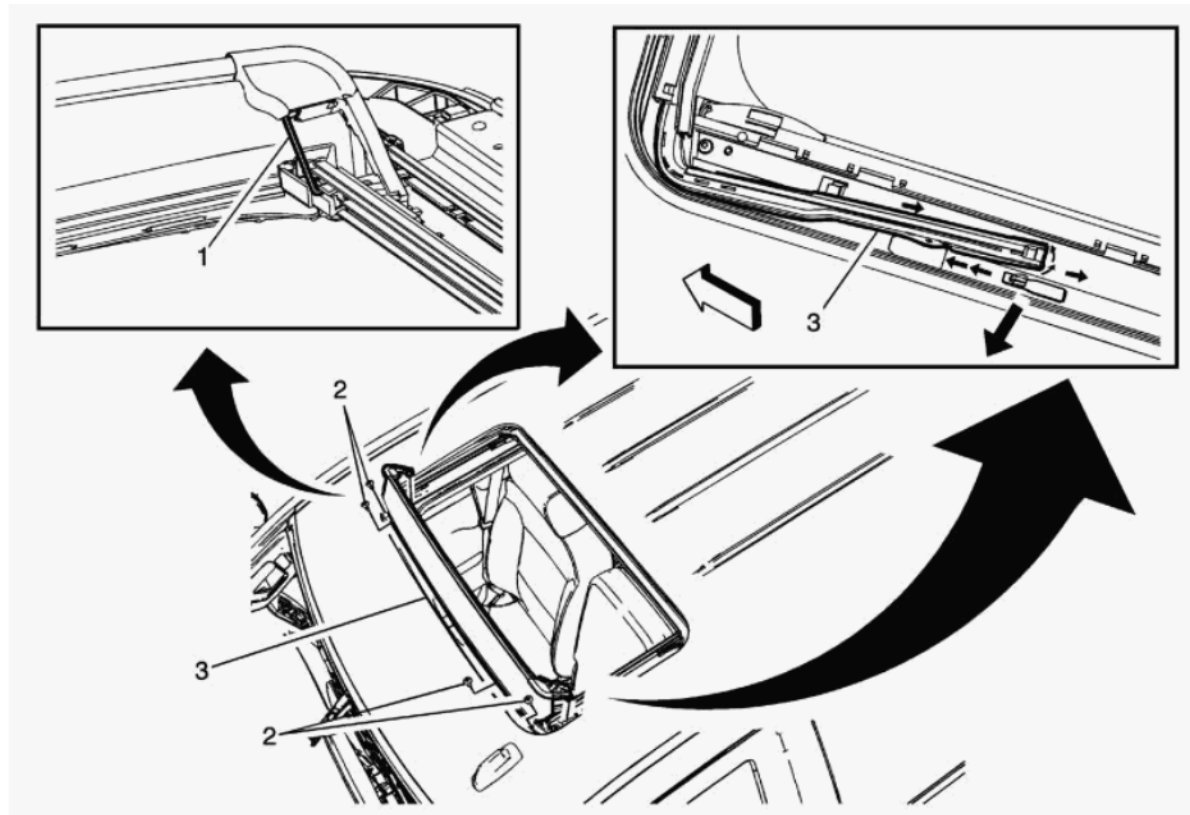


Fig. 3: Sunroof Air Deflector

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Lower the sunroof frame. Refer to Sunroof Frame Replacement .	
1	Sunroof Air Deflector Rear Bracket (Qty: 2) Procedure 1. Place the sunroof window in full open position. 2. Remove the two front springs at the corners of the air deflector while pulling inboard at the lower spring until it disengages from the sunroof tracks.

Callout	Component Name
2	Sunroof Air Deflector Bolt (Qty: 4) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 1.5 - 2.5 N.m (18 - 22 lb in)
3	Sunroof Air Deflector Procedure 1. Rotate the air deflector rearward about 95 degrees until it disengages from the sunroof tracks. 2. Install the air deflector in the sequence listed below. 1. Install the air deflector to the sunroof tracks. 2. Install the two front springs at the corners of the air deflector. 3. Then rotate the air deflector forward about 95 degrees until the lower arms line up with the sunroof tracks. 4. Install the four air deflector screws. NOTE: Verify the operation of the sunroof window to the deflector to ensure no binding.

SUNROOF DRAIN INSPECTION AND CLEANING

Drain Hose Routing

NOTE: If the headliner is wet **DO NOT** remove any interior trim. Do the **Plugged Drain Hose** test first.

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. The front drain hoses are routed down the windshield pillars and out the center of the pillar between the door hinges. The front hoses are installed in a rubber grommet and retained by clips.
2. The rear drain hoses are routed through the rear pillars and out of the rocker panel. In some vehicle the drain hoses are routed out through the metal roof slots and routed to the lower wheelhouse to drain out of the vehicle. The rear hoses are installed in a rubber grommet and retained by clips.

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.

WARNING: 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 [Sunroof Housing Front Drain Hose Replacement](#), or [Sunroof Housing Rear Drain Hose Replacement \(Passenger Side\)](#)[Sunroof Housing Rear Drain Hose Replacement \(Driver Side\)](#).
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 \(Standard Wheelbase\)](#) [Headlining Trim Panel Replacement \(Extended Wheelbase\)](#) .
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 FRAME REPLACEMENT

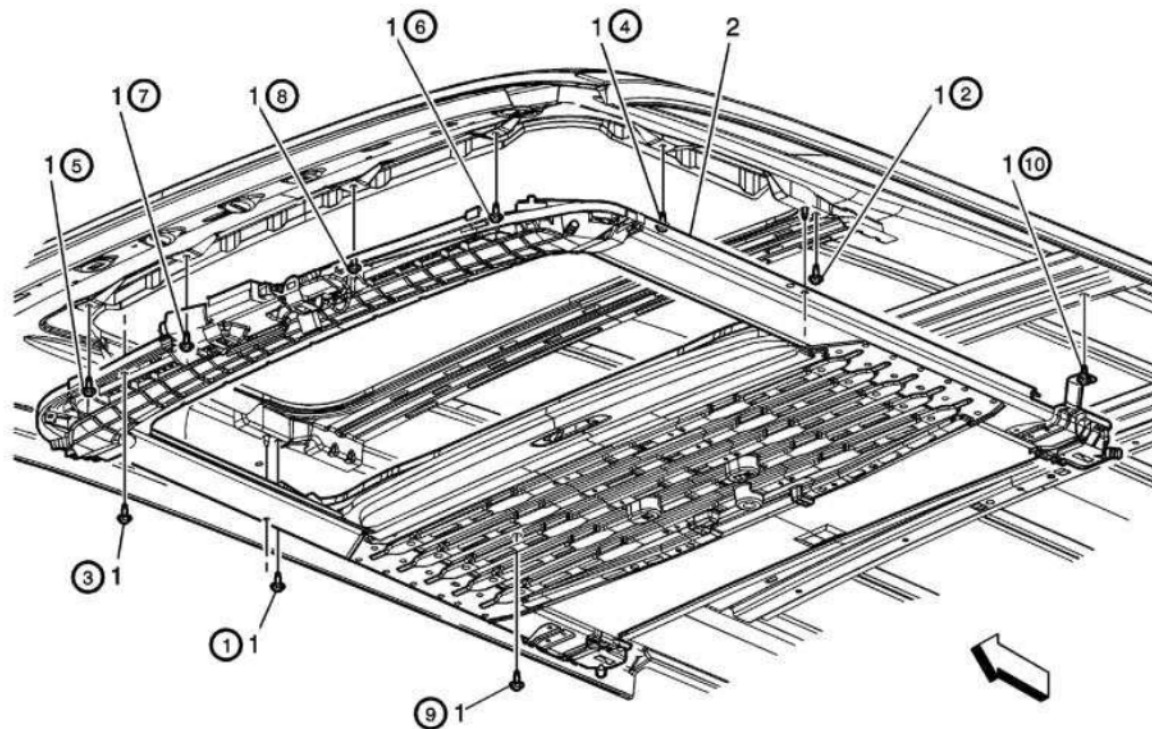


Fig. 4: Sunroof Frame

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	
1. Remove the sunroof window. Refer to Sunroof Window Replacement .	

Callout	Component Name
	2. Lower the headliner as needed. Refer to Headlining Trim Panel Replacement (Standard Wheelbase) Headlining Trim Panel Replacement (Extended Wheelbase) . 3. Disconnect the electrical connector.
1	Sunroof Frame Bolt (Qty: 10) CAUTION: Refer to Fastener Caution Procedure 1. Remove the drain hoses from each side of the sunroof housing front drain hose spigots. 2. Remove the drain hoses from each side of the sunroof housing rear drain hose spigots. 3. With an assistant, remove the sunroof frame from the vehicle. NOTE: 8 out of the 10 bolts have a push on nut to retain the bolts to the sunroof frame. Replace nuts as required, if damaged. Tighten 9 N.m (80 lb in)

Callout	Component Name
2	Sunroof Frame Procedure Transfer all necessary components. NOTE: When tightening the bolts, follow the mandatory sequence.

SUNROOF MODULE BRACKET REPLACEMENT

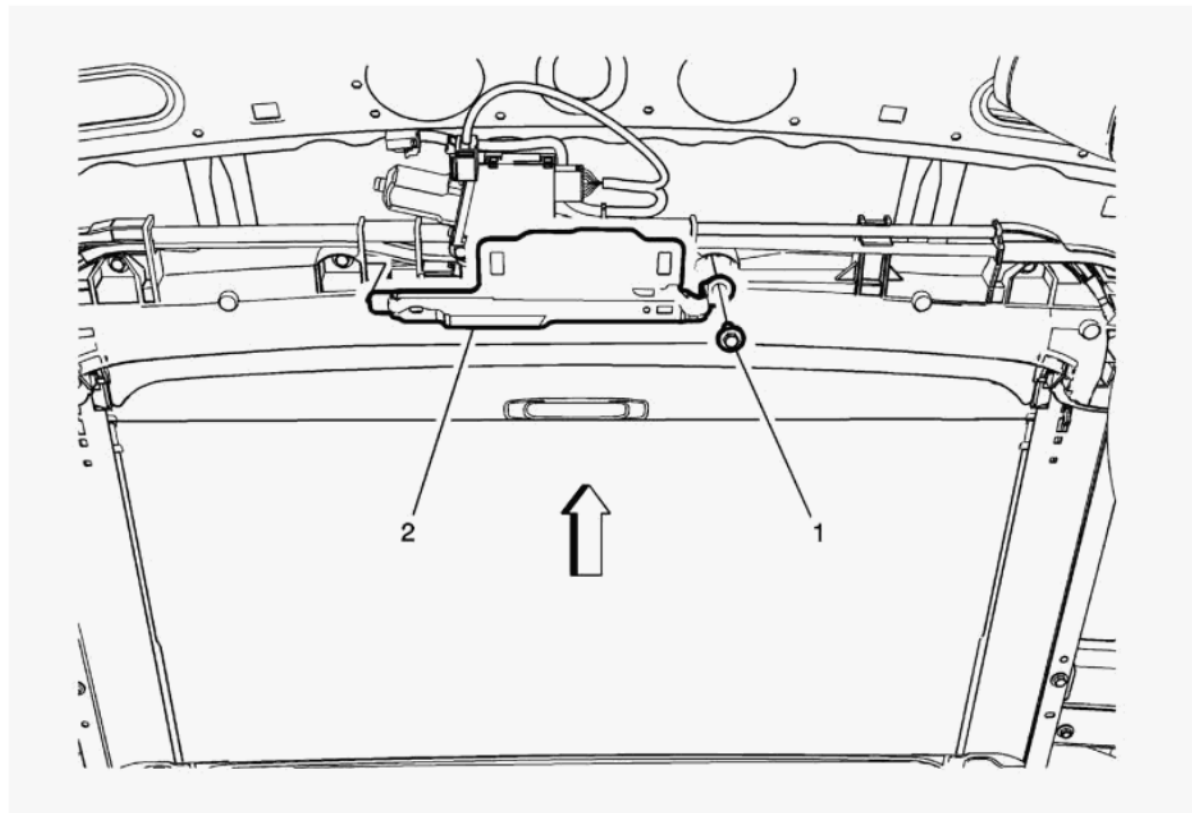


Fig. 5: Sunroof Module Bracket

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Sunroof Module Bracket Screw CAUTION: Refer to <u>Fastener Caution</u> . Procedure Remove the left side screw from the bracket. Tighten 5 N.m (44 lb in)
2	Sunroof Module Bracket Procedure Carefully swing the bracket downward to release the right side from the module.

SUNROOF HOUSING DRAIN GUTTER REPLACEMENT

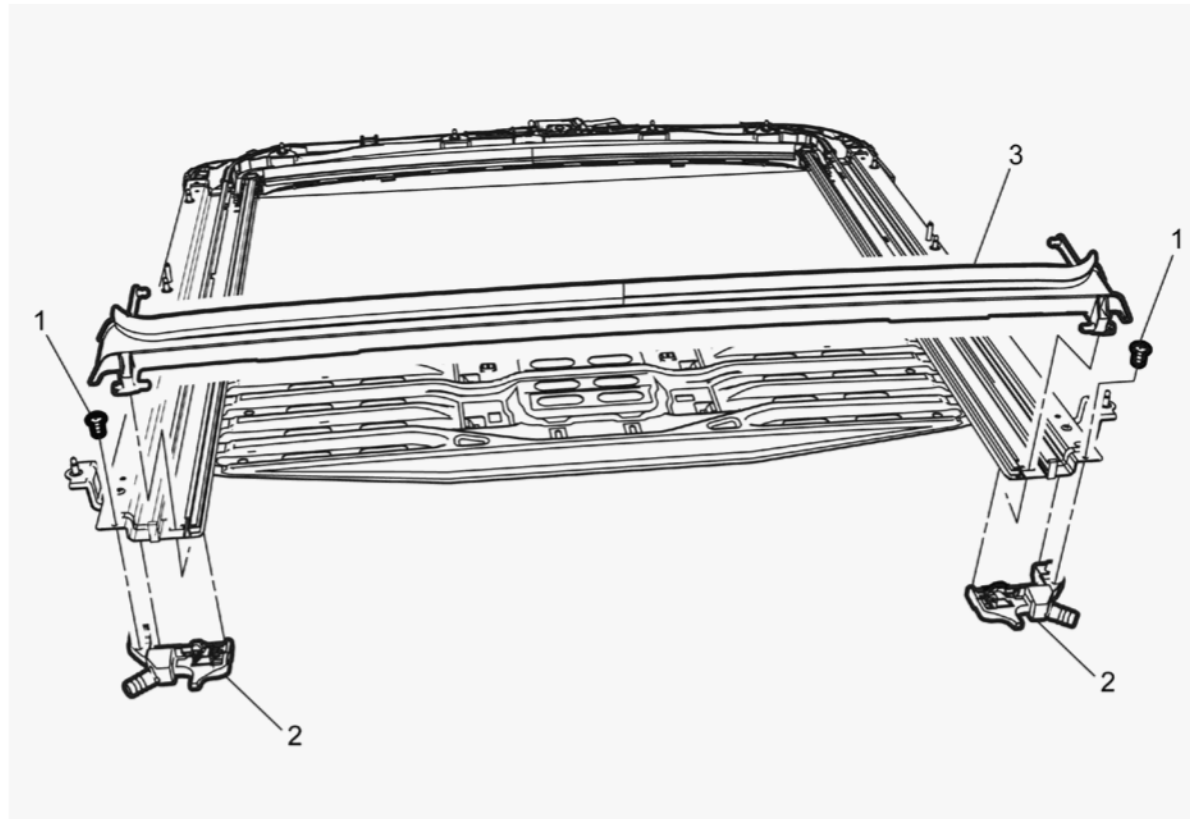


Fig. 6: Sunroof Housing Drain Gutter

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove sunroof frame. Refer to Sunroof Frame Replacement .	
1	Sunroof Drain Rear Spigot Screw (Qty: 2) CAUTION: Refer to Fastener Caution .

Callout	Component Name
	Tighten: 1.5 N.m (13 lb in)
2	Sunroof Drain Rear Spigot (Qty: 2) NOTE: Ensure that the gasket sealing surface is intact and undamaged. Repair as necessary.
3	Sunroof Housing Drain Gutter Procedure 1. Slide the sunroof housing drain gutter from the sunroof frame. 2. Verify sunroof window height and opening fit adjustment. Refer to Sunroof Window Height and Opening Fit Adjustment.

SUNROOF HOUSING FRONT DRAIN HOSE REPLACEMENT

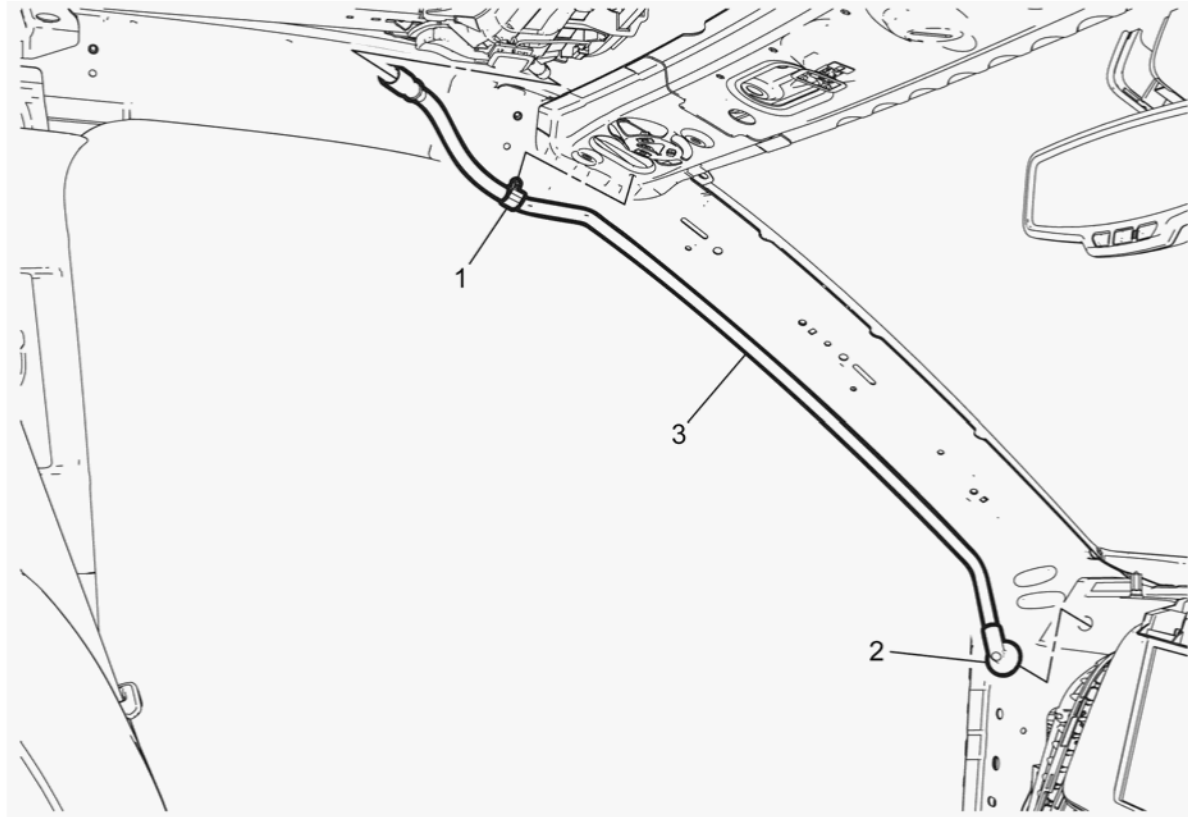


Fig. 7: Sunroof Housing Front Drain Hose

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Lower the front section of the headliner, as needed. Refer to Headlining Trim Panel Replacement (Standard Wheelbase) Headlining Trim Panel Replacement (Extended Wheelbase) . 2. Remove the side window defogger outlet outer duct. Refer to Side Window Defogger Outlet Outer Duct Replacement - Left Side (W/O HUD UV6) Side Window Defogger Outlet Outer Duct Replacement - Left Side (UV6 HUD) , or Side Window Defogger Outlet Outer Duct Replacement - Right Side .	
1	Sunroof Housing Front Clip Retainer

Procedure

Callout	Component Name
	Remove the retainer clip from the side of the A pillar.
2	Sunroof Housing Front Drain Hose Grommet Procedure Reposition the dash panel inner insulator flap to access the hose grommet. NOTE: 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	Sunroof Housing Front Drain Hose Procedure Disconnect the drain hose from the sunroof module by pulling hose forward from module.

SUNROOF HOUSING REAR DRAIN HOSE REPLACEMENT (PASSENGER SIDE)

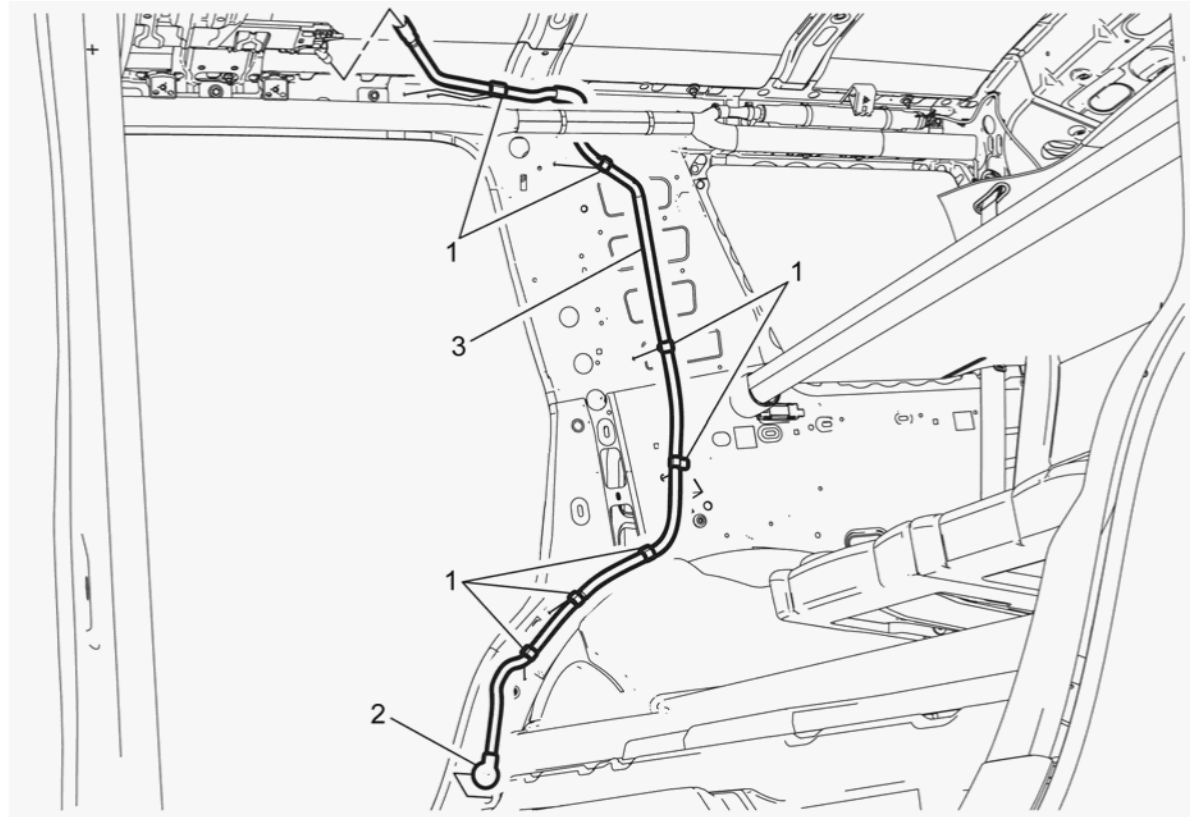


Fig. 8: Sunroof Housing Rear Drain Hose (Passenger Side)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	
1. Lower the rear section of the headliner, as needed. Refer to <u>Headlining Trim Panel Replacement (Standard Wheelbase)</u> <u>Headlining Trim Panel Replacement (Extended Wheelbase)</u> . 2. Remove the quarter lower rear trim panel. Refer to <u>Quarter Lower Rear Trim Panel Replacement (Left Side, Standard Wheelbase)</u> <u>Quarter Lower Rear Trim Panel Replacement (Right Side, Standard Wheelbase)</u> <u>Quarter Lower Rear Trim Panel Replacement (Left Side, Extended Wheelbase)</u> <u>Quarter Lower Rear Trim Panel Replacement (Right Side, Extended Wheelbase)</u> .	

Callout	Component Name
1	Sunroof Housing Rear Drain Hose Retainer (Qty: 7) Procedure Remove the retainer clips from the vehicle.
2	Sunroof Housing Rear Drain Hose Grommet NOTE: Use care when removing the drain hose grommet end from the body lock lower pillar. The grommet presses in and pulls out of the body lock lower pillar.
3	Sunroof Housing Rear Drain Hose Procedure Disconnect the drain hose from the sunroof module by pulling hose rearward from module.

SUNROOF HOUSING REAR DRAIN HOSE REPLACEMENT (DRIVER SIDE)

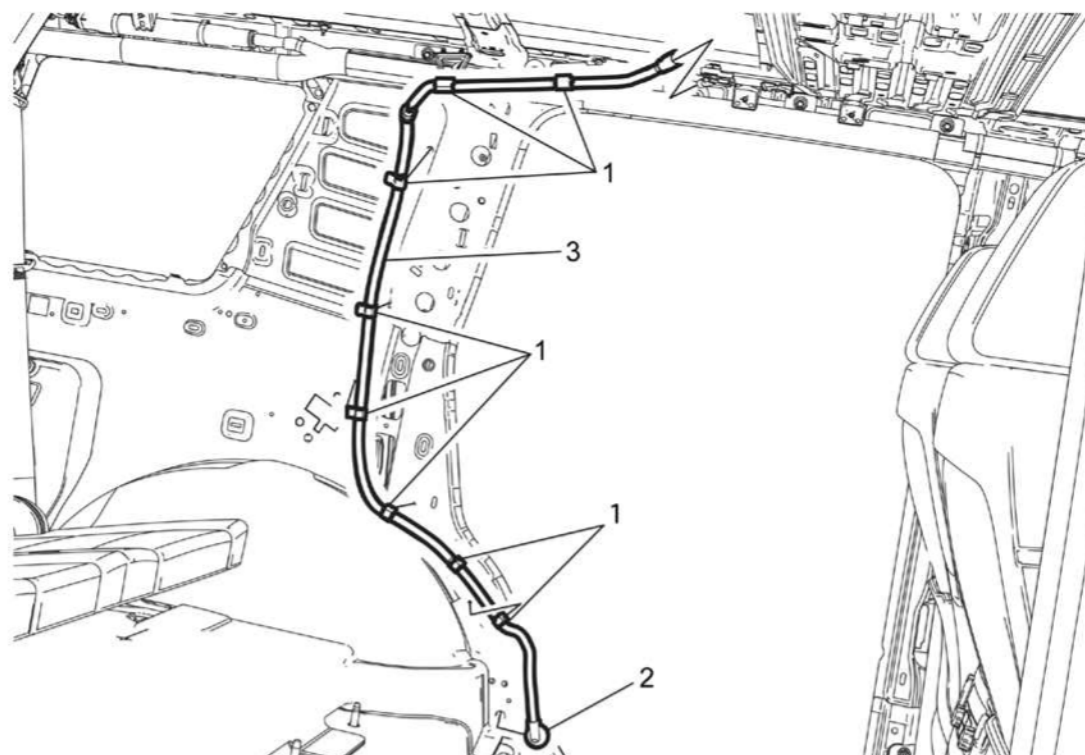


Fig. 9: Sunroof Housing Rear Drain Hose (Driver Side)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	
1.	Lower the rear section of the headliner, as needed. Refer to Headlining Trim Panel Replacement (Standard Wheelbase) Headlining Trim Panel Replacement (Extended Wheelbase) .
2.	Remove the quarter lower rear trim panel. Refer to Quarter Lower Rear Trim Panel Replacement (Left Side, Standard Wheelbase) Quarter Lower Rear Trim Panel Replacement (Right Side, Standard Wheelbase) Quarter Lower Rear Trim Panel Replacement (Left Side, Extended Wheelbase) Quarter Lower Rear Trim Panel Replacement (Right Side, Extended Wheelbase) .

Callout	Component Name
1	Sunroof Housing Rear Drain Hose Retainer (Qty: 8) Procedure Remove the retainer clips from the vehicle.
2	Sunroof Housing Rear Drain Hose Grommet NOTE: Use care when removing the drain hose grommet end from the body lock lower pillar. The grommet presses in and pulls out of the body lock lower pillar.
3	Sunroof Housing Rear Drain Hose Procedure Disconnect the drain hose from the sunroof module by pulling hose rearward from module.

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 in vent location. After the sunroof reaches the vent position, release the vent switch and press and hold the vent switch again for approximate 10 seconds. Notice the rear edge of the sunroof mechanism will move, after the movement ends the Initialization/Teach Process is complete.

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

IMPORTANT:

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 ACTUATOR MOTOR REPLACEMENT

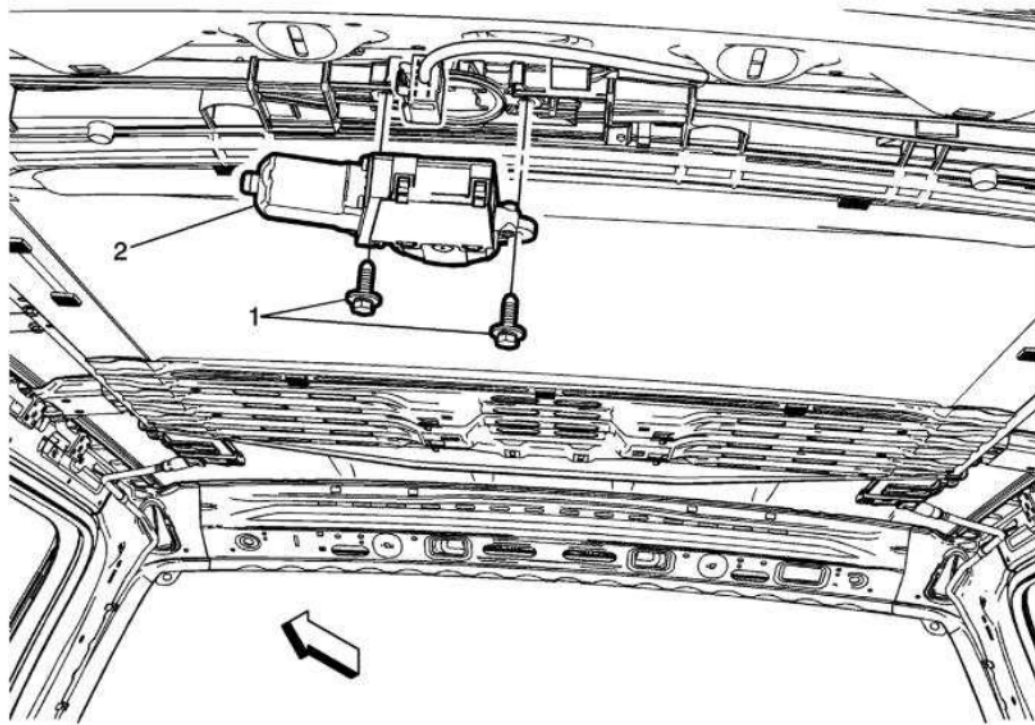


Fig. 10: Sunroof Actuator Motor

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the sunroof module bracket. Refer to Sunroof Module Bracket Replacement .	
1	Sunroof Actuator/Motor Bolts (Qty: 2) CAUTION: Refer to Fastener Caution .

Callout	Component Name
	Tighten 9 N.m (80 lb in)
2	Sunroof Actuator/Motor Procedure 1. Disconnect the electrical connector. 2. Pull downward to disengage the actuator/motor from the sunroof module. 3. It will be necessary to reattach the motor. Refer to Sunroof Motor/Actuator Initialization/Teach Process .

SUNROOF SUNSHADE REPLACEMENT

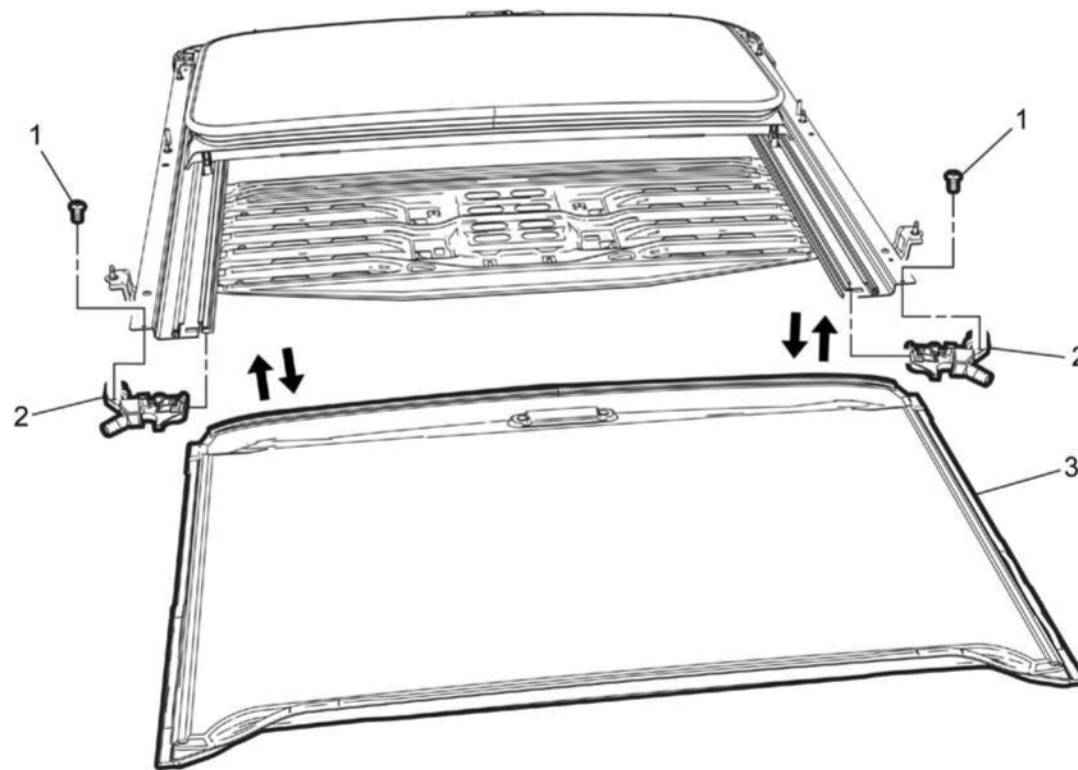


Fig. 11: Sunroof Sunshade

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove sunroof frame. Refer to Sunroof Frame Replacement .	
1	Sunroof Drain Rear Spigot Screw (Qty: 2) CAUTION: Refer to Fastener Caution . Tighten: 1.5 N.m (13 lb in)
2	Sunroof Drain Rear Spigot (Qty: 2)
3	Sunroof Sunshade NOTE: - It will be necessary to slightly raise the gutter assembly to allow clearance for the sunshade to slide out of the sunroof frame. - Slide rearward to

Callout	Component Name
	remove the sunshade from the sunroof frame. • Ensure that the gasket sealing surface is intact and undamaged. Repair as necessary.

SUNROOF WINDOW SEAL REPLACEMENT

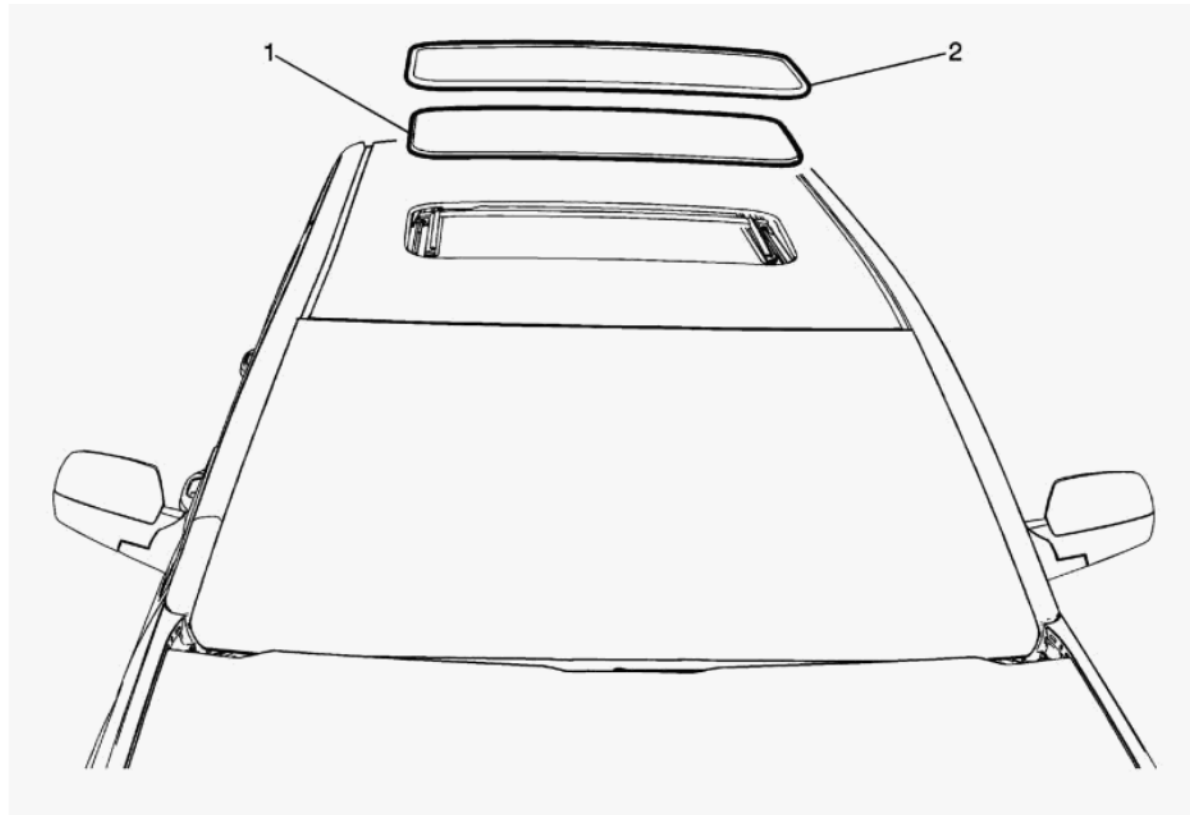


Fig. 12: Sunroof Window Seal

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures Remove the sunroof window. Refer to Sunroof Window Replacement .	
1	Sunroof Window
2	Sunroof Window Seal Procedure 1. Carefully remove the sunroof window seal from the sunroof window. 2. Carefully install the sunroof window seal to the sunroof window ensuring that the seal is fully seated. 3. Sunroof window height and opening fit adjustment. Refer to Sunroof Window Height and Opening Fit

Callout	Component Name
	<u>Adjustment.</u> 4. Ensure that the sunroof does not have any air or waterleaks.

SUNROOF SWITCH REPLACEMENT

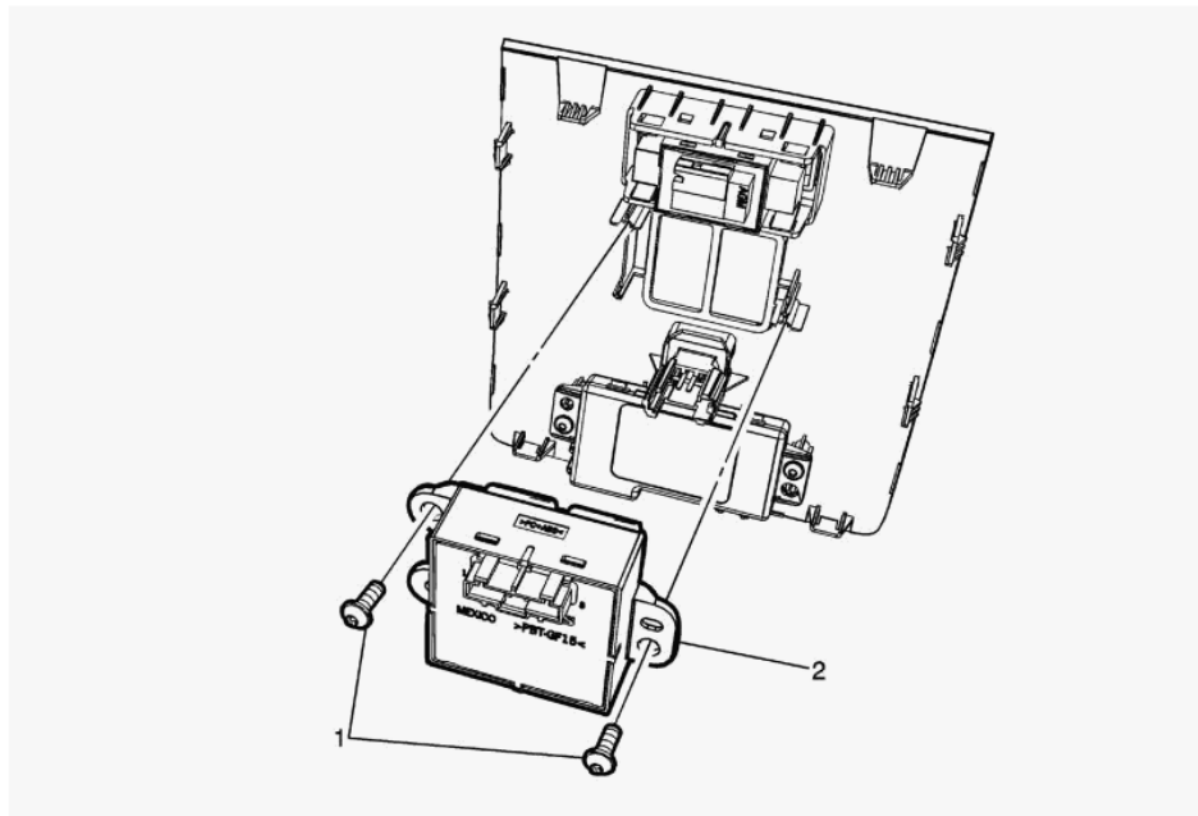


Fig. 13: Sunroof Switch

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the roof console opening trim plate. Refer to <u>Roof Console Opening Trim Plate Replacement</u> .	

Callout	Component Name
1	Sunroof Switch Fasteners (Qty: 2) CAUTION: Refer to <u>Fastener</u> <u>Caution</u> . Tighten 0.57 N.m (5 lb in)
2	Sunroof Switch

SUNROOF WINDOW HEIGHT AND OPENING FIT ADJUSTMENT

Window Height Set

1. Slide the sunroof sunshade to the open position.
2. Remove the sunroof panel side covers. Refer to [Sunroof Panel Side Opening Closeout Cover Replacement](#).
3. Cycle the sunroof to the fully closed position.
4. Loosen the sunroof window panel screws.

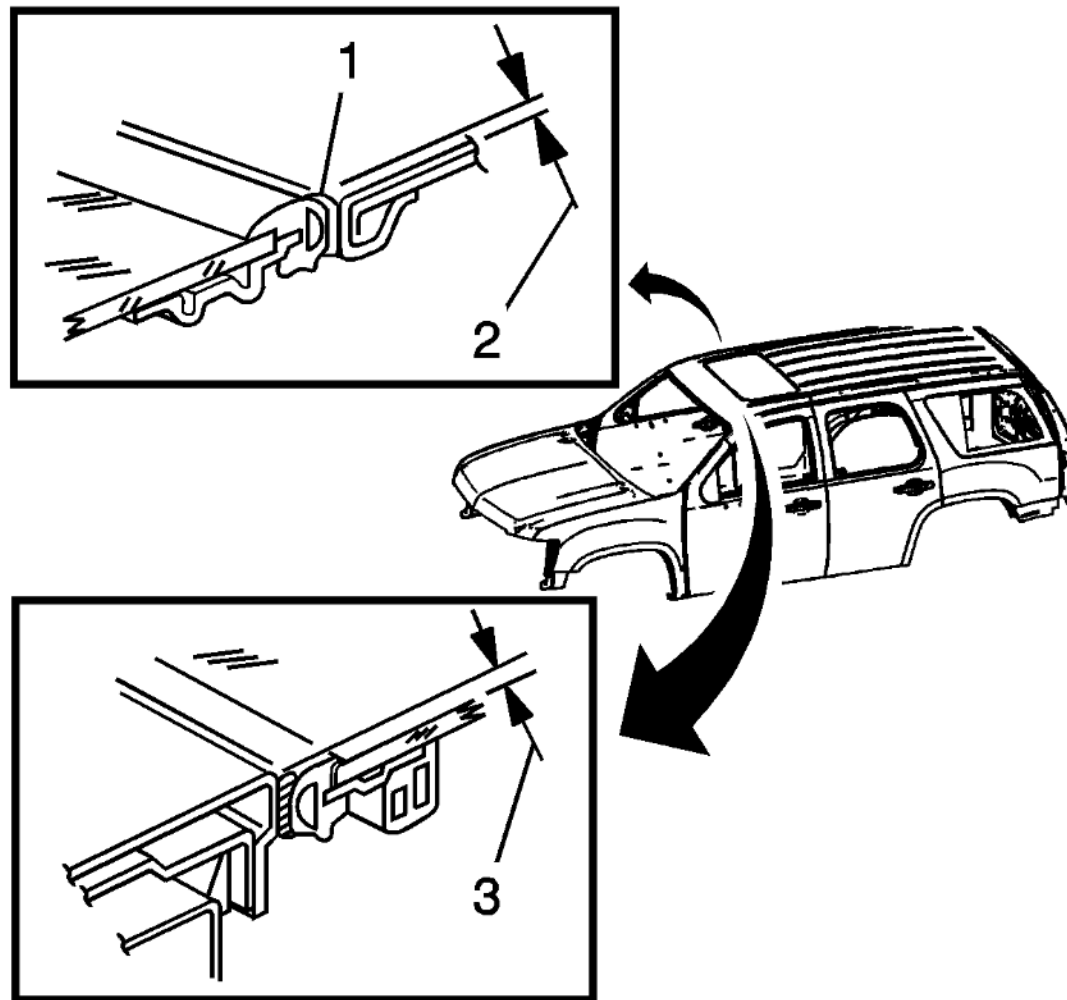


Fig. 14: Checking Corners Of Sunroof Window Panel

Courtesy of GENERAL MOTORS COMPANY

5. Individually adjust the 4 corners of the sunroof window panel.
6. Adjust the front of the sunroof window panel to 0.5 - 2.0 mm (0.020 - 0.080 in) below the top surface (3) of the roof panel.
7. Adjust the rear of the sunroof window panel to 0.5 - 2.0 mm (0.020 - 0.080 in) above the top surface (2) of the roof panel.

CAUTION: Refer to [Fastener Caution](#) .

8. Tighten the sunroof window panel screws.

Tighten

Tighten the sunroof window panel screws to 5 N.m (44 lb in).

9. Install the sunroof panel side covers. Refer to [Sunroof Panel Side Opening Closeout Cover Replacement](#).

10. Close the sunshade.

SUNROOF WINDOW REPLACEMENT

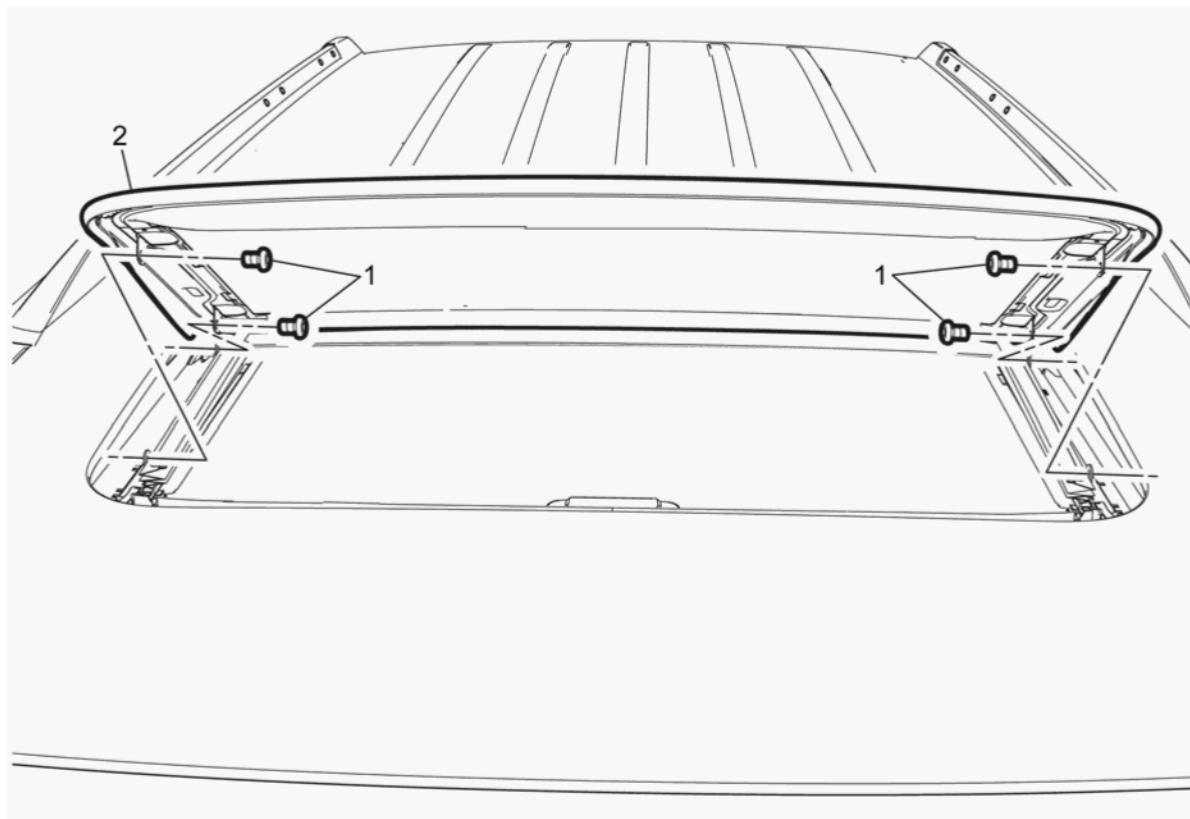


Fig. 15: Sunroof Window

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures - Slide the sunshade to the full open position. - Remove the sunroof panel side opening closeout cover. Refer to Sunroof Panel Side Opening Closeout Cover Replacement.	
1	Sunroof Window Screw (Qty: 4) CAUTION: Refer to Fastener Caution . Procedure Place the sunroof in the vent position to access the screws. Tighten 5 N.m (44 lb in)
2	Sunroof Window Procedure - Lift the sunroof window out of the frame, transfer the sunroof window seal. Refer to Sunroof Window Seal Replacement. - Sunroof window height and opening fit adjustment. Refer to Sunroof Window Height and Opening Fit Adjustment. - Water test to ensure that sunroof window and window seal is fitting properly in the close position.

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 30 A
- Body control module (BCM)

Power and Grounds

Battery positive voltage is supplied at all times to the sunroof control module assembly from the 30 A SUNROOF fuse located in the underhood fuse block. Ground is supplied to the sunroof control module through the module ground circuit and G200.

Ground is supplied to the sunroof switch through the switch ground circuit and G200.

Power Sunroof Operation

The power sunroof system will operate with the ignition switch turned to Accessory or RUN positions, this allows for retained accessory power (RAP) control of the sunroof through the BCM. 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 Description and Operation (Without BTM)** **Retained Accessory Power Description and Operation (With BTM)** .

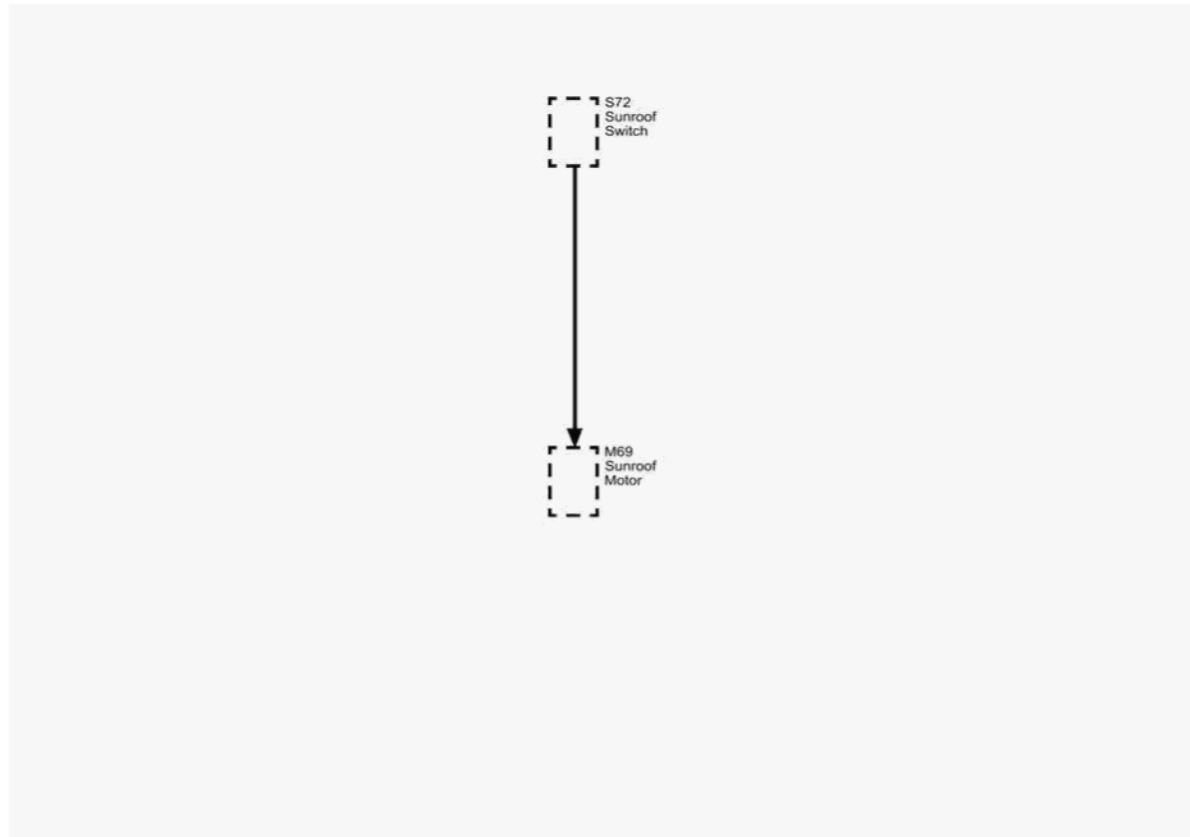


Fig. 16: Sunroof Block Diagram

Courtesy of GENERAL MOTORS COMPANY

Sunroof Switch

The sunroof switch, located in the front center of the headliner, contains two rocker type switches that are used to control the following sunroof functions:

- Roof express open/close
- Roof open/close
- Vent open/close

Express Open

The express open will only operate with the sunroof in the fully closed or partially open position. To express open the sunroof glass, momentarily

press the sunroof switch to the second rearward position once. This will apply the sunroof switch low reference circuit to both the sunroof switch express signal circuit and to the sunroof switch open signal circuit (12-volt references) inputs, pulling them to 0 volts momentarily. The momentary transition inputs to the sunroof module indicates an express open request. Once the express open has been initiated, the sunroof motor/module assembly will drive the motor in the open direction, slightly lowering the rear edge of the sunroof glass, then sliding open with the sunshade, allowing the wind deflector to raise upward. The sunroof glass will continue to express open until:

- The sunroof glass reaches the requested full open position.
- Activation of the sunroof switch (in any direction) to stop the sunroof glass in a desired position other than the express open position.
- Motor stall is sensed because the sunroof glass is being obstructed.
- The operation time-out expires, 15 seconds after the initiation of the express open feature has been requested.

To Open

Opening the sunroof can be done from any position between fully closed and partially open. To open the sunroof glass, press and hold the sunroof switch to the first rearward position. This will apply the sunroof switch low reference circuit to the sunroof switch open vent signal circuit (12-volt reference) input, pulling the reference voltage to 0 volts. The constant low (0 volts) input to the sunroof module indicates an open request. Once the open has been initiated, the sunroof motor/module assembly will drive the motor in the open direction, slightly lowering the rear edge of the sunroof glass, then sliding open with the sunshade, allowing the wind deflector to raise upward. The sunroof glass will continue to open until the sunroof motion is terminated by either:

- The sunroof glass reaches the full open position.
- Releasing of the sunroof switch. The sunroof may be left in any position between fully open and fully closed.

To Vent Open

Opening the sunroof glass, to the vent position, can be done when it is between fully closed and partially vent. To vent open, press and hold the sunroof vent switch rearward. This will apply the sunroof switch low reference circuit to the sunroof switch open vent signal circuit. Holding the sunroof switch in the vent position will cause the sunroof switch open vent signal circuit (12-volt reference) input to be pulled to 0 volts. The constant low input to the sunroof module indicates a vent request. Once the vent request has been initiated, the sunroof motor/module assembly will drive the motor in the closed direction (to vent position) until the sunroof motion is terminated by either:

- The sunroof glass reaches the full vent open position.
- Releasing the sunroof switch.

Closing to the Fully Closed Position

To close the power sunroof from the following positions:

- Open position, press and hold the sunroof switch forward.
- Vent position, press and hold the sunroof vent switch forward.

Holding the sunroof switch to the closed position will apply the sunroof switch low reference circuit to either the sunroof switch close signal or the sunroof switch close vent signal circuit. Holding the sunroof switch to the closed position will cause the sunroof switch close signal or the sunroof switch close vent signal circuit (12 volt reference) to be pulled to 0 volts. The constant low input to the sunroof control module indicates a close request. As the close request has been initiated, the sunroof motor/module assembly will drive the motor to the closed position. As the sunroof glass nears the closed position, the wind deflector will retract, and the rear sunroof glass will raise slightly, then seats to flush with the roof panel. To close the sunshade, this will have to be manually slid closed.
