Fastener Tightening Specifications

Application	Specification	
	Metric	English
Sunroof Module Bolts	9 N·m	80 lb in
Sunroof Motor Screws	5 N·m	44 lb in
Sunroof Window Adjusting Screws	5 N·m	44 lb in
Sunroof Window Screws	5 N·m	44 lb in

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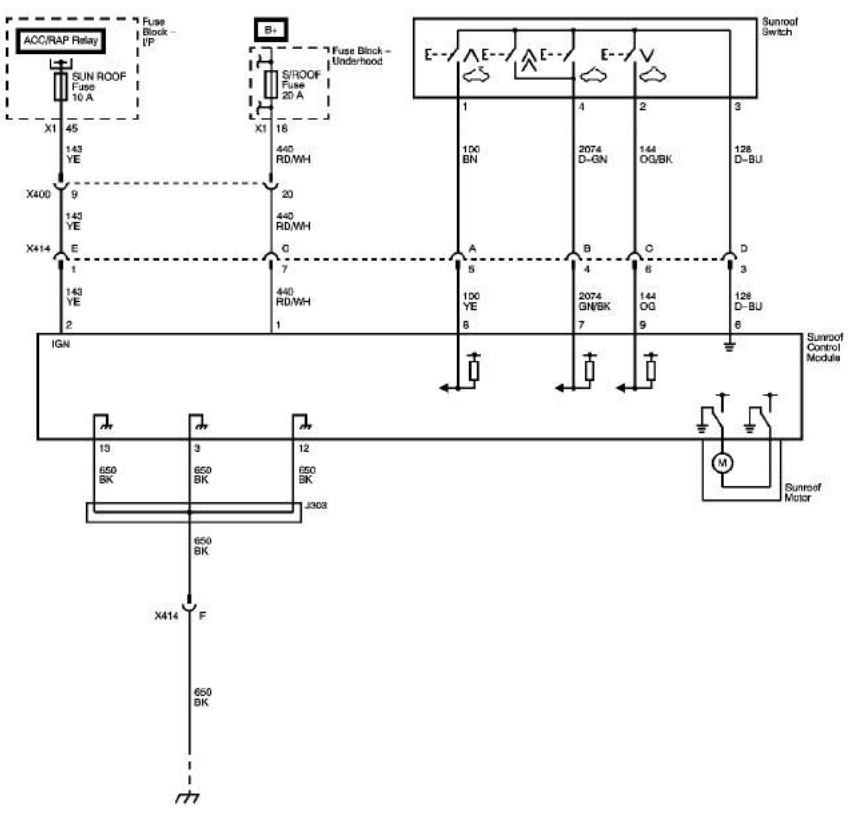
Sunroof Schematics



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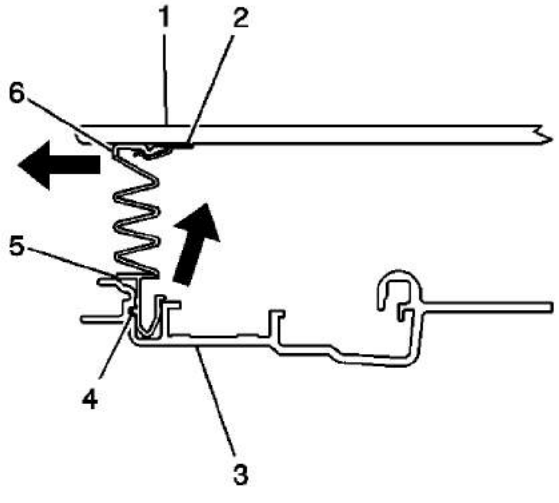
Sunroof Panel Side Opening Closeout Cover Replacement

Removal Procedure



1. Open the sunshade to the full rearward position.
2. Open the sunroof window (1) to the vent position.
3. Detach both sides of the sunroof side opening closeout panel covers (6) from the sunroof window clips (2).
4. Open the sunroof to the full open position.
5. Using a flat-bladed tool, press the locking tab (4) outward, from inside the roof opening, in order to detach the side opening closeout panel cover from the sunroof track channel (3).
6. With the lock tab (4) depressed, lift the front edge of the side opening closeout panel cover from the track, working towards the rear of the sunroof opening.
7. Repeat the steps for the entire length of the side opening closeout panel cover (6).
8. Remove the sunroof side opening closeout panel cover from the sunroof module track assembly.

Installation Procedure

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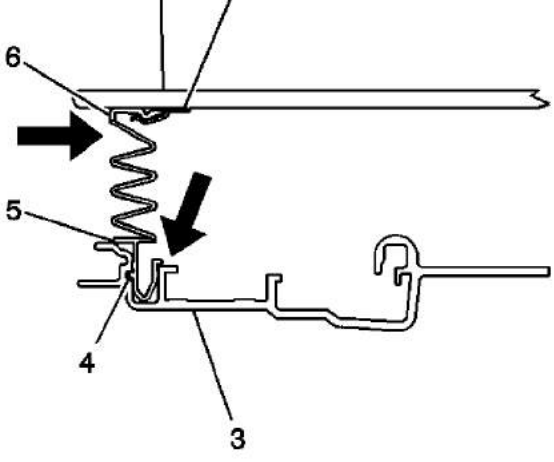

1. Place in position, the new sunroof side opening closeout panel cover (6) to the sunroof module track assembly (3).
2. Hold the lower part (5) of the side opening closeout panel cover firmly and press the locking tab (4) into the track assembly.
3. Ensure the entire length of the side opening closeout panel cover (6) is secure to the sunroof assembly track.
4. Close the sunroof window (1).
5. Open the sunroof window to the vent position.
6. Secure the sunroof side opening closeout panel cover (6) to the 3 clips (2) located on the inside edge of the sunroof window.
7. Close the sunroof window.
8. Cycle the sunroof window to the vent position and full open positions in order to ensure the sunroof side opening closeout panel covers are secure to the attachment clips.
9. Close the sunroof window.
10. Close the sunshade.

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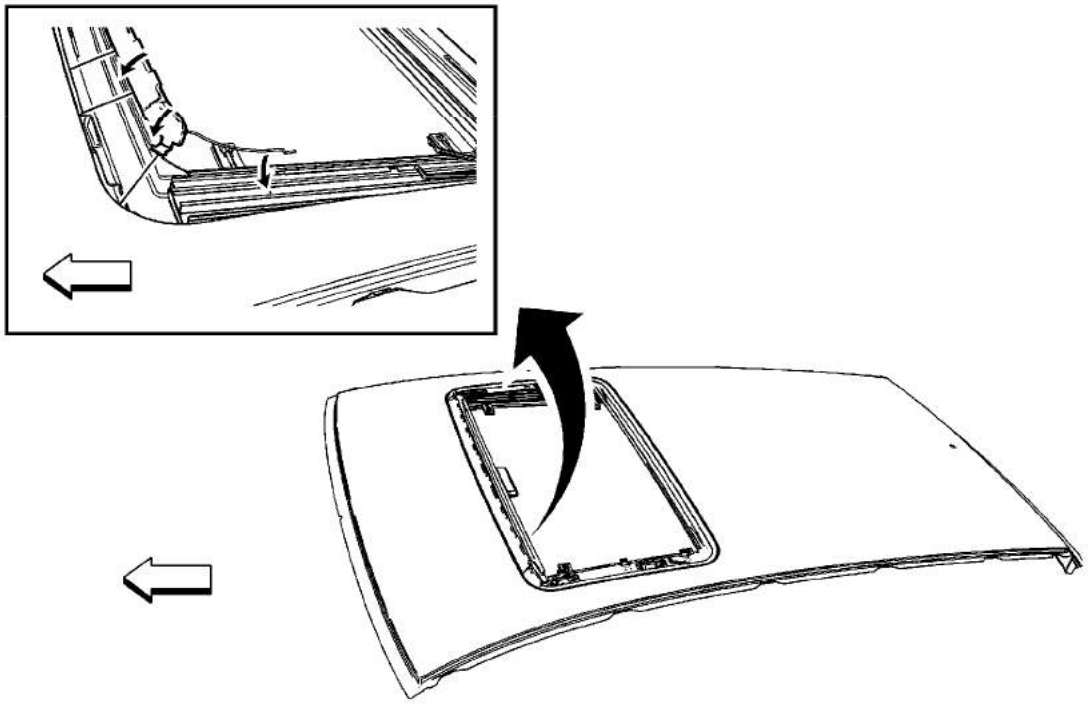
Sunroof Air Deflector Replacement



Callout	Component Name
Preliminary Procedure **Open the sunroof window.**	
1	Sunroof Air Deflector **Procedure** 1. Push down on the right front side of the air deflector. 2. While pushing down on the right front side of air deflector. Lift up on the air deflector, releasing air deflector from the roof. 3. Remove the air deflector springs for the sunroof frame on both sides. **Tip:** Do not lift up on the spring of the air deflector with a strong force, the spring can be damaged.

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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.
6. Remove the blockage using the following steps.
   6.1. Push mechanics wire through the hose to remove the obstruction.
   6.2. 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.

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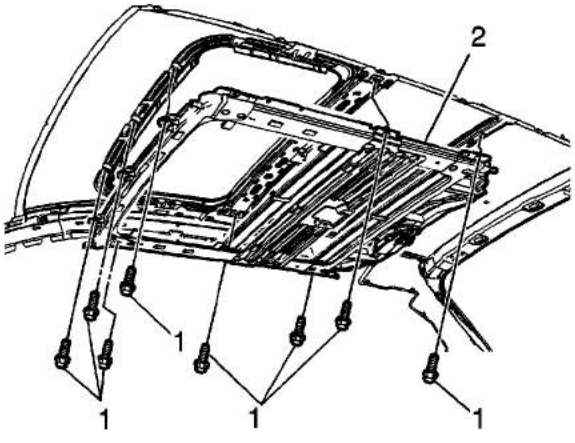
Sunroof Frame Replacement

Removal Procedure

1. It is only necessary to lower the headliner. Only perform the steps in the headliner replacement procedure that will lower the headliner enough to gain access to the part. Refer to Headlining Trim Panel Replacement.



2. Remove the sunroof window. Refer to Sunroof Window Replacement.
3. Disconnect the electrical connector from the sunroof module.
4. Disconnect the front and rear sunroof drain hoses. Refer to Sunroof Housing Front Drain Hose Replacement and Sunroof Housing Rear Drain Hose Replacement.
5. Remove the bolts (1) that secure the sunroof module (2) to the roof.
6. With an assistant, lower and remove the sunroof module assembly.
7. Transfer all necessary components to the new frame assembly.

Installation Procedure

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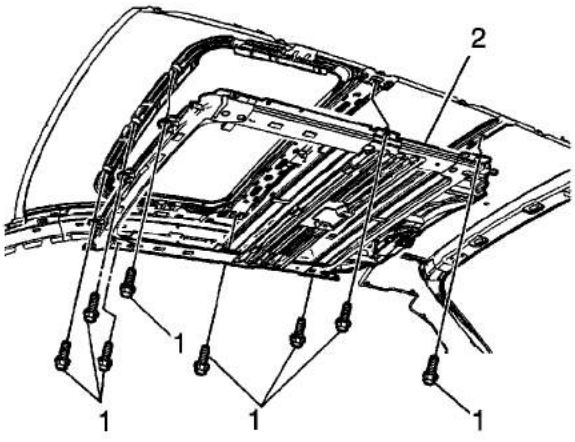

1. With an assistant, position the new sunroof module assembly into the roof opening.
2. Install the bolts (1) which secure the sunroof module (2) assembly to the roof and tighten the bolts by hand.
3. Place a 12 mm (0.47 in) pin into the sunroof module alignment holes.

Caution: Refer to Fastener Caution in the Preface section.

4. Remove the alignment pins and tighten the bolts to **9 N·m (80 lb in)**.
5. Install the sunroof window. Refer to Sunroof Window Replacement.
6. Connect the front and rear sunroof drain hoses. Refer to Sunroof Housing Front Drain Hose Replacement and Sunroof Housing Rear Drain Hose Replacement.
7. Connect the electrical connectors to the sunroof module.
8. Secure the harness to the sunroof module.
9. Adjust the sunroof window. Refer to Sunroof Window Height and Opening Fit Adjustment.
10. Verify the proper operation of the sunroof before securing the headliner.
11. Ensure the motor/actuator initialization/teach process has been done. Refer to Sunroof Motor/Actuator Initialization/Teach Process.
12. Install the headliner. Refer to Headlining Trim Panel Replacement.

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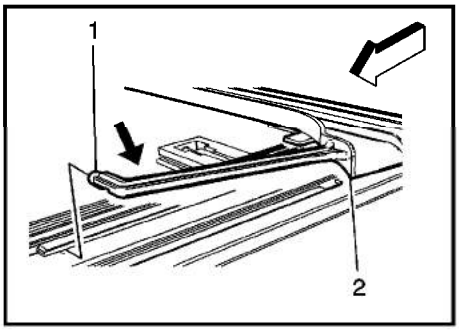
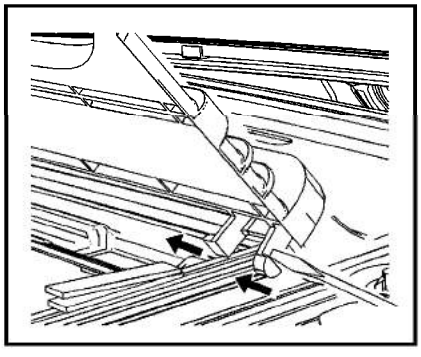
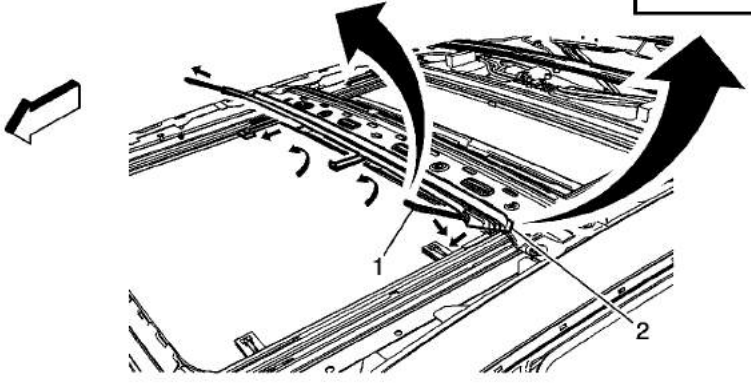
Sunroof Housing Drain Gutter Replacement







Callout	Component Name
Preliminary Procedure **Remove the sunroof window. Refer to Sunroof Window Replacement.**	
1	Sunroof Water Gutter Hook Arm **Procedure** 1. Remember the location of the hole of curve on the panel which the water gutter hook arms hook into. Release the sunroof water gutter hook arms from the sunroof frame on both sides. 2. Position the sunroof water gutter upright on both sides to location the tabs.
2	Sunroof Water Gutter **Procedure** [redacted]

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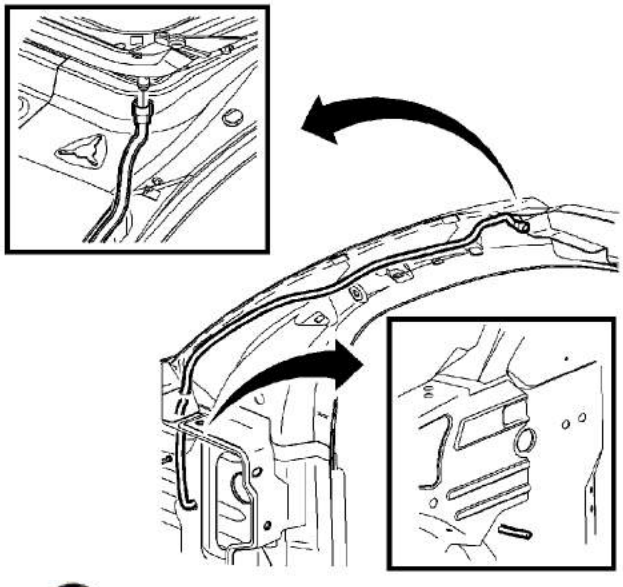
Sunroof Housing Front Drain Hose Replacement

Removal Procedure

1. Lower the headliner. Refer to Headlining Trim Panel Replacement.



2. Remove the front drain hose from the sunroof module.
3. Remove tape from the drain hose.
4. Remove the front drain hose from the retaining clips.
5. Pull the front drain hose out of the front hinge pillar.

Installation Procedure

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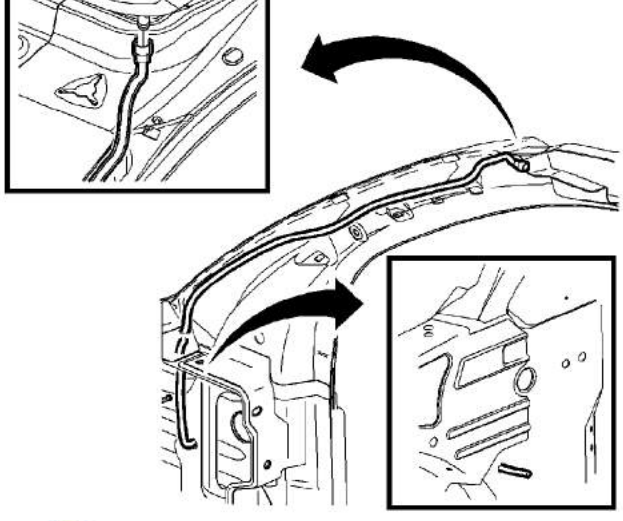

1. Push the drain hose into the hole in the front hinge pillar.
2. Connect the front drain hose to the retaining clips.
3. Connect the drain hose to the sunroof module.
4. Install the headliner. Refer to Headlining Trim Panel Replacement.

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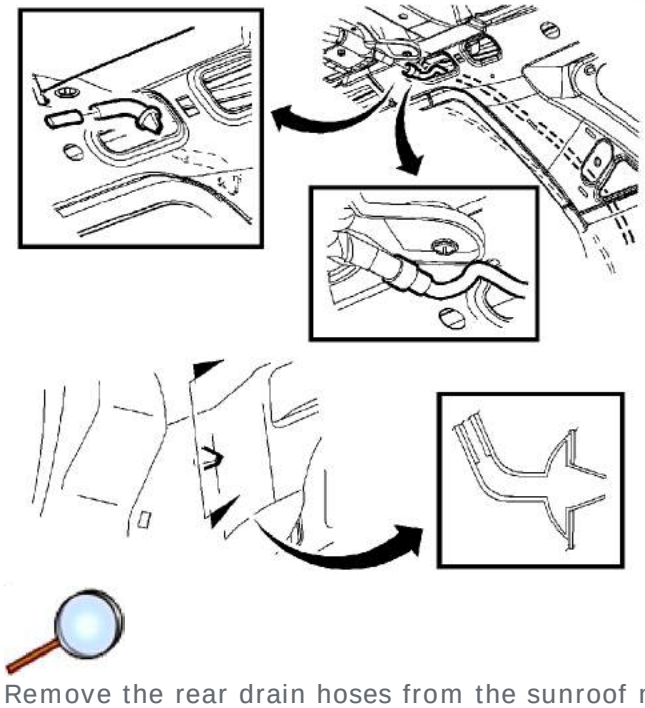
Sunroof Housing Rear Drain Hose Replacement

Removal Procedure

1. Remove the headliner. Refer to Headlining Trim Panel Replacement.



2. Remove the rear drain hoses from the sunroof module.
3. Remove the tape from the drain hose.
4. Remove the upper portion of the rear drain hoses from the retaining clips.
5. Remove the rear side trim panels. Refer to Center Pillar Upper Garnish Molding Replacement.
6. Remove the lower portion of the rear drain hoses from the retaining clips.
7. Pull the rear drain hoses up through the side rail.

Installation Procedure

1. Route the rear drain hose down through the access hole in the side rail.

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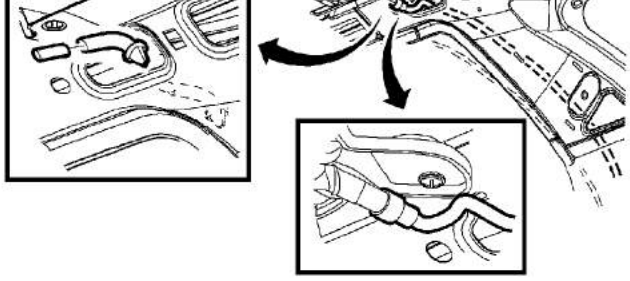

2. Push the end of the rear drain hoses down into the rear compartment opening.
3. Clip the lower portion of the rear drain hoses into position.
4. Install the rear side trim panels. Refer to Center Pillar Upper Garnish Molding Replacement.
5. Clip the upper portion of the rear drain hoses into position.
6. Install the drain hose spouts on the sunroof module.
7. Install the headliner. Refer to Headlining Trim Panel Replacement.

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Sunroof Motor / Actuator Initialization / Teach Process

Important: If the sunroof motor is new, cycle the sunroof seven (7) times to teach the motor/actuator initialization process.

Perform the initialization/teach procedure on a reinstall motor or a new motor. Ensure the electrical harness on the headliner is connected to the sunroof motor, battery power is applied, and the ignition switch is ON.

> **Important:** If the sunroof window doesn't go to the vent open position first time, release the switch and press the switch again.

1. Press and hold the sunroof switch to the vent open position until the sunroof window stops in the vent open position.
2. Again press and hold the sunroof switch to the vent open position for at least 10 seconds, then the window should move slightly.
3. Verify the sunroof operation.

If the initialization/teach procedure is not carried out completely, it has to be started again.

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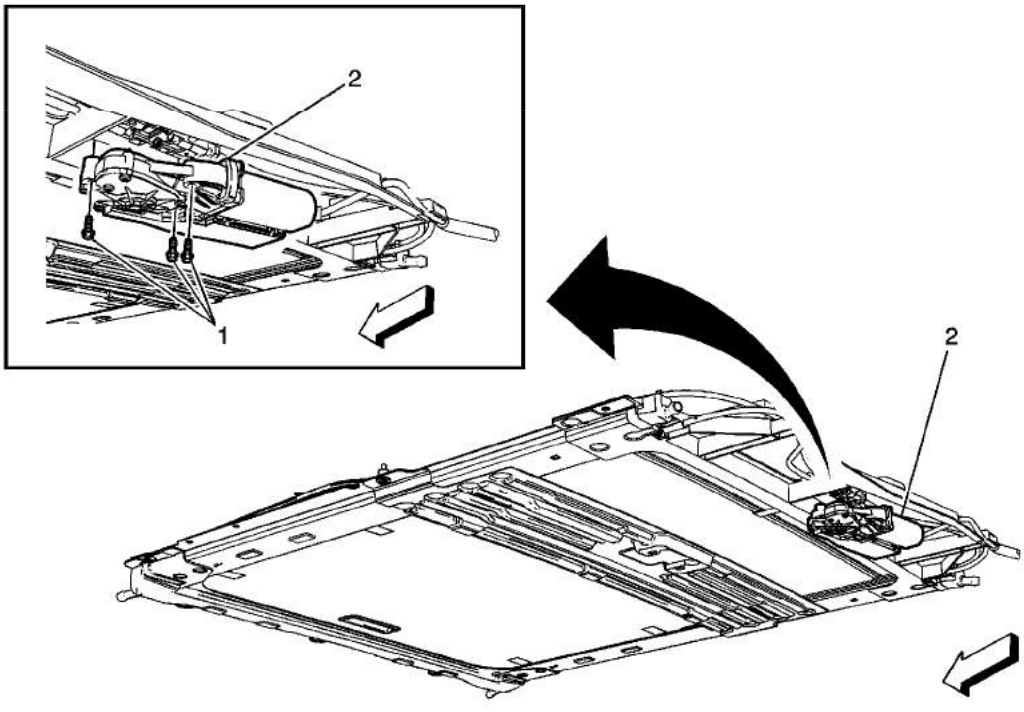
Sunroof Motor / Actuator Replacement



Callout	Component Name
Preliminary Procedure It is only necessary to lower the headliner. Only perform the steps in the headliner replacement procedure that will lower the headliner enough to gain access to the part. Refer to Headlining Trim Panel Replacement.	
1	Sunroof Motor/Actuator Screw (Qty: 3) **Caution:** Refer to Fastener Caution in the Preface section. **Procedure** 1. The sunroof window must be in the fully closed position before disconnecting the harness, to ensure synchronization of the sunroof motor to the sunroof module. 2. Disconnect the electrical connector from the sunroof motor. **Tighten** 4 N·m (35 lb in).
	Sunroof Motor/Actuator

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2	1. Pull downward to disengage the motor/actuator from the sunroof module. 2. Perform the timing/synchronization of the sunroof frame. Refer to Sunroof Track Timing/Synchronization. 3. Install the motor, verify the sunroof operation. 4. Ensure the motor/actuator initialization/teach process has been done. Refer to Sunroof Motor/Actuator Initialization/Teach Process. 5. Verify the proper operation of the sunroof before installing the headliner. 6. Install the headliner. Refer to Headlining Trim Panel Replacement.

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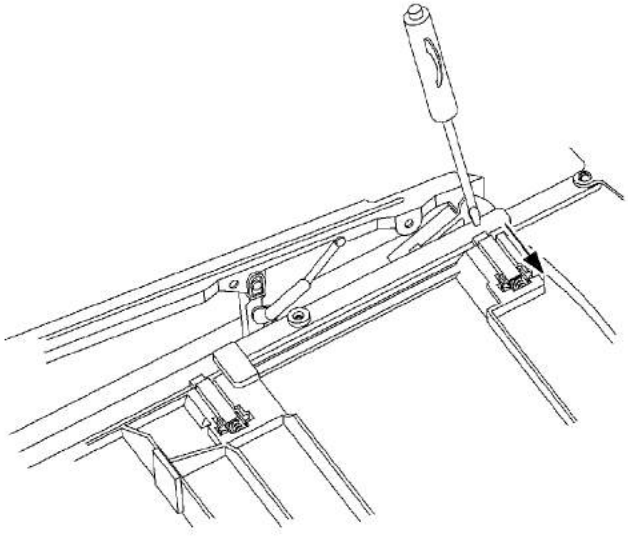
Sunroof Sunshade Replacement

Removal Procedure

1. Remove the sunroof window. Refer to Sunroof Window Replacement .



2. Remove the sunroof drain gutter. Refer to Sunroof Water Gutter Replacement .
3. Slide the sunshade forward to the closed position.
4. Push the spring retainer clips on the right side of the sunshade inward to disengage them from the track using an upward lifting motion.
5. Remove the sunshade from the sunroof module.

Installation Procedure

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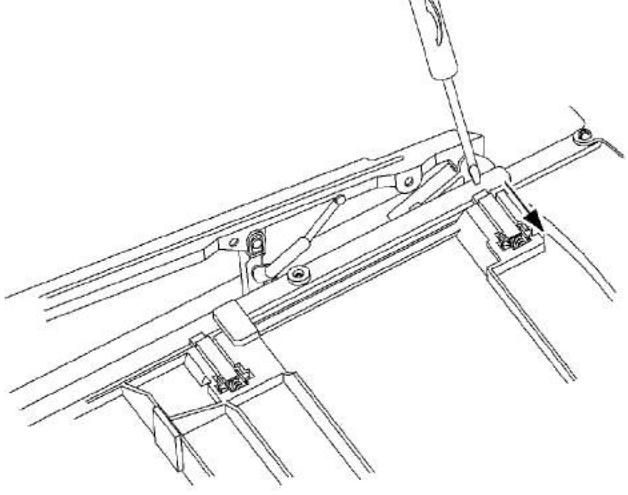

1. Engage one side of the sunshade by positioning the spring clips into the track.
2. Push the spring retainer clips inward on the opposite side of the sunshade to engage them into the track.
3. Slide the sunshade back and forth to ensure proper operation.
4. Slide the sunshade to the half closed position.
5. Install the rear drain gutter. Refer to Sunroof Water Gutter Replacement .
6. Install the sunroof window. Refer to Sunroof Window Replacement .

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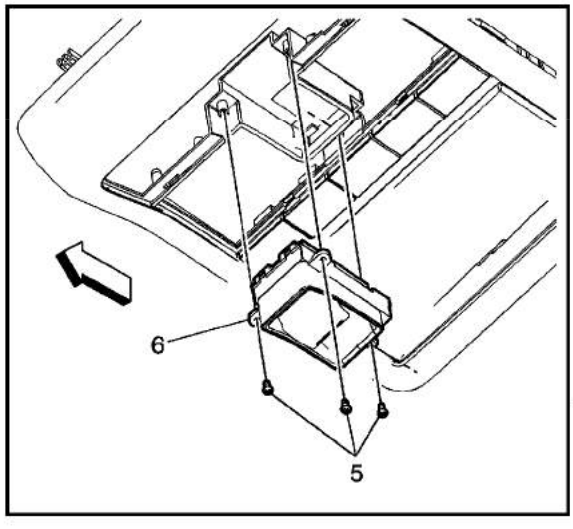
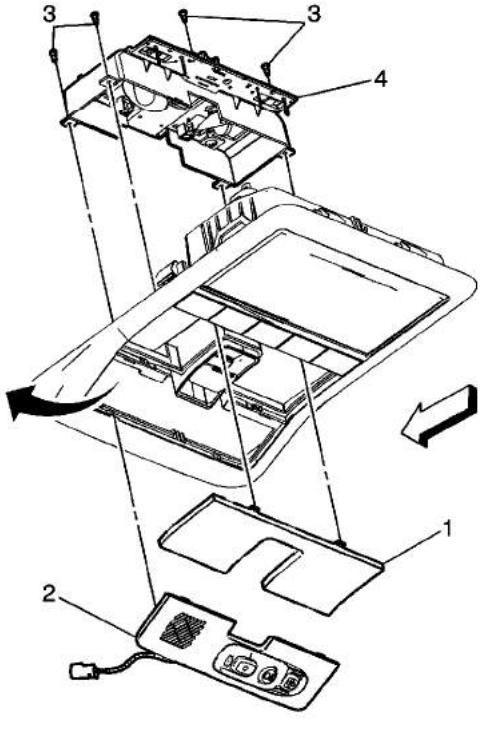
Sunroof Switch Replacement





Callout	Component Name
Preliminary Procedure Remove the roof console assembly. Refer to Roof Console Replacement.	
1	Reading Lamp Lens **Procedure** Use a plastic flat-bladed tool to remove the lens.
2	Mobile Communication Trim Cover **Procedure** Use a plastic flat-bladed tool to remove the cover.
3	Reading Lamp Screw (Qty: 4) **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** [redacted]

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4	Reading Lamp Housing
5	Sun Roof Switch Screw (Qty: 3) **Tighten** 2 N·m (18 lb in)
6	Sun Roof Switch Assembly

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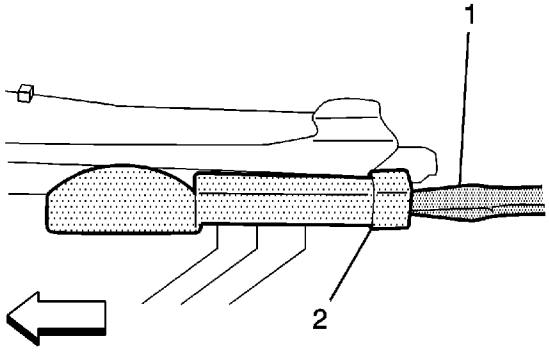
Sunroof Track Timing / Synchronization

Removal Procedure

1. It is only necessary to lower the headliner. Only perform the steps in the headliner replacement procedure that will lower the headliner enough to gain access to the part. Refer to Headlining Trim Panel Replacement.
2. Remove the sunroof motor. Refer to Sunroof Motor/Actuator Replacement.
3. Remove the sunroof window from the sunroof module. Refer to Sunroof Window Replacement.

Installation Procedure



1. Position a flat blade tool (1) inline with the sunroof cable plate (2) pushing rearward.

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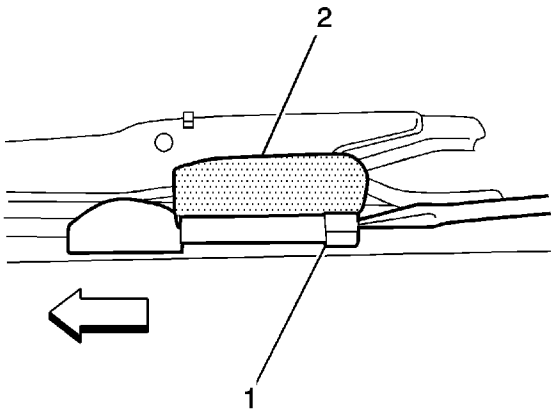
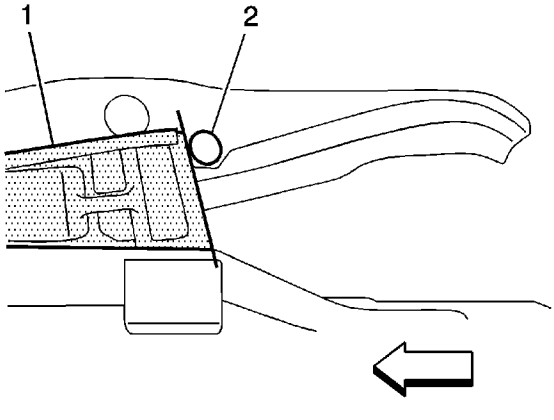


2. Push the sunroof cable plate (1) until the sunroof drive wedge (2) reaches the synchronization position.



3. Align the drive wedge (1) with the hole (2) in the mechanism.
4. Install the sunroof motor. Refer to Sunroof Motor/Actuator Replacement.
5. Install the sunroof window to the sunroof module. Refer to Sunroof Window Replacement.
6. Verify the sunroof operation.
7. Install headliner. Refer to Headlining Trim Panel Replacement.

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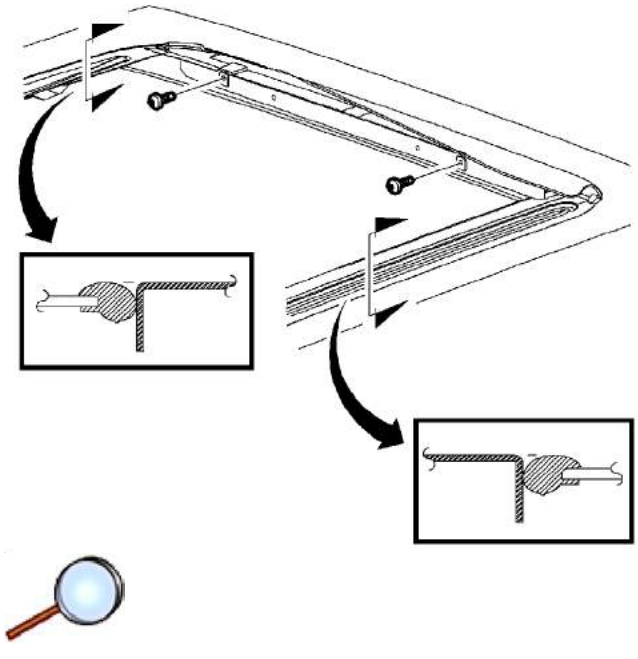
Sunroof Window Height and Opening Fit Adjustment

Note: Correct adjustment cannot be achieved if the sunroof window is closed from vent position.

1. Cycle the sunroof window from full open to closed position.



Note: Do Not remove or lower headliner to access sunroof window screws.

2. Loosen the adjusting screws on the window.
3. Adjust the corners of the front window panel using the following guidelines:
   - Adjust the front of the sunroof window to 0.0 mm - 1.0 mm (0.0 in - 0.04 in) below the top surface of the roof panel.
   - Adjust the rear center line of the sunroof window to 2 mm to 3 mm (0.08 in to 0.12 in) below the top surface of the roof panel.

Caution: Refer to Fastener Caution in the Preface section.

4. Tighten the sunroof window adjustment screws to **5 N·m (44 lb in)**.
5. Cycle sunroof window through all positions.
6. Inspect the sunroof window adjustment. Adjust if necessary.

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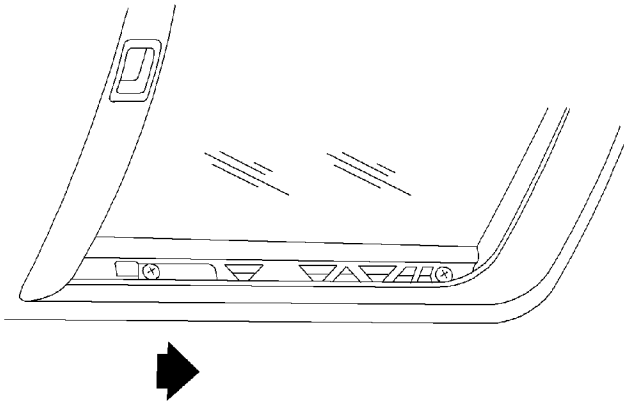
Sunroof Window Replacement

Removal Procedure

1. Slide the sunshade rearward.

   Caution: 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 to the vent position.
3. Remove the sunroof panel side opening closeout. Refer to Sunroof Panel Side Opening Closeout Cover Replacement.



4. Remove the sunroof window screws on both sides.

   Note: If operating the sunroof without the window, refer to Sunroof Air Deflector Replacement.

5. Lift the sunroof window from the sunroof opening.

Installation Procedure

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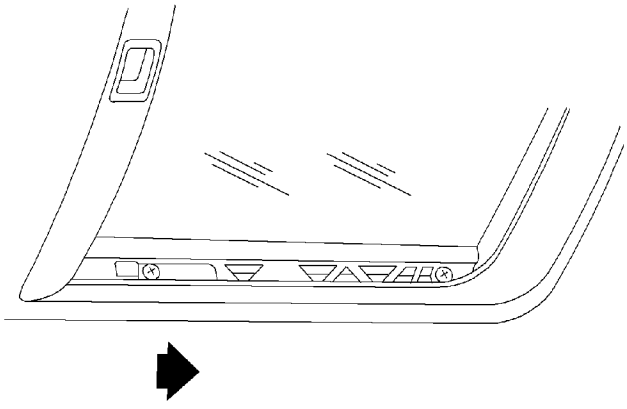

1. Position the sunroof window into the opening.
2. Install the sunroof window screws. Do not tighten the screws.
3. Carefully close the sunroof window from the vent position to the full closed position.
4. Adjust the sunroof window. Refer to Sunroof Window Height and Opening Fit Adjustment.

   Caution: Refer to Fastener Caution in the Preface section.

5. Tighten the sunroof window screws to **5 N·m (44 lb in)**.
6. Install the sunroof panel side opening closeout. Refer to Sunroof Panel Side Opening Closeout Cover Replacement.

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