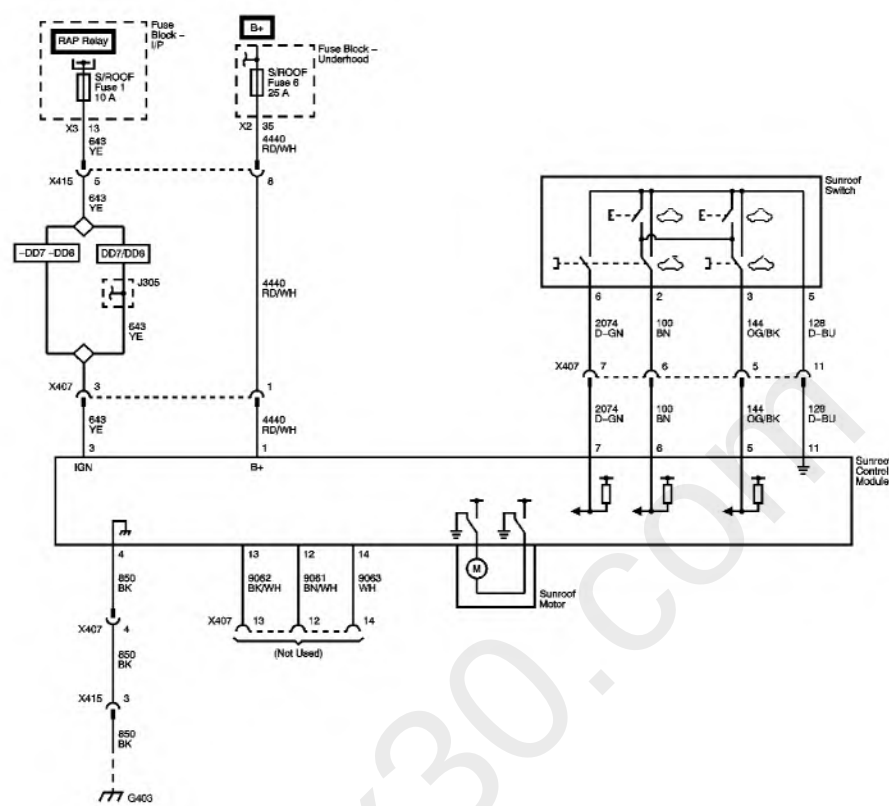


Fastener Tightening Specifications

Application	Specification	
	Metric	English
Sunroof Module Bolts	8 N·m	71 lb in
Sunroof Motor Screws	5 N·m	44 lb in
Sunroof Window Adjusting Screws	6 N·m	53 lb in
Sunroof Window Screws	6 N·m	53 lb in

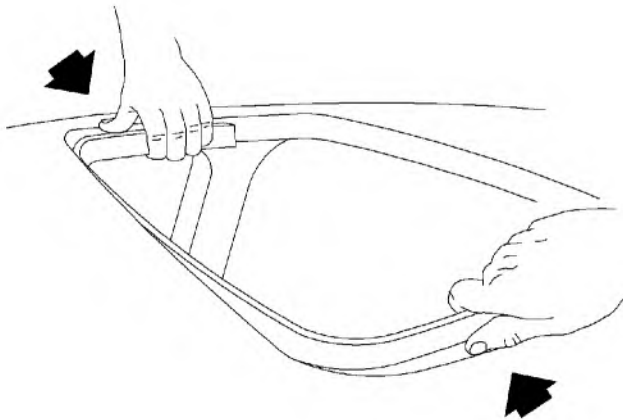
Sunroof Schematics



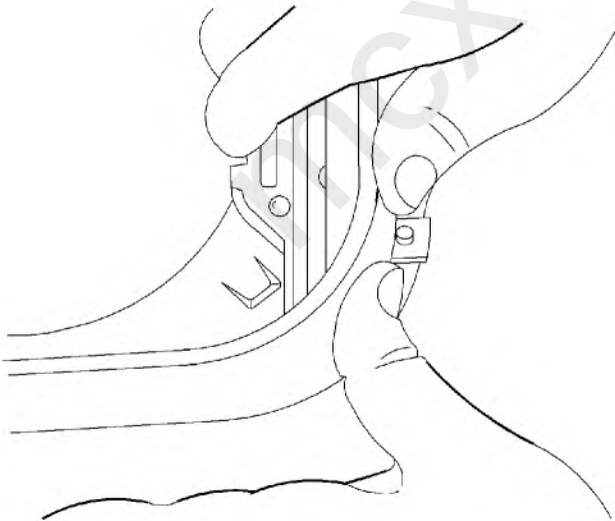
Sunroof Air Deflector Replacement

Removal Procedure

1. Cycle the sunroof window to the rear.

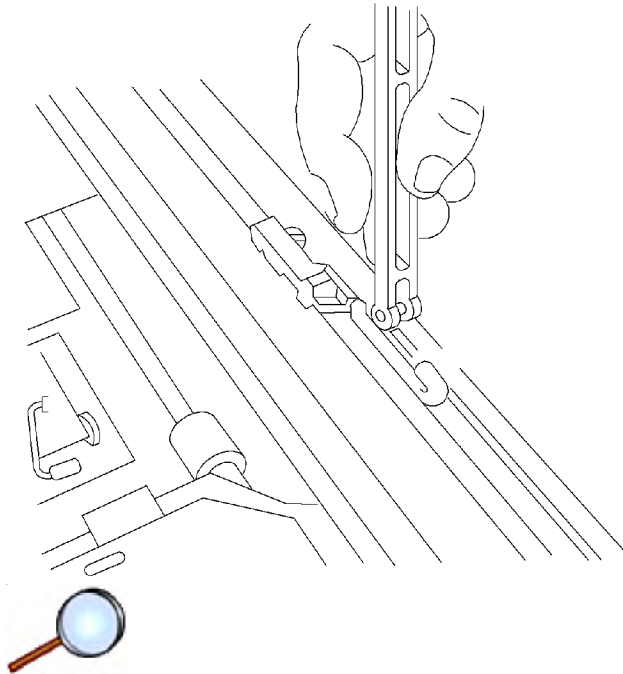


2. Push down on the right front side of the air deflector.



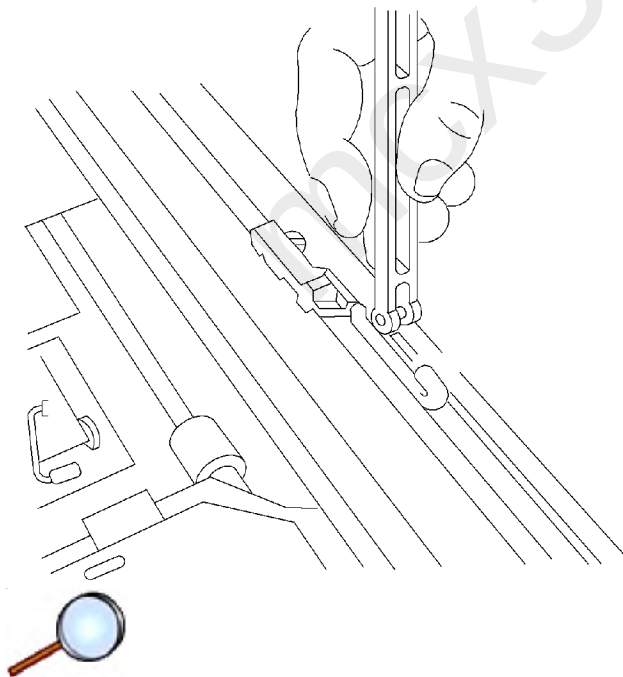
3. Do the following while holding the right side down:
 - Push the left front side of the air deflector towards the right side.
 - Pull up on the left side until the lower tab clears the roof opening.

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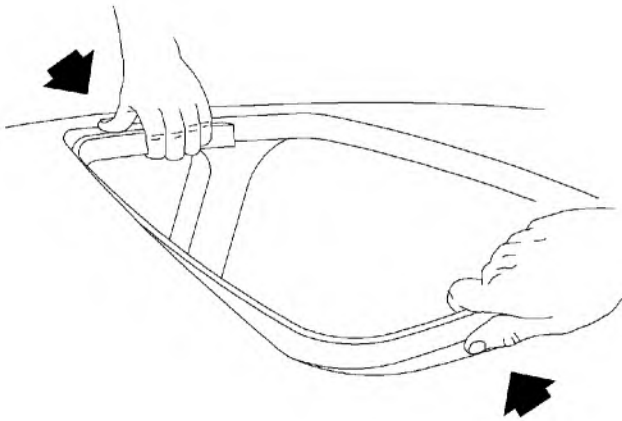


4. Swing the air deflector in an upward arc, rearward, to disengage air deflector from the hooks on both sides of the sunroof module.
5. Remove the air deflector from the vehicle.

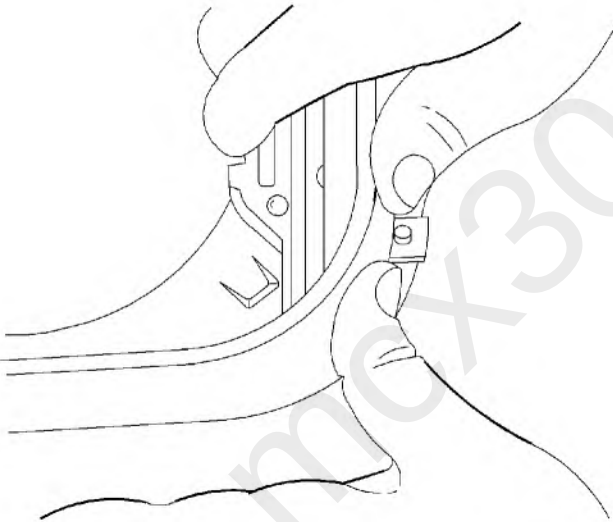
Installation Procedure



1. Engage the rear of the air deflector into the side hooks on the sunroof module.
2. Arc the air deflector in a forward motion.



3. Push the right side of the air deflector down into the roof opening.



4. Push the left front side of the air deflector inward and down so the tab clears the roof opening.
5. Close the sunroof window.

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.

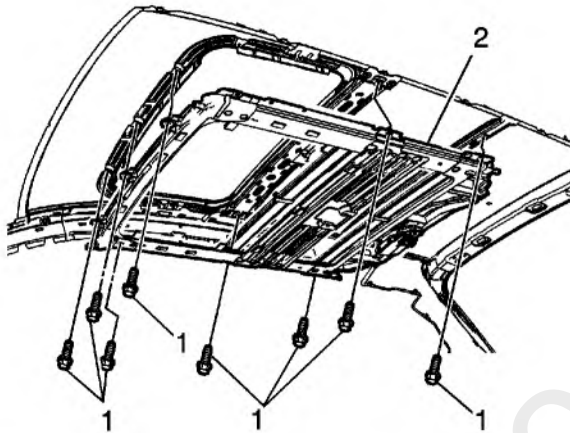
1. Open the sunroof window panel.
2. Lower the headliner as needed. Refer to [Headlining Trim Panel Replacement](#).
3. Connect any disconnected hoses.
4. Ensure that the rear drain hoses are properly routed in the metal roof slot and taped in place.

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Sunroof Frame Replacement

Removal Procedure

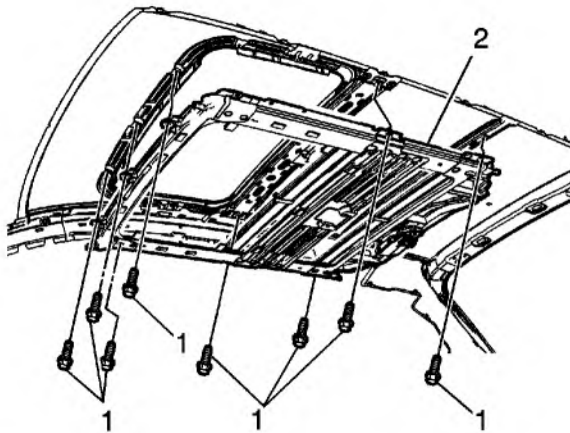
1. It is only necessary to lower the headliner. Only do those step in headliner replacement that will lower the headliner enough to gain access to the part. Refer to [Headlining Trim Panel Replacement](#).



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. With the aid of an assistant, remove the bolts that secure the sunroof module.

Installation Procedure

1. Before transferring any parts perform the timing/synchronization of the sunroof frame. Refer to [Sunroof Track Timing/Synchronization](#).
2. Transfer all necessary parts to the new module.



3. With the aid of an assistant, position the new sunroof module into the roof opening.

Caution: Refer to [Fastener Caution](#) in the Preface section.

4. With the aid of an assistant, install the bolts that secure the sunroof module to the roof.

Tighten

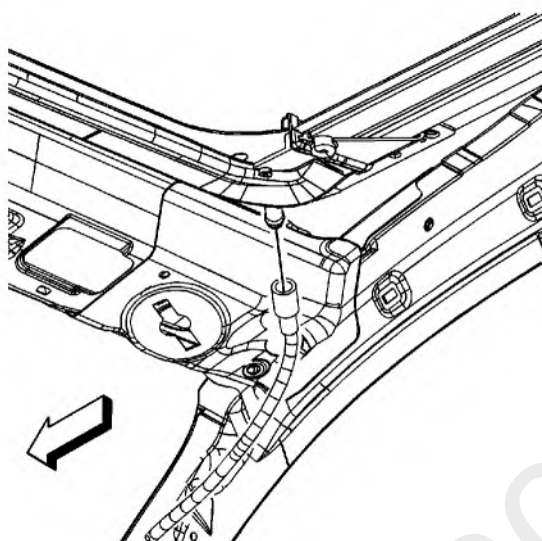
Tighten the bolts to 8 N·m (70 lb in).

5. Connect the front and rear sunroof drain hoses. Refer to [Sunroof Housing Front Drain Hose Replacement](#) and [Sunroof Housing Rear Drain Hose Replacement](#).
6. Connect the electrical connectors to the sunroof module.
7. Install and adjust the sunroof window. Refer to [Sunroof Window Height and Opening Fit Adjustment](#).
8. Ensure the motor/actuator initialization/teach process has been done. Refer to [Sunroof Motor/Actuator Initialization/Teach Process](#).
9. Verify the proper operation of the sunroof before installing the headliner.
10. Install the headliner. Refer to [Headlining Trim Panel Replacement](#).

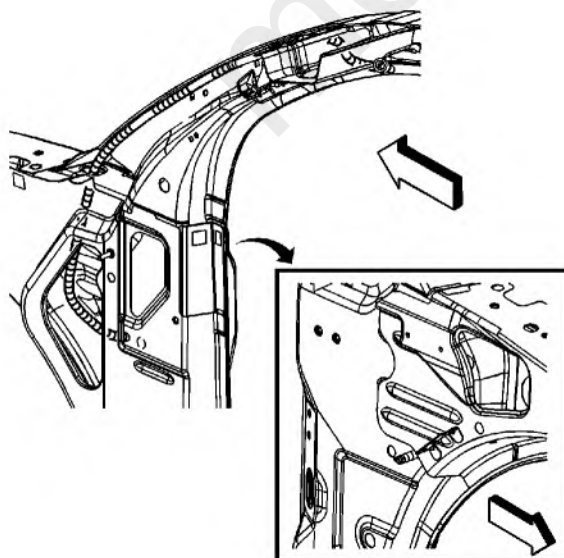
Sunroof Housing Front Drain Hose Replacement

Removal Procedure

1. It is only necessary to lower the headliner. Only do those step in headliner replacement that will lower the headliner enough to gain access to the part. Refer to [Headlining Trim Panel Replacement](#) .



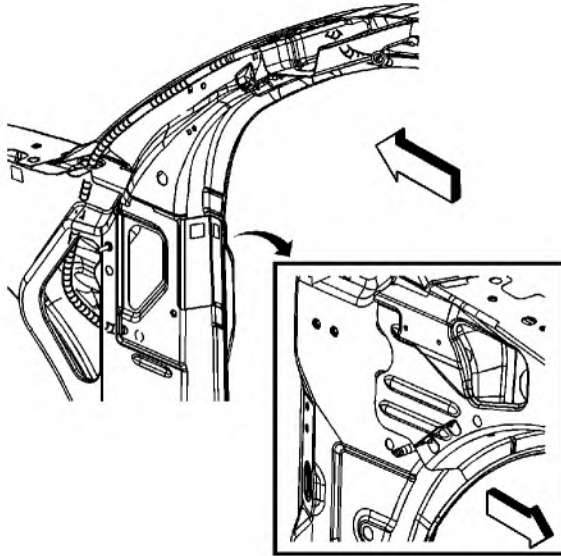
2. Remove the front drain hose from the sunroof module.
3. Remove tape from the drain hose.
4. Remove the front drain hose from the retaining clips.



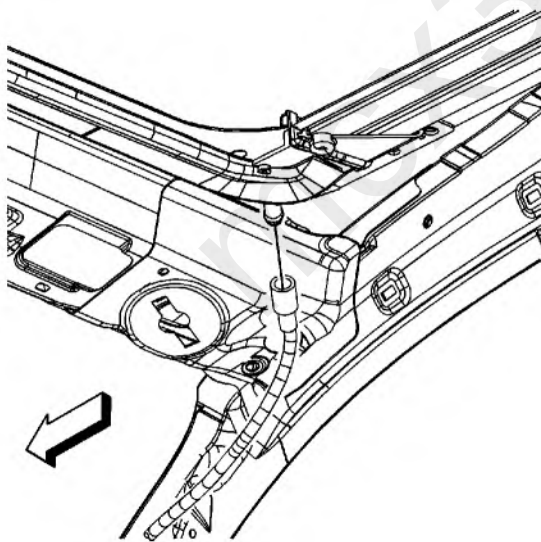
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5. Pull the front drain hose out of the front hinge pillar.

Installation Procedure



1. Push the drain hose into the hole in the front hinge pillar.
2. Connect the front drain hose to the retaining clips.

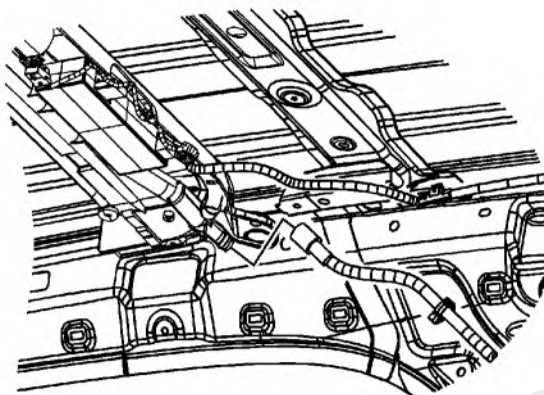


3. Connect the drain hose to the sunroof module.
4. Install the headliner. Refer to [Headlining Trim Panel Replacement](#).

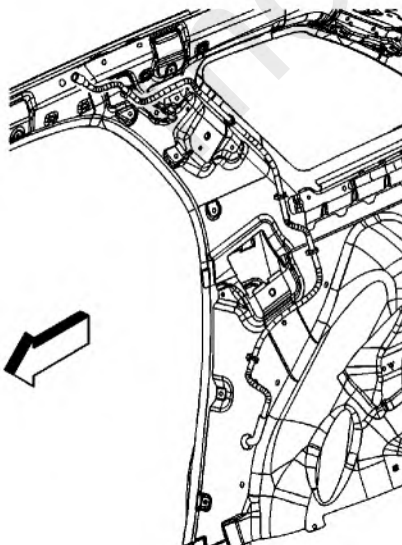
Sunroof Housing Rear Drain Hose Replacement

Removal Procedure

1. It is only necessary to lower the headliner. Only do those step in headliner replacement that will lower the headliner enough to gain access to the part. Refer to [Headlining Trim Panel Replacement](#) .



2. Remove the rear drain hoses from the sunroof module.
3. Remove the tape from the drain hose.

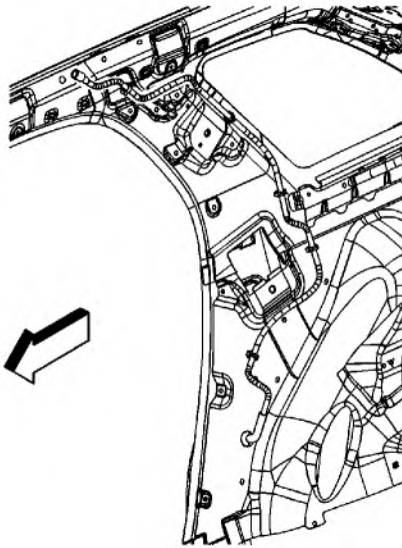


4. Remove the upper portion of the rear drain hoses from the retaining clips.

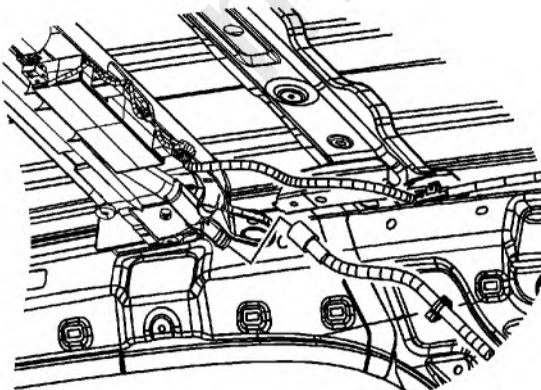
5. Remove the rear side trim panels. Refer to [Center Pillar Upper Garnish Molding Replacement](#).
6. Remove the lower portion of the rear drain hoses from the retaining clips.
7. Pull the rear drain hoses up through the side rail.

Installation Procedure

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



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 rear drain hoses to 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.

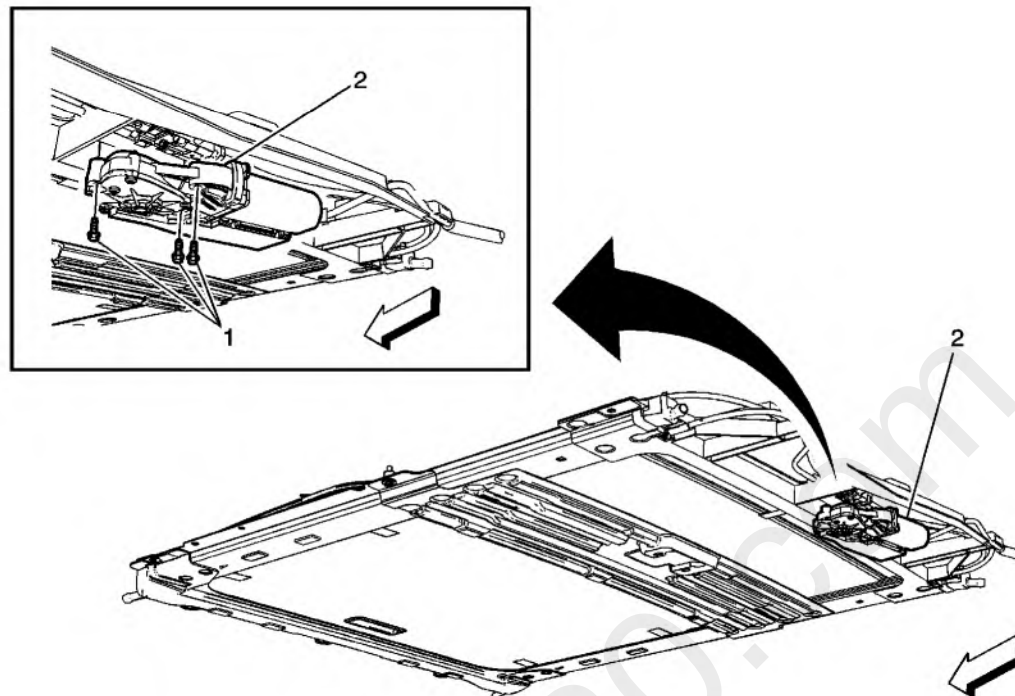
Perform the initialization/teach procedure on a reinstall motor or a new motor. Ensure the electrical harness on the headliner is connected to the sunroof motor, battery power is applied, and the ignition switch is ON.

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.

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

Procedure

2

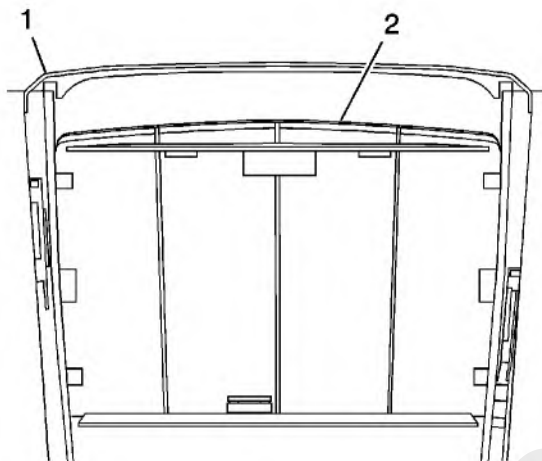
1. Pull downward to disengage the motor/actuator from the sunroof module.
2. Perform the timing/synchronization of the sunroof frame. Refer to [Sunroof Track Timing/Synchronization](#).
3. Install the motor, verify the sunroof operation.
4. Ensure the motor/actuator initialization/teach process has been 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

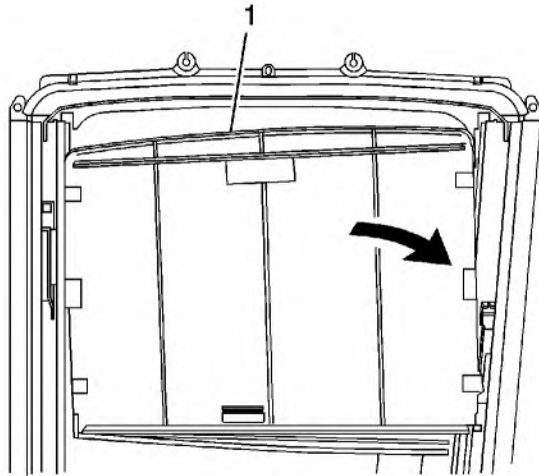
1. Remove the sunroof window. Refer to [Sunroof Window Replacement](#).
2. Remove the screws from the sunroof drain channel.
3. Remove the sunroof drain channel.



4. Slide the sunshade (2) forward to the closed position.
5. Apply slight upward pressure to the rear of the sunshade flange close to either left or right of the guide track to disengage the tab.
6. Rotate the rear of the sunshade toward the guide tab was disengaged until all tabs release.
7. Remove the sunshade (2) from the sunroof frame (1).

Installation Procedure

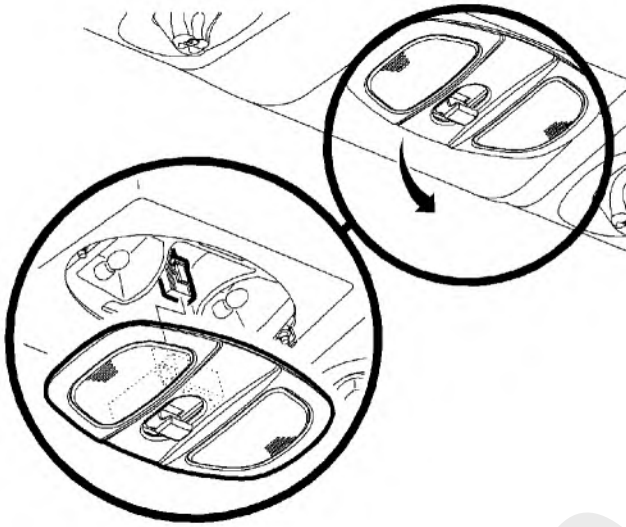
1. Engage one front tab of the sunshade by positioning it into the lower guide track.



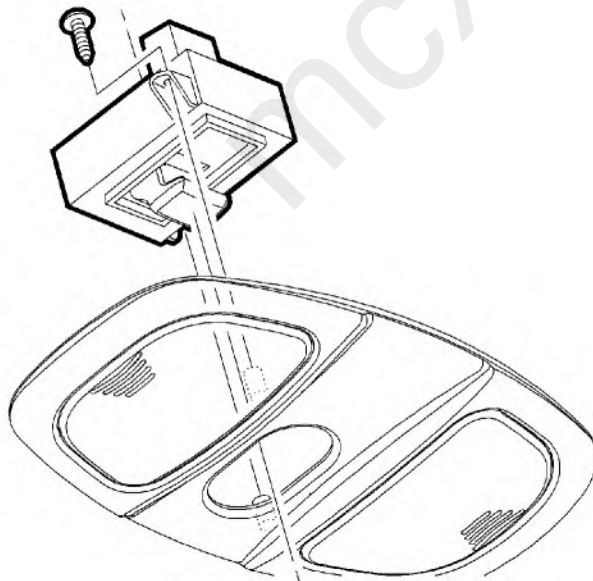
2. Rotate the sunshade (1) toward opposite guide to engage other front tab while ensuring rear tab of first side engaged.
3. Gently apply upward pressure to the rear sunshade flange to engage last tab.
4. Slide the sunshade back and forth to ensure proper operation.
5. Slide the sunshade to the half closed position.
6. Install the rear drain channel, large flange to rear.
7. Install the sunroof window. Refer to [Sunroof Window Replacement](#).

Sunroof Switch Replacement

Removal Procedure



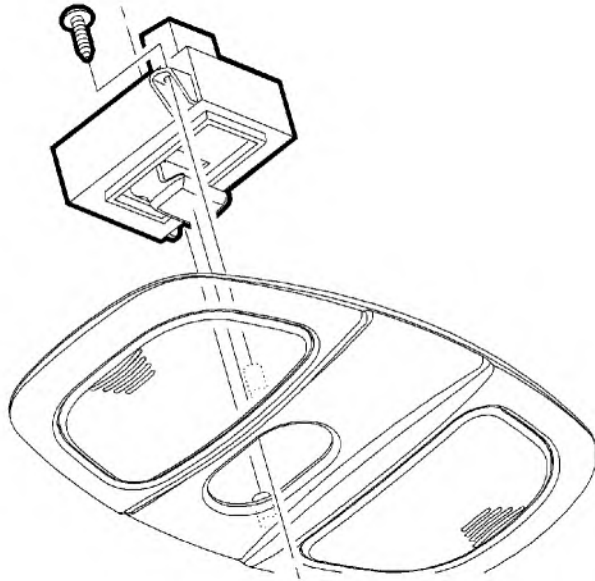
- 
1. Pull gently at front of reading lamp cover to disengage retaining clips.
 2. Rotate cover rearward until rear attaching hooks are released.
 3. Disconnect sunroof switch harness from sunroof switch.



- 
4. Remove sunroof switch fasteners and remove sunroof switch.

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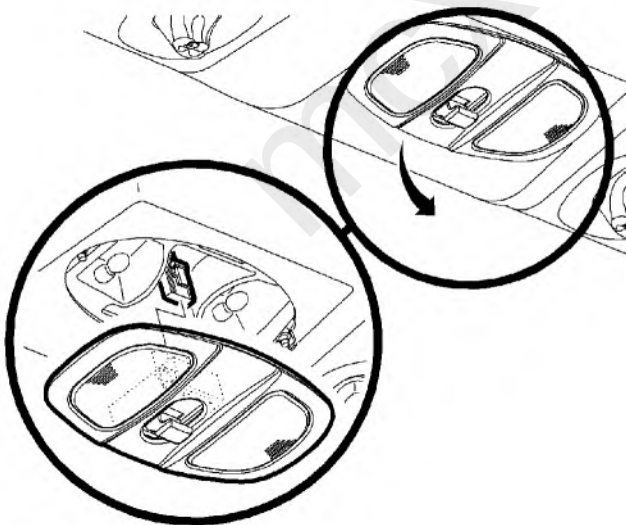
Installation Procedure



1. Install sunroof switch with fasteners.

Tighten

Tighten sunroof switch to 2.5 N·m (22 lb in)



2. Connect sunroof switch harness to sunroof switch.
3. Position front reading lamp cover into rear attaching hooks.
4. Rotate front reading lamp cover into lamp assembly forward, then snap cover into place.

5. Function sunroof switch to ensure proper operation.

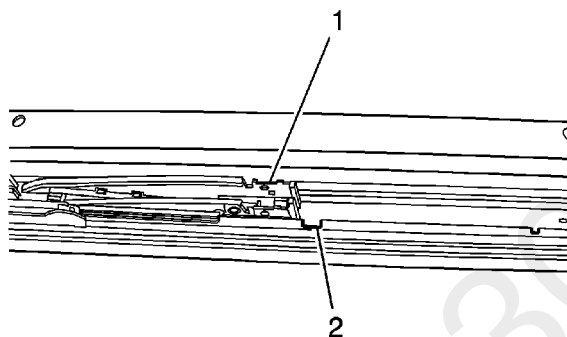
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Sunroof Track Timing / Synchronization

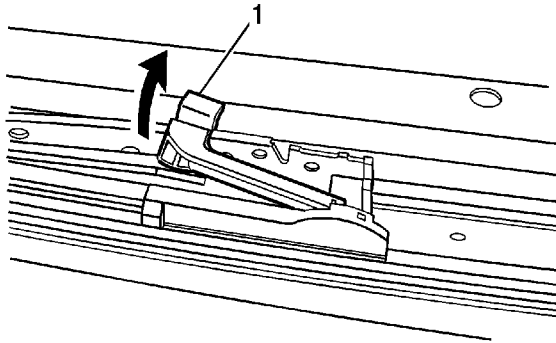
1. It is only necessary to lower the headliner. Only do those steps in the headliner replacement procedure that will lower the headliner enough to gain access to the part. Refer to [Headlining Trim Panel Replacement](#).
2. Place the sunroof window in the vent/open position.
3. Remove the screws from the motor/actuator.
4. Disengage the motor/actuator from the drive cables and module.

Note: After the motor/actuator has been removed it will be necessary to align the module tracks.

5. Remove the sunroof window. Refer to [Sunroof Window Replacement](#).



6. Sliding the drive cable plates (1) on the left and right forward until the first stop is made (2), this will lock the sliding bracket and release drive cable plate.

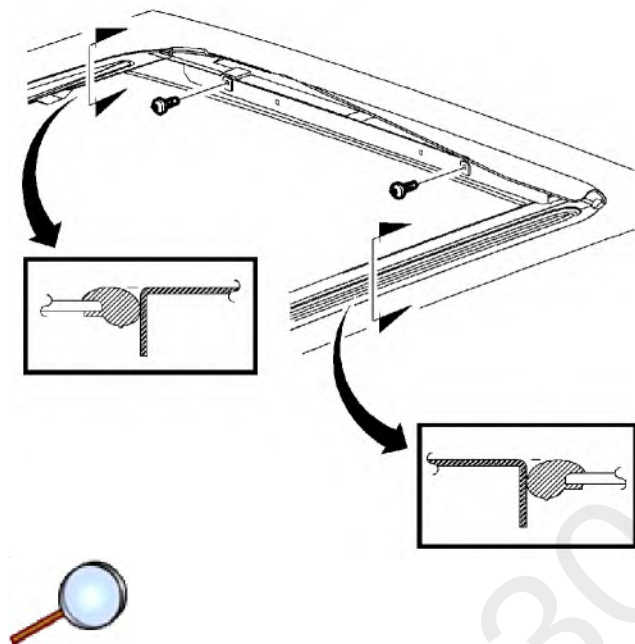


7. Manually adjust the drive cable plates (1) on the left and right sides, by sliding them forward until contact is made to the guide crimp (timing hard stop).
8. Install the sunroof motor/actuator. Refer to [Sunroof Motor/Actuator Replacement](#).
9. Install the sunroof window. Refer to [Sunroof Window Replacement](#).
10. Ensure the motor/actuator initialization/teach process has been done. Refer to [Sunroof Motor/Actuator Initialization/Teach Process](#).
11. Verify the sunroof for proper operation.
12. Install the headliner. Refer to [Headlining Trim Panel Replacement](#).

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.

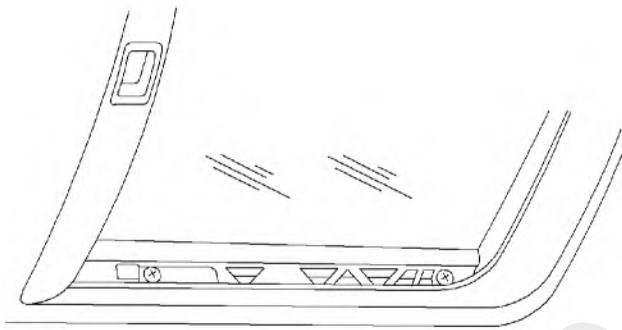
4. Tighten the sunroof window adjustment screws to **5 N·m (44 lb in)**.
5. Cycle sunroof window through all positions.
6. Inspect the sunroof window adjustment. Adjust if necessary.

Sunroof Window Replacement

Removal Procedure

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

1. Cycle the sunroof window to the vent position.
2. Slide the sunshade rearward.

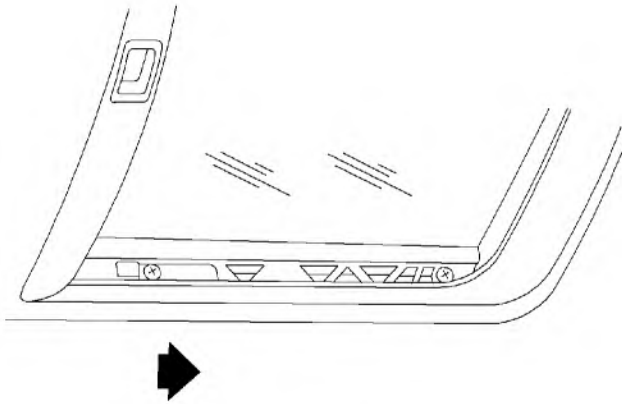


3. Remove the sunroof window screws on both sides.

Note: If operating the sunroof without the window, refer to [Sunroof Air Deflector Replacement](#).

4. Lift the sunroof window from the sunroof opening.

Installation Procedure



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.

Tighten

Tighten the screws to 5 N·m (44 lb in).