

SECTION : 9Q

ROOF

CAUTION : *Disconnect the negative battery cable before removing or installing any electrical unit or when a tool or equipment could easily come in contact with exposed electrical terminals. Disconnecting this cable will help prevent personal injury and damage to the vehicle. The ignition must also be in LOCK unless otherwise noted.*

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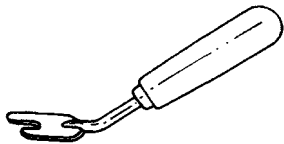
SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Application	N•m	Lb-Ft	Lb-In
Power Sunroof Control Switch Screws	2	–	18
Passenger Assist Handle Screws	3	–	27
Sun Visor Screws	4	–	35
Sun Visor Support Screw	1.5	–	13
Sunroof Housing Bolts	10	–	89
Sunroof Motor Screws	3	–	27

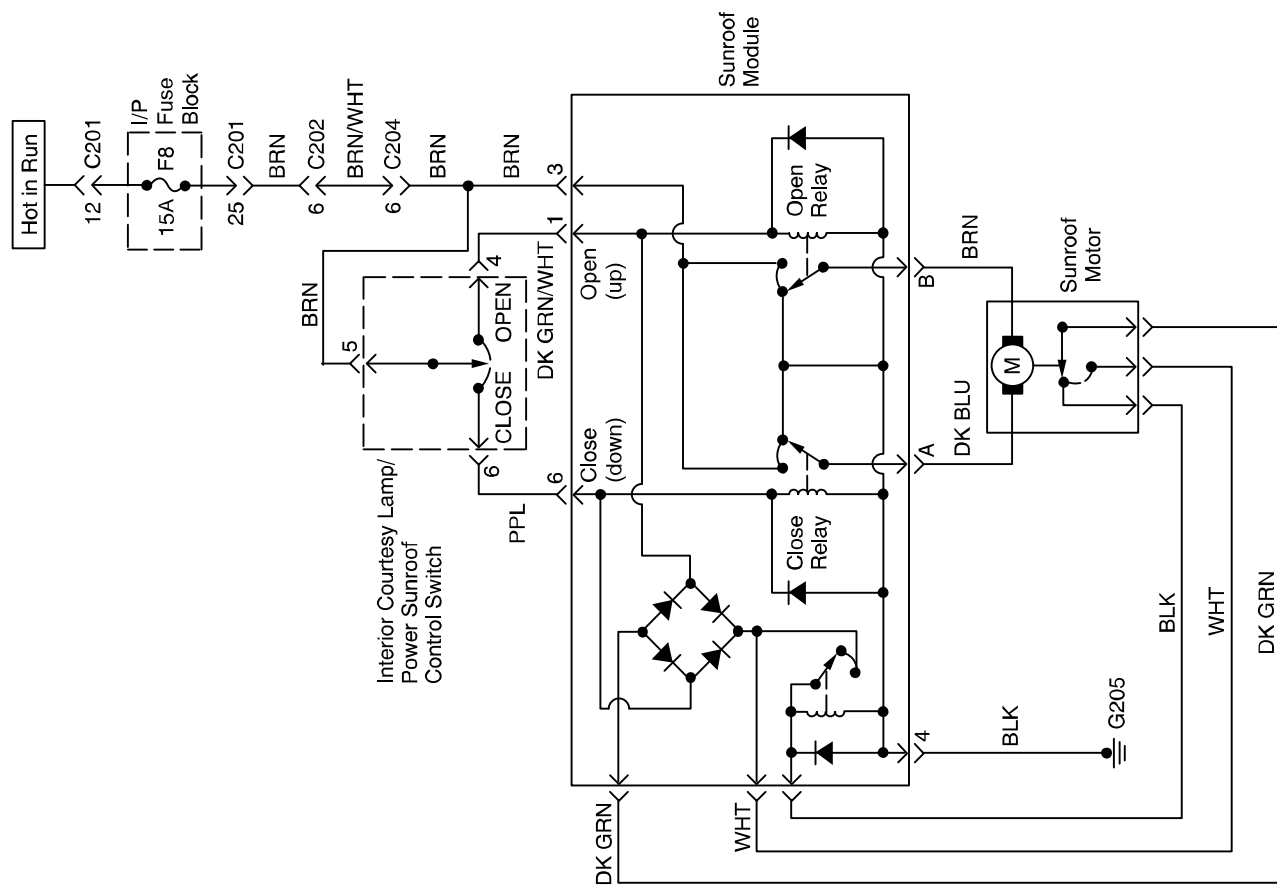
SPECIAL TOOLS

SPECIAL TOOLS TABLE

 KM475B	KM-475-B Trim Remover
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SCHEMATIC AND ROUTING DIAGRAMS

POWER SUNROOF SYSTEM



DIAGNOSIS

POWER SUNROOF

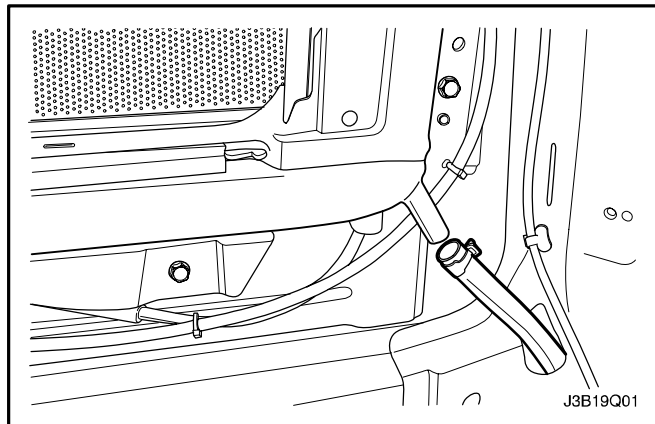
Power Sunroof Does Not Work

Step	Action	Value(s)	Yes	No
1	Check fuse F8. Is either fuse blown?	–	Go to <i>Step 2</i>	Go to <i>Step 3</i>
2	1. Check for a short circuit and repair it, if necessary. 2. Replace the blown fuse. Is the repair complete?	–	System OK	–
3	1. Turn the ignition on. 2. Check the voltages at fuse F8. Are both voltages equal to the specified value?	11 – 14 v	Go to <i>Step 5</i>	Go to <i>Step 4</i>
4	Repair the power supply to the fuse which did not indicate battery voltage with the ignition on. Is the repair complete?	–	System OK	–
5	1. Disconnect the interior courtesy lamp/power sunroof control switch connector. 2. Turn the ignition on. 3. Check the voltage at terminal 5 of the interior courtesy lamp/power sunroof control switch connector. Is the voltage equal to the specified value?	11–14 v	Go to <i>Step 7</i>	Go to <i>Step 6</i>
6	Repair the open circuit between fuse F8 and the interior courtesy lamp/power sunroof control switch connector. Is the repair complete?	–	System OK	–
7	1. Reconnect the interior courtesy lamp/power sunroof control switch connector. 2. With the sunroof switch in the OPEN position, check the voltage at terminal 4 of the interior courtesy lamp/power sunroof control switch connector. 3. With the sunroof switch in the CLOSE position, check the voltage at terminal 6 of the interior courtesy lamp/power sunroof control switch connector. Do both voltages equal the specified value?	11 – 14 v	Go to <i>Step 9</i>	Go to <i>Step 8</i>
8	Replace the interior courtesy lamp/power sunroof control switch. Is the repair complete?	–	System OK	–
9	1. Disconnect the sunroof module connector. 2. With the sunroof switch in the OPEN position, check the voltage at terminal 1 of the sunroof module connector. 3. With the sunroof switch in the CLOSE position, check the voltage at terminal 6 of the sunroof module connector. Are the voltages equal to the specified value?	11–14 v	Go to <i>Step 11</i>	Go to <i>Step 10</i>

Step	Action	Value(s)	Yes	No
10	Repair the open circuit between the interior courtesy lamp/power sunroof control switch and the sunroof module connector. Is the repair complete?	–	System OK	–
11	1. Reconnect the sunroof module. 2. Remove the sunroof motor, but leave the connectors attached. 3. Turn the ignition on. 4. Use the sunroof switch to attempt to operate the motor in both directions. Does the motor operate?	–	Go to <i>Step 12</i>	Go to <i>Step 13</i>
12	Repair the jammed sunroof mechanism. Is the repair complete?	–	System OK	–
13	1. Disconnect both of the one–wire connectors at the sunroof motor. 2. Connect a voltmeter between the one–wire connectors, on the module side of the connectors. 3. Turn the ignition on. 4. Turn the sunroof switch to the OPEN position and observe the voltmeter reading. 5. Turn the sunroof switch to the CLOSE position and observe the voltmeter reading. Does the voltmeter indicate the specified voltage when the switch is in either the OPEN or the CLOSE position (one of the switch positions should show reverse polarity)?	11–14v	Go to <i>Step 15</i>	Go to <i>Step 14</i>
14	Replace the sunroof module. Is the repair complete?	–	System OK	–
15	Replace the sunroof motor. Does the sunroof operate with the new motor?	–	System OK	Go to <i>Step 14</i>

MAINTENANCE AND REPAIR

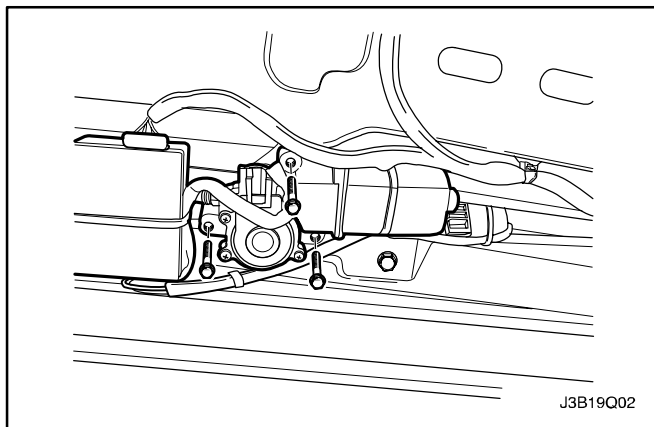
ON-VEHICLE SERVICE



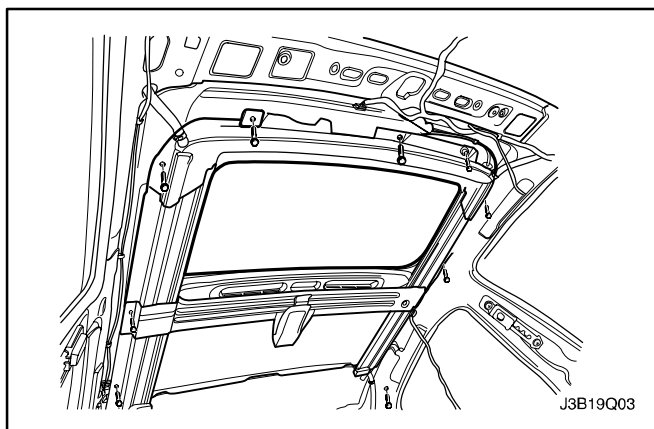
POWER SUNROOF

Removal Procedure

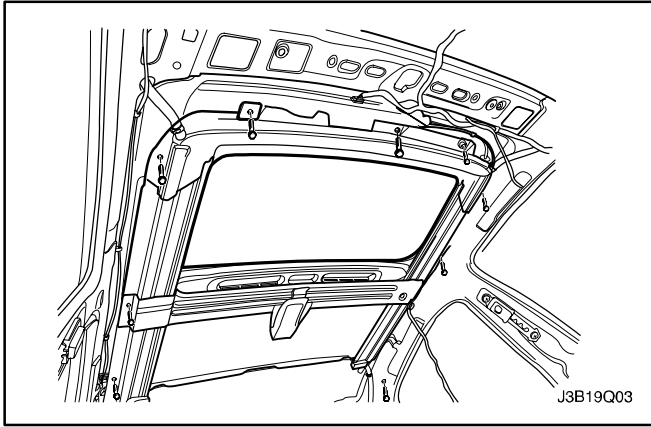
1. Disconnect the negative battery cable.
2. Remove the headliner. Refer to "Formed Headliner" in this section.
3. Remove the drain hoses.



4. Disconnect the electrical connectors.
5. Remove the screws and the motor.



6. Remove the motor control module.
7. Remove the bolts and the housing from the vehicle.



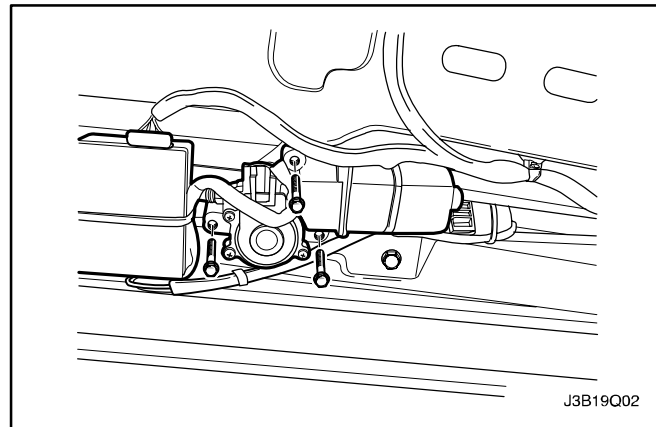
Installation Procedure

Notice : Dissimilar metals in direct contact with each other may corrode rapidly. Make sure to use the correct fasteners to prevent premature corrosion.

1. Install the housing to the roof of the vehicle with the bolts.

Tighten

Tighten the sunroof housing bolts to 10 N•m (89 lb-in).

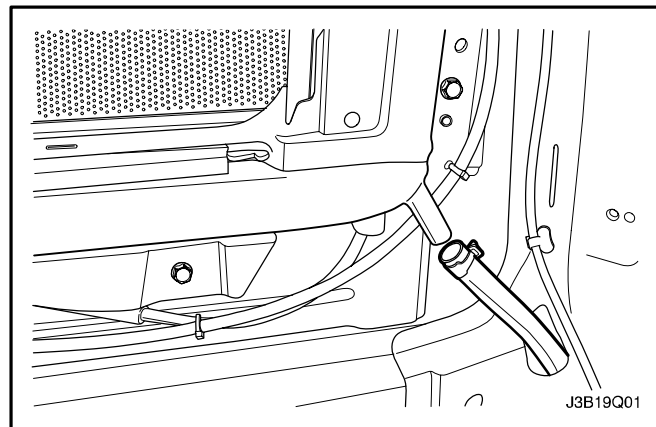


2. Install the motor control module.
3. Install the motor with the screws.

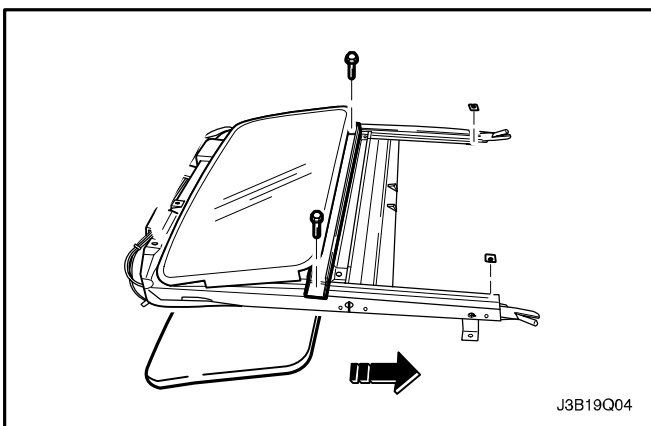
Tighten

Tighten the sunroof motor screws to 3 N•m (27 lb-in).

4. Connect the electrical connectors.



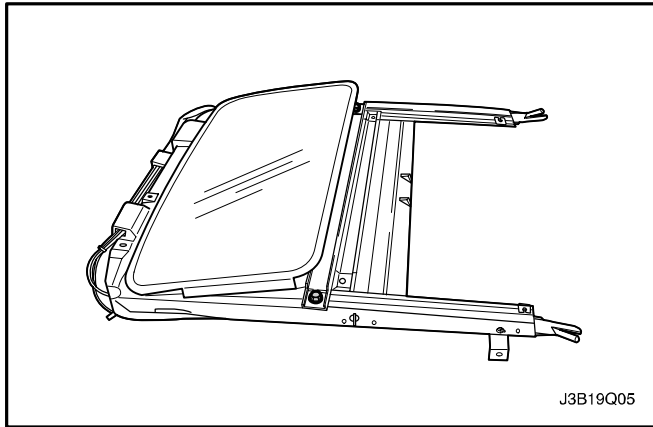
5. Install the drain hoses.
6. Install the headliner. Refer to "Formed Headliner" in this section.
7. Connect the negative battery cable.



SUN SHADE

Removal Procedure

1. Remove the sunroof. Refer to "Power Sunroof" in this section.
2. Remove the sunshade steps.
3. Remove the bolts and the drain channel.
4. Remove the sun shade.



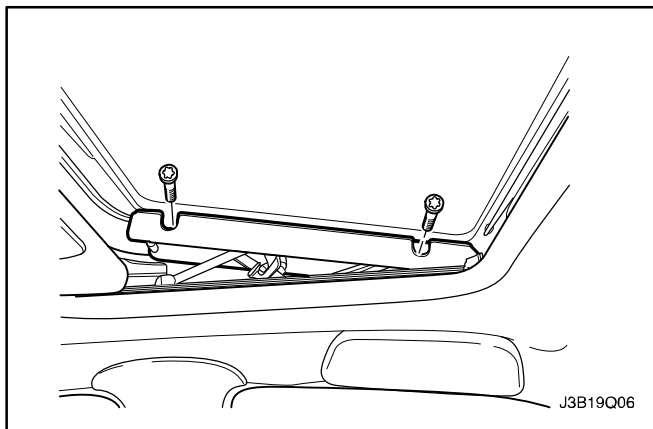
Installation Procedure

1. Install the sun shade.
2. Install the drain channel with the bolts.

Tighten

Tighten the drain channel bolts to 3 N•m (27 lb–in).

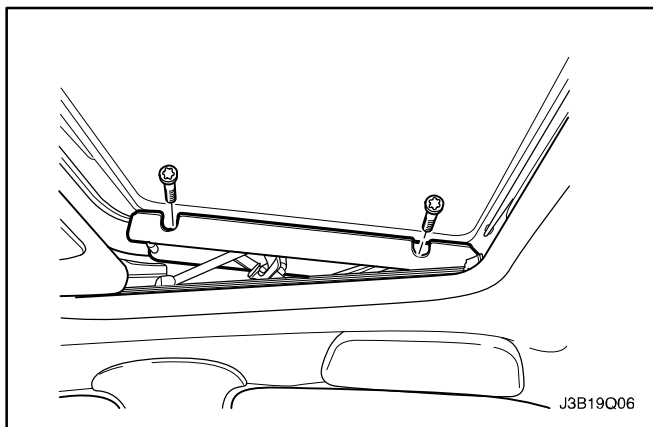
3. Install the sun shade stops.
4. Install the sunroof. Refer to "Power Sunroof" in this section.



SUNROOF GLASS

Removal Procedure

1. Tilt the sunroof up pressing the sunroof switch.
2. Remove the bolts and the sunroof glass.



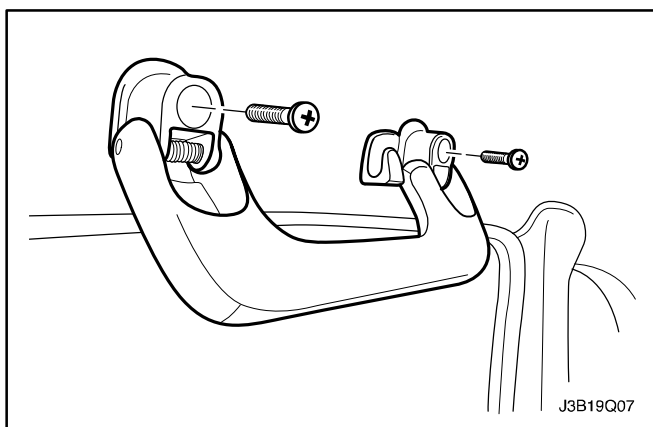
Installation Procedure

1. Install the sunroof glass with the bolts.

Tighten

Tighten the sunroof glass bolts to 3 N•m (27 lb–in).

2. Return the sunroof to its original position.



FORMED HEADLINER

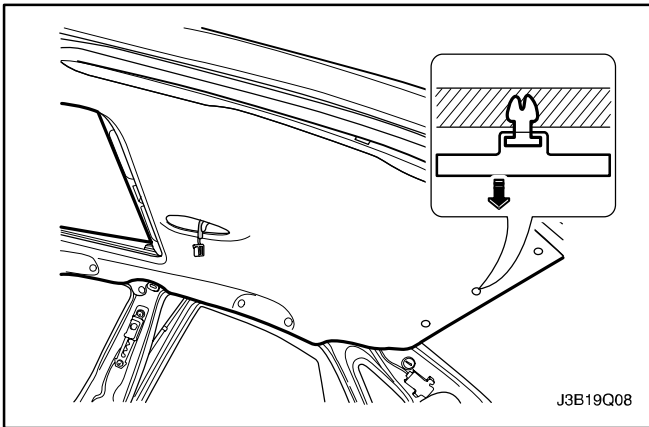
Tools Required

KM-475-B Trim Remover

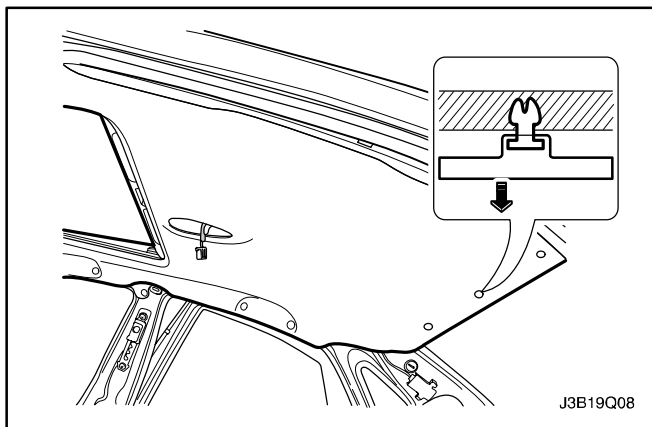
Removal Procedure

1. Disconnect the negative battery cable.
2. Remove the sunroof molding, if equipped.
3. Remove the passenger assist handles. Refer to "Passenger Assist Handles" in this section.
4. Remove the plastic retaining clips in the headliner on the driver's side.
5. Remove the sun visors. Refer to "Sun Visors with Vanity Mirror" in this section.

6. Remove the power sunroof control switch, if equipped. Refer to "Power Sunroof Control Switch" in this section.
7. Remove the A-, B-, and C-pillar trim panels. Refer to *Section 9G, Interior Trim*.

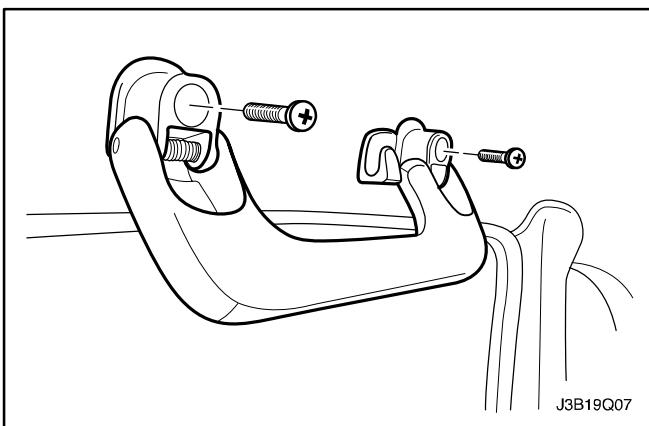


8. Remove the plastic retainers in the headliner using the trim remover KM-475-B.
9. Recline both front seats.
10. Remove the headliner.

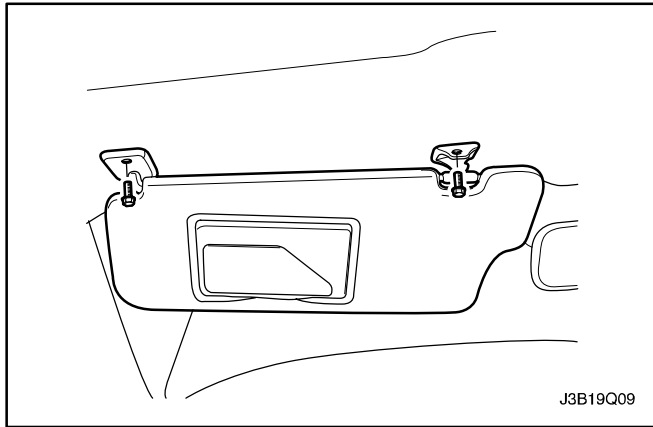


Installation Procedure

1. Recline both front seats.
2. Install the headliner behind the seats around the doors.
3. Install the plastic retainers.



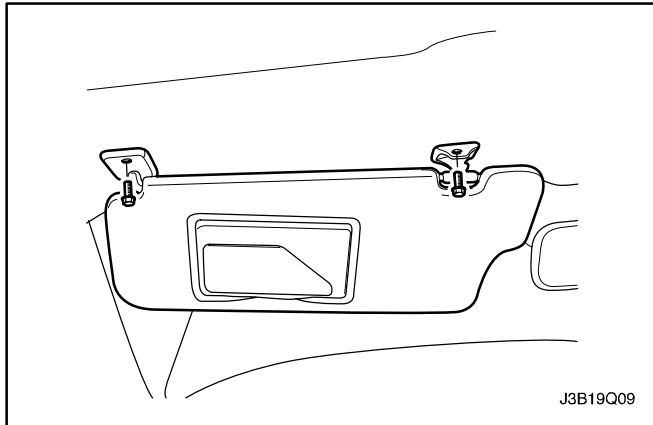
4. Install the A-, B-, and C-pillar trim panels. Refer to *Section 9G, Interior Trim*.
5. Install the power sunroof control switch, if equipped. Refer to "Power Sunroof Control Switch" in this section.
6. Install the sun visors. Refer to "Sun Visors with Vanity Mirror" in this section.
7. Install the plastic retainers in the headliner on the driver's side.
8. Install the passenger assist handles. Refer to "Passenger Assist Handles" in this section.
9. Install the sunroof molding, if equipped.
10. Connect the negative battery cable.



SUN VISORS WITH VANITY MIRROR

Removal Procedure

1. Remove the screws and the sun visor from the headliner.
2. Disconnect the vanity mirror electrical connector. Refer to Section 9B, Lighting System.
3. Remove the screw and the sun visor support from the headliner.



Installation Procedure

Notice : Dissimilar metals in direct contact with each other may corrode rapidly. Make sure to use the correct fasteners to prevent premature corrosion.

1. Install the sun visor support to the headliner with the screw.

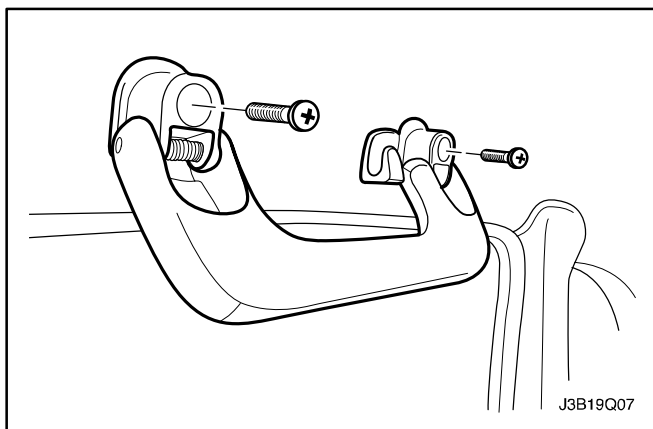
Tighten

Tighten the sun visor support screw to 1.5 N•m (13 lb-in).

2. Connect the vanity mirror electrical connector. Refer to Section 9B, Lighting System.
3. Install the sun visor to the headliner with the screws.

Tighten

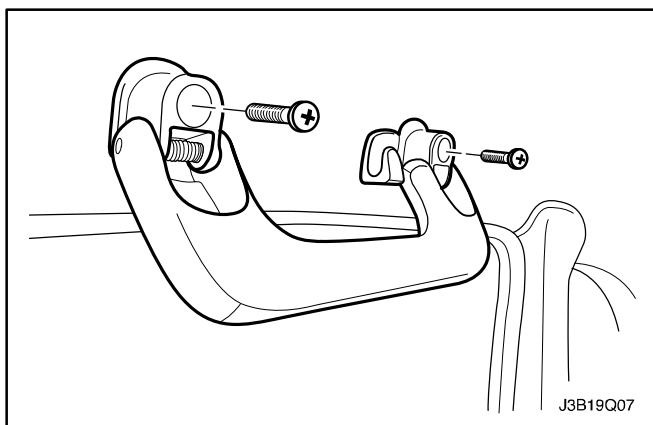
Tighten the sun visor screws to 4 N•m (35 lb-in).



PASSENGER ASSIST HANDLES

Removal Procedure

1. Reposition the plastic caps to reveal the assist handle screws.
2. Remove the screws and the assist handle from the headliner.



Installation Procedure

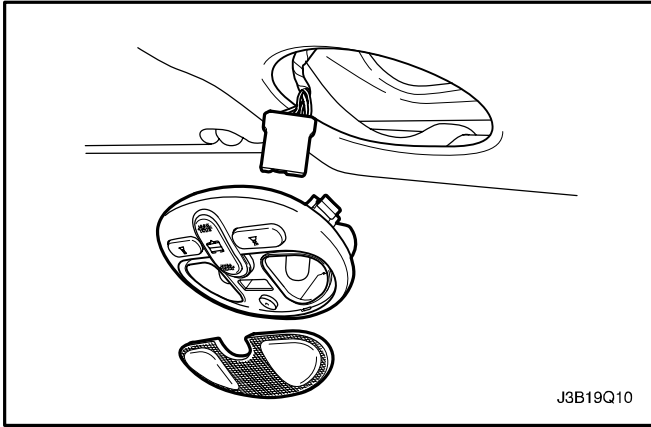
Notice : Dissimilar metals in direct contact with each other may corrode rapidly. Make sure to use the correct fasteners to prevent premature corrosion.

1. Install the assist handle to the headliner with the screws.

Tighten

Tighten the passenger assist handle screws to 3 N•m (27 lb-in).

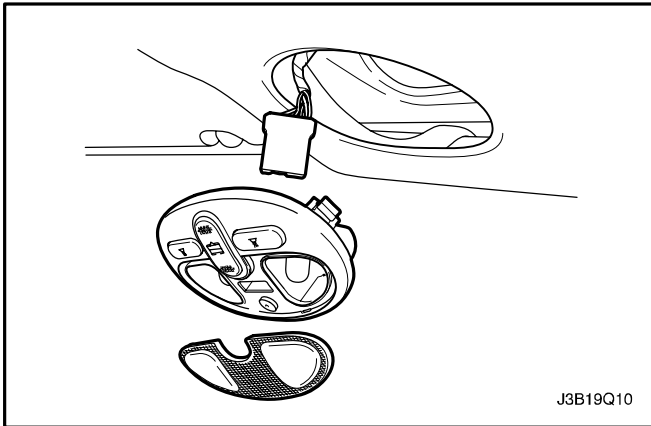
2. Install the plastic caps over the assist handle screws.



POWER SUNROOF CONTROL SWITCH

Removal Procedure

1. Disconnect the negative battery cable.
2. Pry off the interior courtesy lamp lens.
3. Remove the screws and the switch.
4. Disconnect the electrical connector.



Installation Procedure

1. Connect the electrical connector.

Notice : Dissimilar metals in direct contact with each other may corrode rapidly. Make sure to use the correct fasteners to prevent premature corrosion.

2. Install the sunroof control switch with the screws.

Tighten

Tighten the power sunroof control switch screws to 2 N•m (18 lb-in).

3. Install the interior courtesy lamp lens.
4. Connect the negative battery cable.

GENERAL DESCRIPTION AND SYSTEM OPERATION

ROOF

The roof is a one-piece painted metal unit which incorporates a single solid headliner. There are two moldings, one per side on the vehicle's roof, which enclose and hide the roof rail seams. The roof moldings are serviceable as individual units.

The one-piece formed headliner consists of a molded substrate covered with a foam-backed cloth facing. The one-piece construction requires that the headliner be serviced as a complete assembly.

POWER SUNROOF/SUNROOF CONTROL SWITCH

The sunroof has the following characteristics:

- Intended to provide light and air through the roof the vehicle.
- Built into the roof.
- Made of glass.
- Equipped with a sunshade that opens and closes manually.
- Powered by an electric motor.
- Controlled by a toggle switch built into the interior courtesy lamp assembly.

The sunroof control switch is a toggle button located on the right side of the interior courtesy lamp assembly.

To operate the sunroof, the ignition must be ON.

Tilting the Sunroof, Open and Closed

To tilt open the rear end of the sunroof, press and hold the forward portion of the toggle button until the sunroof tilts open.

To close the sunroof from a tilted-open position, press and hold the rear portion of the toggle button until the sunroof tilts closed.

Sliding the Sunroof, Open and Closed

To slide open the sunroof, press the rear portion of the toggle button until the sunroof slides. If the sun shade is closed, the sunroof will pull the sunshade open when the sunroof slides open.

To close the sunroof from a slid-open position, press the forward portion of the toggle button until the sunroof slides closed.

SUN VISORS WITH VANITY MIRROR

The sun visors swing down in order to block out glare. They also swing to the side when they are released from the support. To replace the vanity mirror lamp, refer to *Section 9B, Lighting Systems*.

PASSENGER ASSIST HANDLES

There is a passenger assist handle for each rear outboard seat and for the front passenger seat. Passengers can use these handles to assist in keeping their balance over rough roads or during sharp turns.

COAT HOOKS

The coat hooks are located on the left and the right rear passenger assist handles.