

# 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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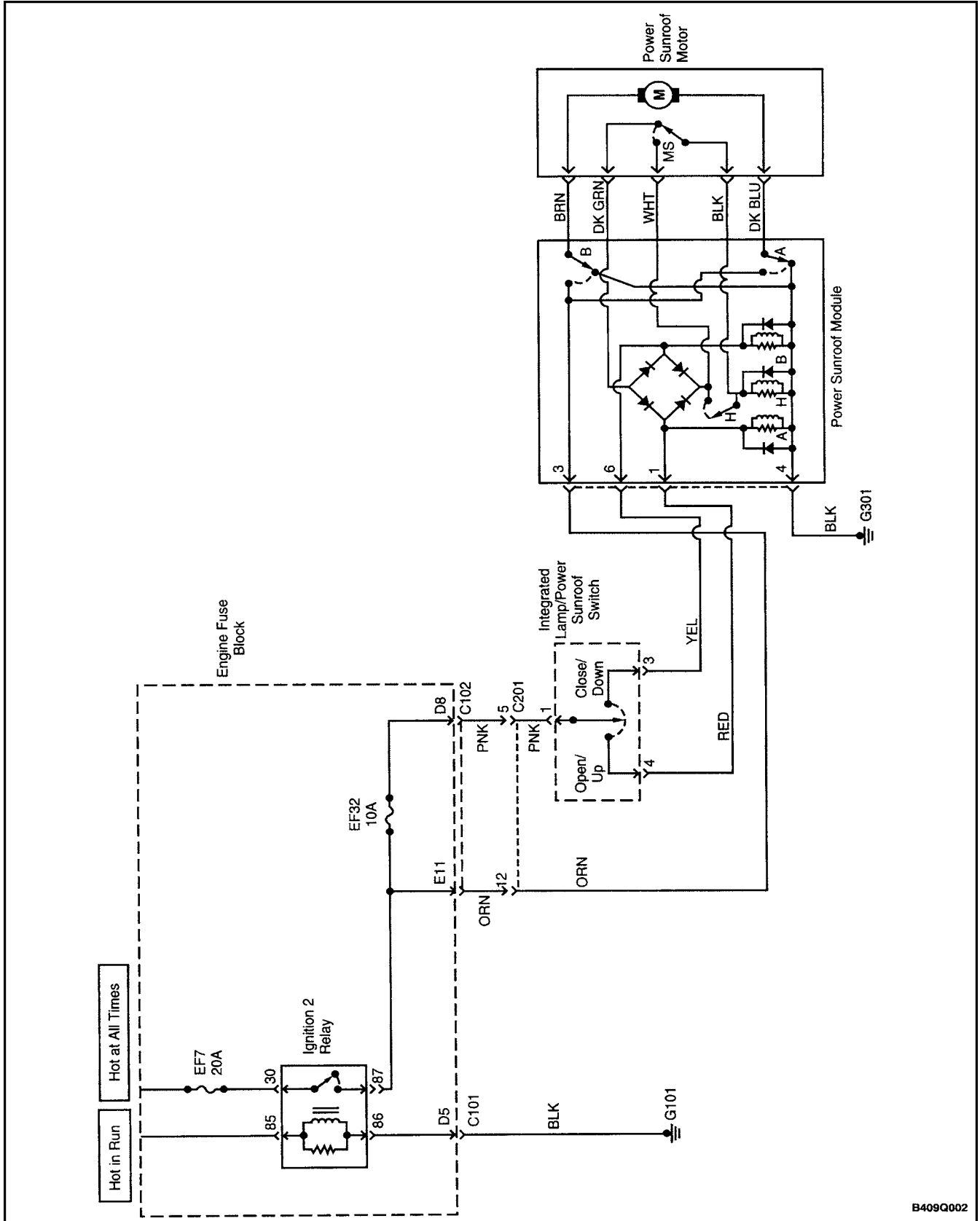
### SPECIFICATIONS

#### FASTENER TIGHTENING SPECIFICATIONS

Application	N•m	Lb-Ft	Lb-In
Lamp/Power Sunroof Control Switch Screws	4	–	35
Passenger Assist Handle Screws	3.5	–	31
Rear Seat Belt Anchor Bolts	35	26	–
Roof Rack Nuts	27	20	–
Seat Belt Anchor Bolts	35	26	–
Sun Visor Screw	2	–	18
Sun Visor Support Screw	2	–	18
Sunroof Glass Screws	7	–	62
Sunroof Housing Bolts	7	–	62
Sunroof Motor Screws	5	–	44

# SCHEMATIC AND ROUTING DIAGRAMS

## POWER SUNROOF SYSTEM



# DIAGNOSIS

## POWER SUNROOF

### Power Sunroof Does Not Work

Step	Action	Value(s)	Yes	No
1	1. Turn the ignition ON. 2. Does the power mirror work? Is fuse F4 blown?		Go to <i>Step 8</i>	Go to <i>Step 2</i>
2	Check the fuse EF7 and the fuse EF32. Are the fuses blown?		Go to <i>Step 3</i>	Go to <i>Step 4</i>
3	1. Check for a short circuit. 2. Repair the short circuit, if necessary. 3. Replace the fuse. Is the repair complete?		System OK	
4	1. Remove the Ignition 2 relay. 2. Turn the ignition ON. 3. Check the voltage at the Ignition 2 relay socket, terminal 30 and terminal 85. The terminals are not marked on the relay socket, but are marked on the bottom of the relay. Does the voltmeter indicate the specified value at both locations?	11 – 14 v	Go to <i>Step 6</i>	Go to <i>Step 5</i>
5	Repair the power supply to the Ignition 2 relay. Is the repair complete?		System OK	
6	1. Temporarily substitute a known good relay for the Ignition 2 relay. 2. Turn the ignition ON. 3. Attempt to operate the sunroof. Does the sunroof operate?		Go to <i>Step 7</i>	Go to <i>Step 8</i>
7	1. Return the substituted relay to its original position. 2. Replace the Ignition 2 relay. Is the repair complete?		System OK	
8	1. Disconnect the lamp/sunroof switch. 2. Turn the ignition ON. 3. At the lamp/sunroof switch, on the fuse-side of the connector, check the voltage at terminal 1. Does the voltmeter indicate the specified value?	11 – 14 v	Go to <i>Step 10</i>	Go to <i>Step 9</i>
9	Repair the open circuit between the fuse EF32 and the sunroof switch. Is the repair complete?		System OK	
10	1. Reconnect the sunroof switch. 2. Disconnect the sunroof module six-pin electrical connector. 3. Use an ohmmeter to measure the resistance between the terminal 4 and ground. Is the resistance within the specified value?	$\approx 0 \Omega$	Go to <i>Step 10</i>	Go to <i>Step 9</i>
11	Repair the ground circuit. Is the repair complete?		System OK	

9Q – 4 ROOF

Step	Action	Value(s)	Yes	No
12	1. Leave the sunroof module disconnected. 2. Turn the ignition ON. 3. Check the voltage at terminal 3 of the connector for the sunroof module. Does the ohmmeter indicate the specified value?	11–14 v	Go to <i>Step 14</i>	Go to <i>Step 13</i>
13	Repair the open power supply to terminal 3 of the sunroof module connector. Is the repair complete?		System OK	
14	1. Reconnect the sunroof module. 2. Remove the sunroof motor, but leave the connectors attached. 3. Use the sunroof switch to attempt to operate the motor in both directions. Does the motor operate?		Go to <i>Step 15</i>	Go to <i>Step 16</i>
15	Repair the jammed sunroof mechanism. Is the repair complete?		System OK	
16	1. Disconnect both of the one–wire connectors at the sunroof motor. 2. Connect a voltmeter between the one–wire connectors. 3. Turn the ignition ON. 4. Turn the sunroof switch to the CLOSE position and observe the voltmeter reading. 5. Turn the sunroof switch to the OPEN position and observe the voltmeter reading. 6. The meter will show the same voltage at both switch positions, but one of the switch positions will show a reverse polarity. Does the voltmeter indicate the specified value when the switch is in either the OPEN or the CLOSE position?	11–14 v	Go to <i>Step 18</i>	Go to <i>Step 17</i>
17	Replace the sunroof module. Is the repair complete?		System OK	
18	Replace the sunroof motor. Is the repair complete?		System OK	Go to <i>Step 17</i>

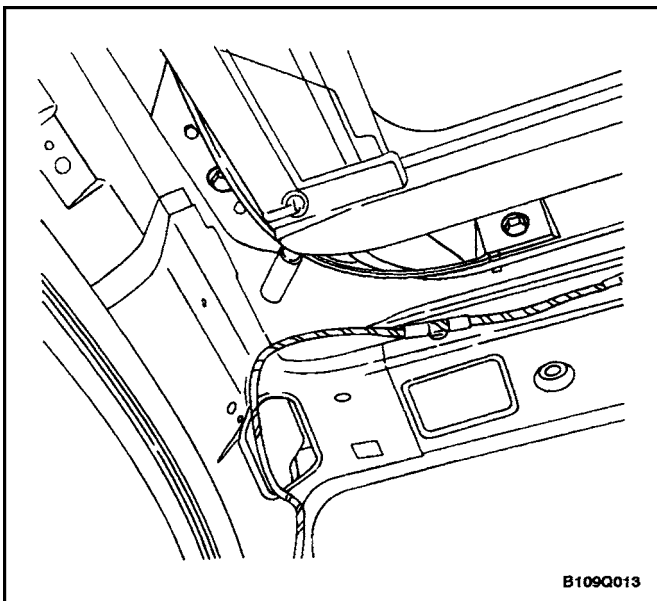
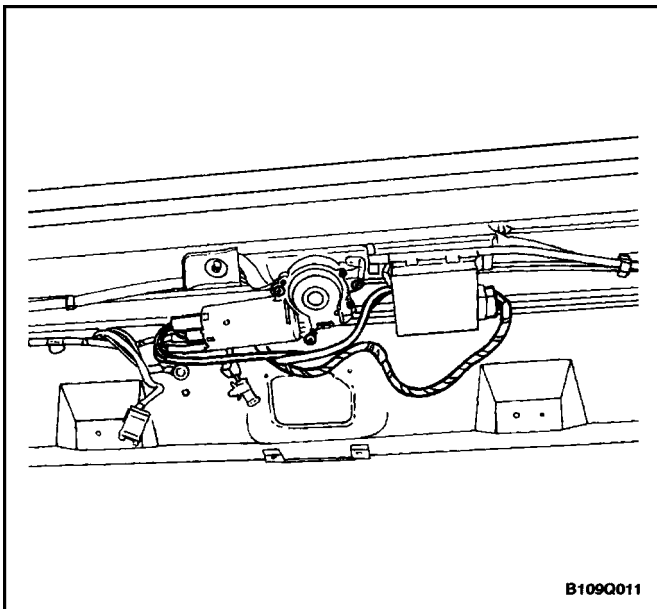
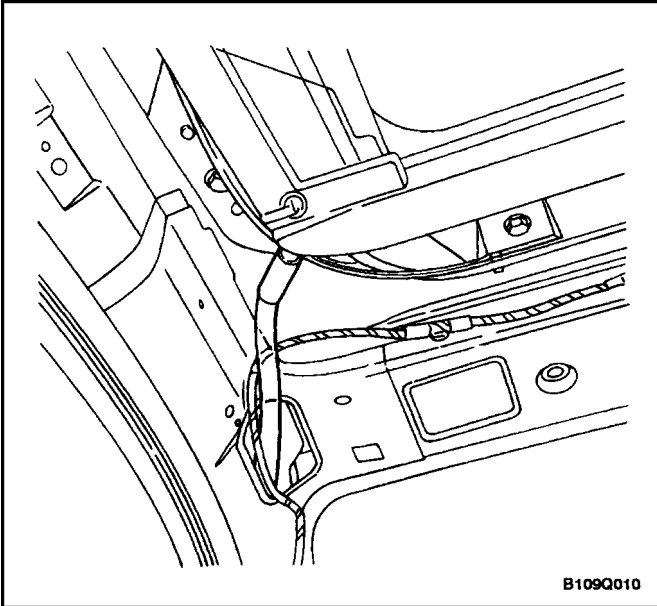
# MAINTENANCE AND REPAIR

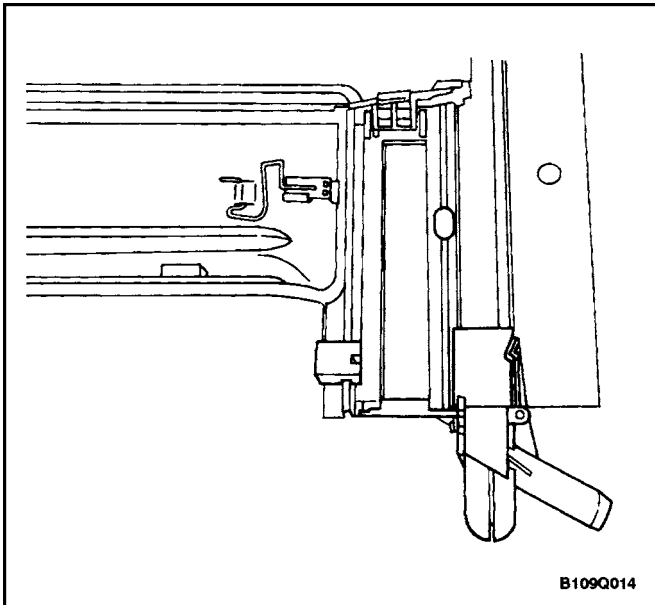
## ON-VEHICLE SERVICE

### POWER SUNROOF

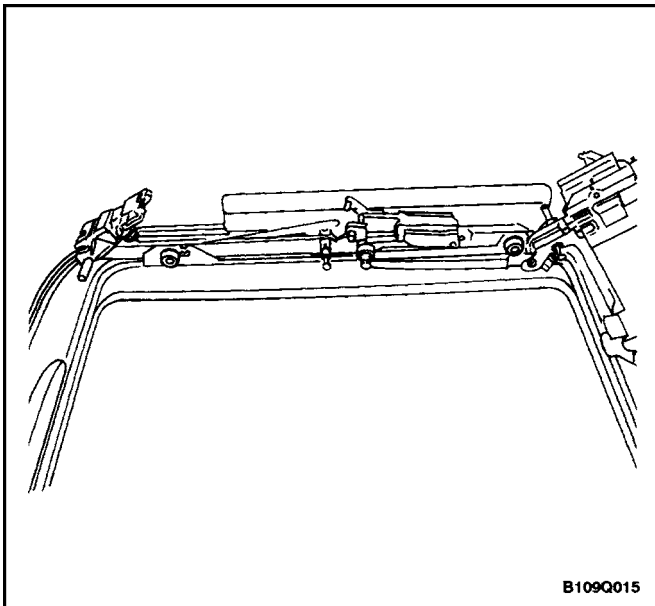
#### Removal Procedure

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.

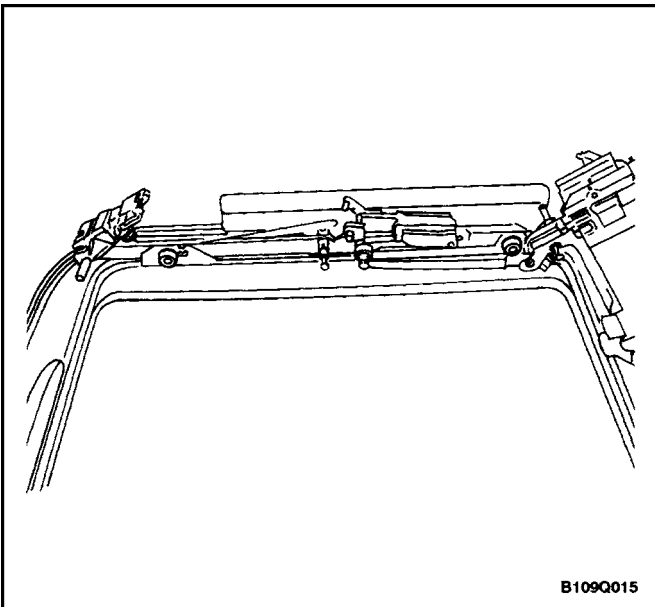




8. Remove the rubber end caps.
9. Remove the drain nozzles.
10. Remove the shade stops.
11. Remove the glass stops.



12. Remove the shade.
13. Remove the glass and the frame from the housing.
14. Remove the plastic trim.
15. Remove the screws and the glass from the frame.



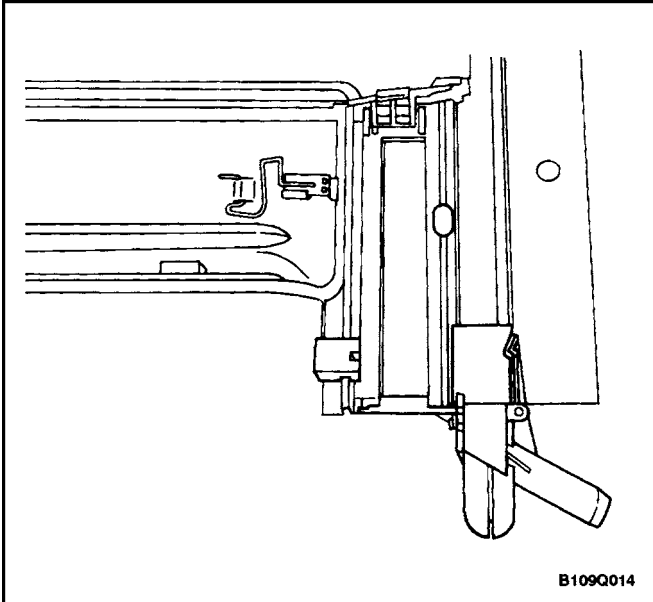
## Installation Procedure

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

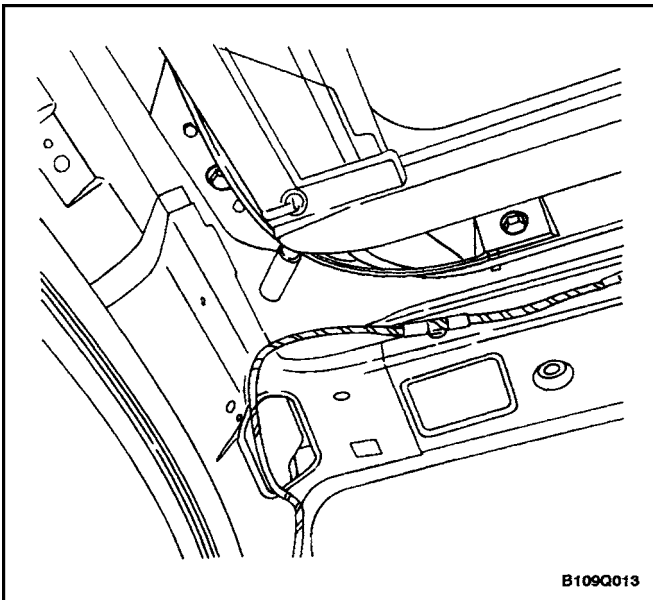
1. Install the glass to the frame with the screws.

### **Tighten**

Tighten the sunroof glass screws to 7 N•m (62 lb-in).



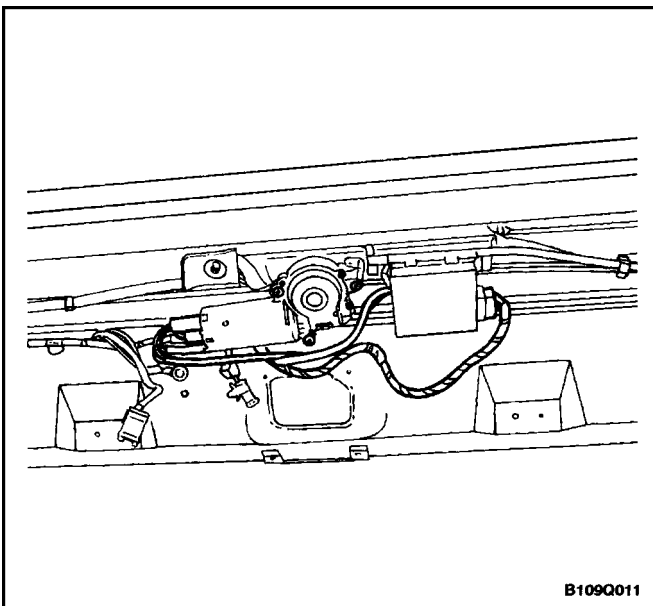
2. Install the plastic trim.
3. Install the glass and the frame to the housing.
4. Install the shade.
5. Install the glass stops.
6. Install the shade stops.
7. Install the drain nozzles.
8. Install the rubber end caps.



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

**Tighten**

Tighten the sunroof housing bolts to 7 N•m (62 lb-in).

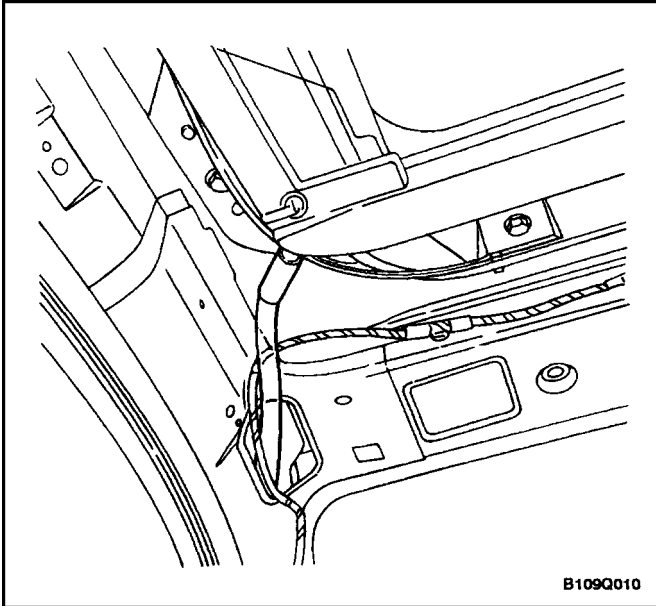


10. Install the motor control module.
11. Install the motor with the screws.

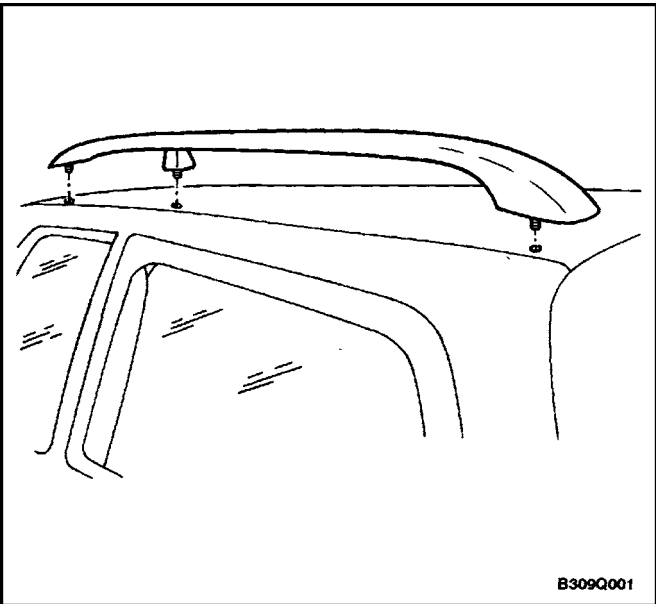
**Tighten**

Tighten the sunroof motor screws to 5 N•m (44 lb-in).

12. Connect the electrical connectors.



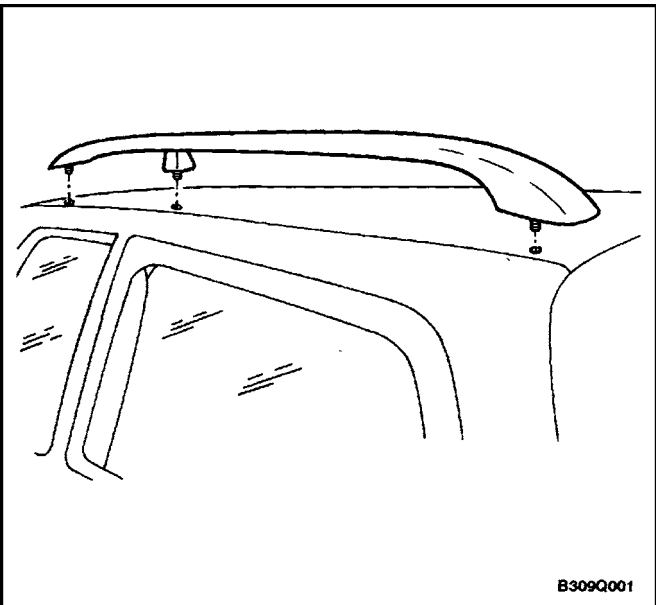
13. Install the drain hoses.
14. Install the headliner. Refer to "Formed Headliner" in this section.
15. Connect the negative battery cable.



## ROOF RACK (WAGON)

### Removal Procedure

1. Remove the headliner. Refer to "Formed Headliner" in this section.
2. Remove the nuts and the roof rack.



### 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.

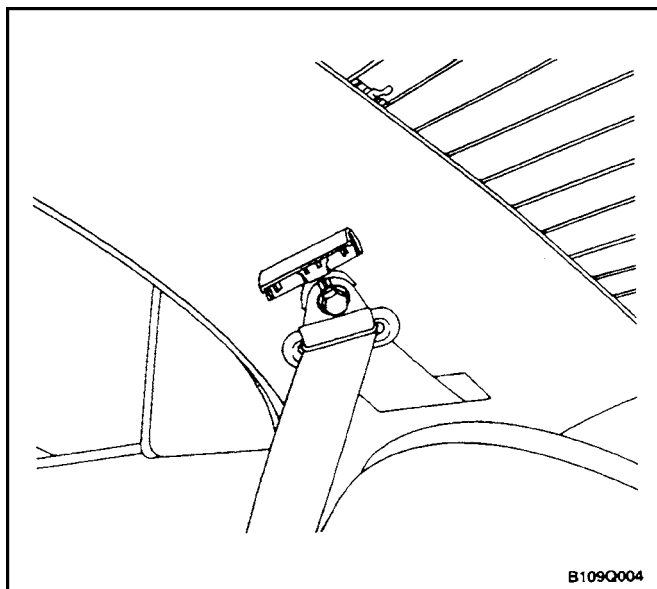
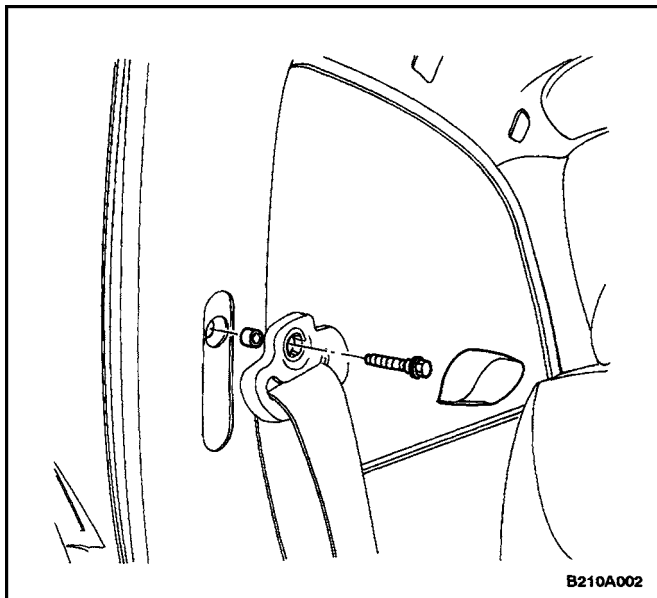
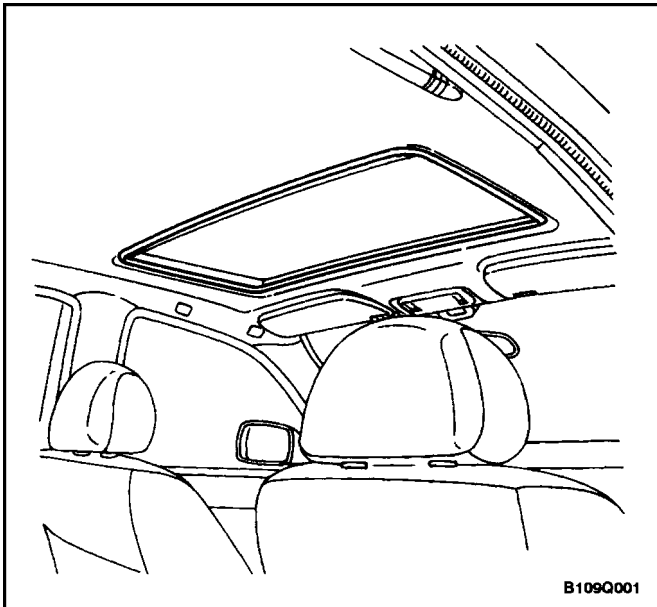
1. Install the roof rack with the nuts.

#### **Tighten**

Tighten the roof rack nuts to 27 N•m (20 lb–ft).

2. Install the headliner. Refer to "Formed Headliner" in this section.



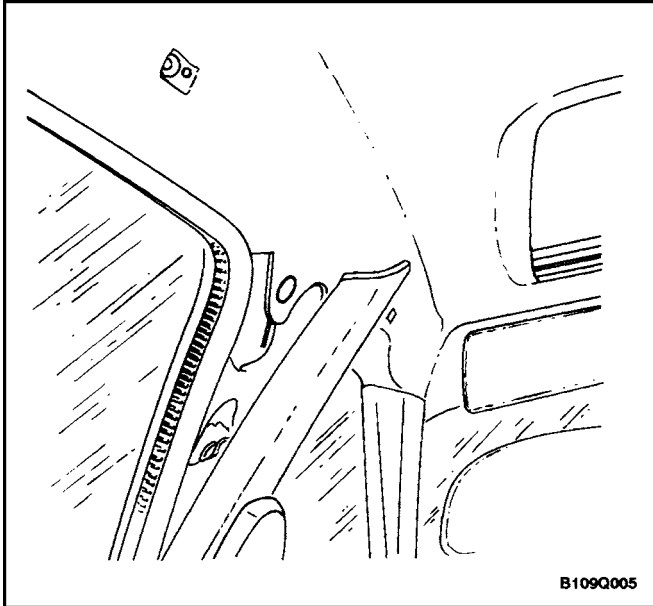


## FORMED HEADLINER

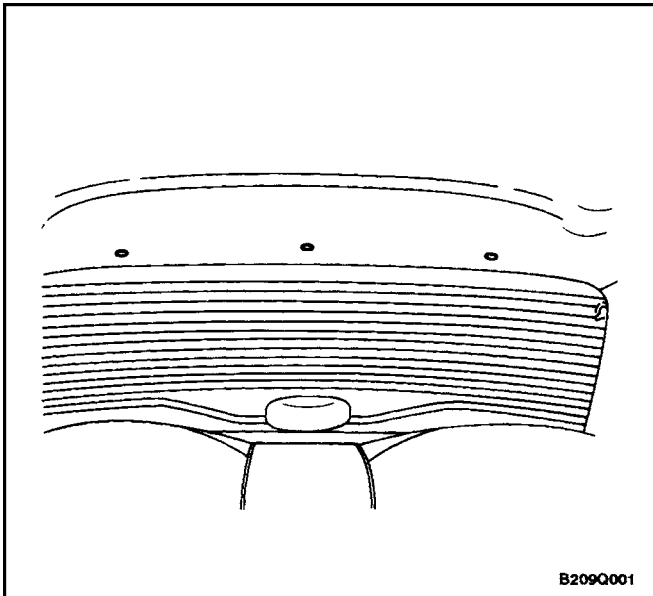
### (Notchback Shown, Hatchback and Wagon Similar)

#### Removal Procedure

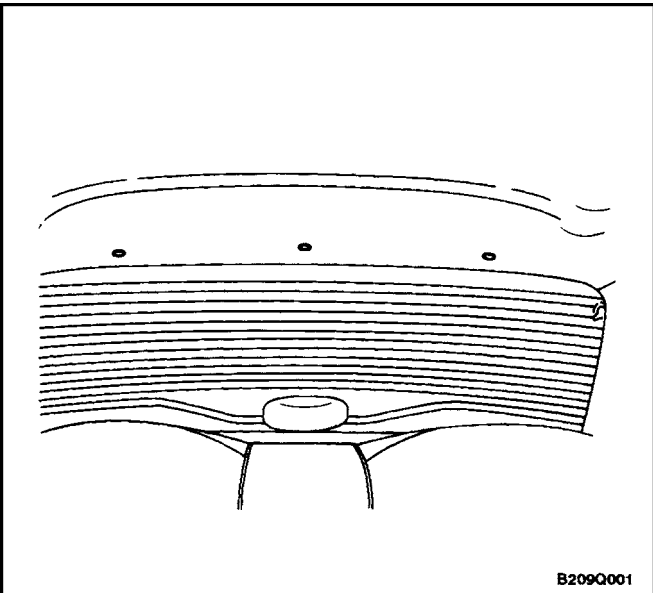
1. Disconnect the negative battery cable.
2. Remove the headliner/sunroof molding, if equipped.
3. Remove the passenger assist handles. Refer to "Passenger Assist Handles" in this section.
4. Remove the ticket holder. Refer to *Section 9E, Instrumentation/Driver Information*.
5. Remove the sun visors and the sun visor supports from the headliner. Refer to "Sun Visors" in this section.
6. Remove the interior courtesy lamp or the interior courtesy lamp/power sunroof control switch, if equipped. Refer to *Section 9B, Lighting Systems* or "Interior Courtesy Lamp/Power Sunroof Control Switch" in this section.
7. Remove the cargo area lamp (wagon only). Refer to *Section 9B, Lighting Systems*.
8. Remove the clock. Refer to *Section 9E, Instrumentation/Driver Information*.
9. Remove the left and the right A-pillar trim panels.
10. Remove the bolts and the seat belt anchors from the left and the right B-pillars.
11. Disconnect the top of the left and the right B-pillar trim panels.
12. Remove the bolts and the rear seat belt anchors from the left and the right C-pillars.



13. Remove the left and the right C-pillar trim panels.
14. Remove the left and right D-pillar trim panels (wagon only). Refer to *Section 9G, Interior Trim*.
15. Remove the retaining clips behind the upper B-pillar trim panel.

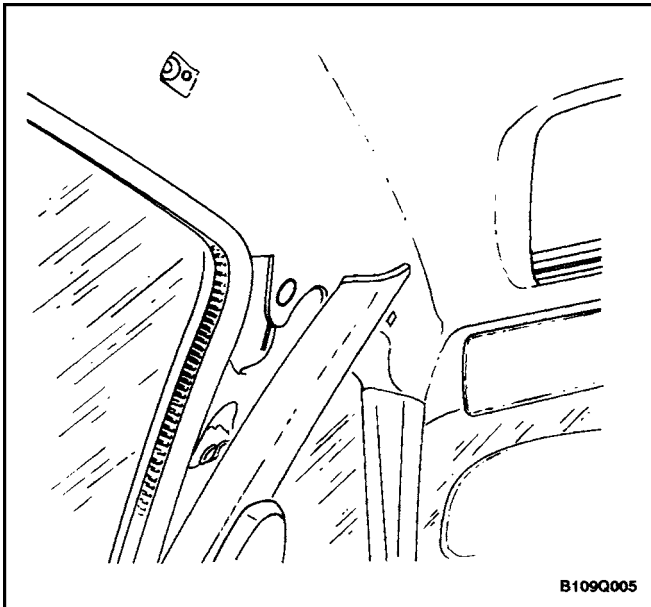


16. Remove the plastic retainers in the headliner along the rear window.
17. Recline both front seats.
18. Remove the headliner through a rear door or the hatchback door.

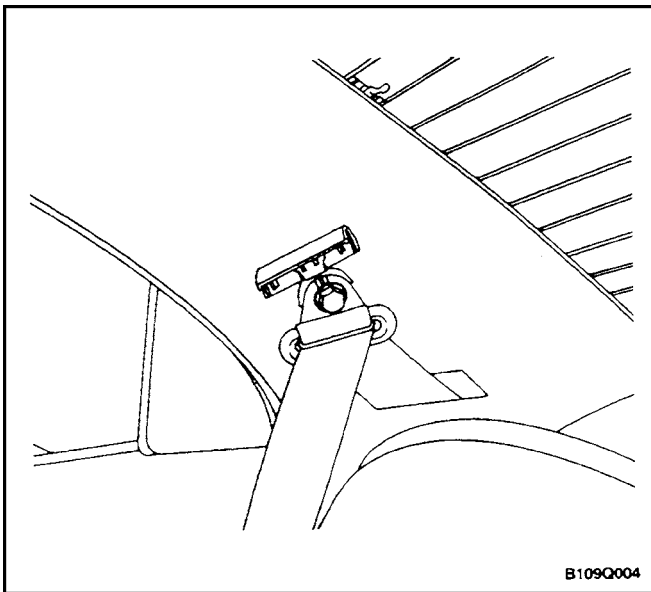


### Installation Procedure

1. Recline both front seats.
2. Insert the headliner through a rear door or the hatchback door.
3. Install the headliner behind the trim panels and the seals around the doors.
4. Install the plastic retainers along the rear window.



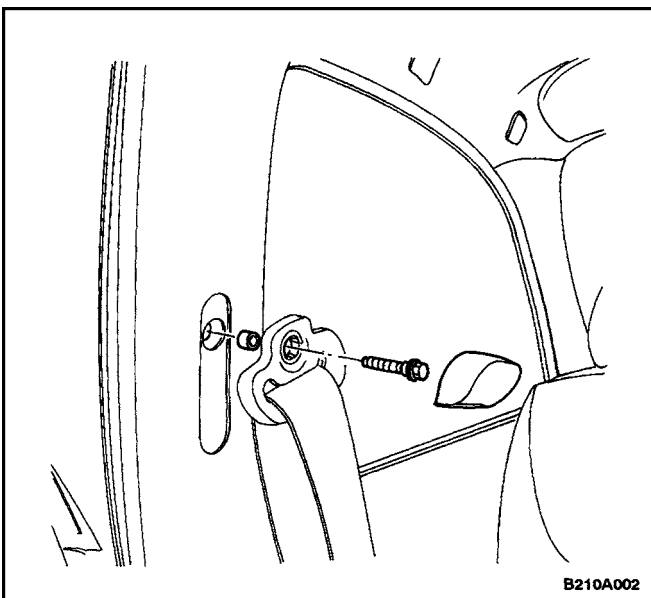
5. Install the retaining clips behind the upper B-pillar trim panels.



6. Install the left and right D-pillar trim panels (wagon only). Refer to *Section 9G, Interior Trim*.
  7. Install the left and the right C-pillar trim panels.
- Notice** : Dissimilar metals in direct contact with each other may corrode rapidly. Make sure to use the correct fasteners to prevent premature corrosion.
8. Install the rear seat belt anchors and the bolts to the left and the right C-pillars.

**Tighten**

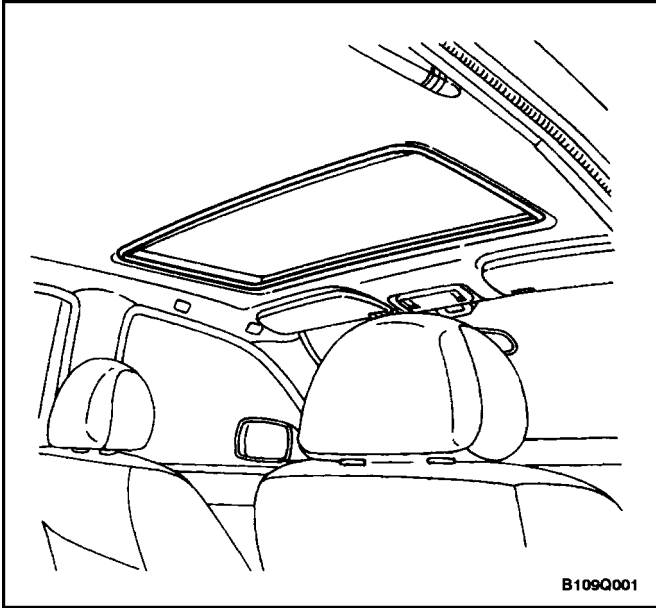
Tighten the rear seat belt anchor bolts to 35 N•m (26 lb–ft).



9. Install the top of the left and the right B-pillar trim panels.
10. Install the seat belt anchors with the bolts in the left and the right B-pillar panels.

**Tighten**

Tighten the rear seat belt anchor bolts to 35 N•m (26 lb–ft).

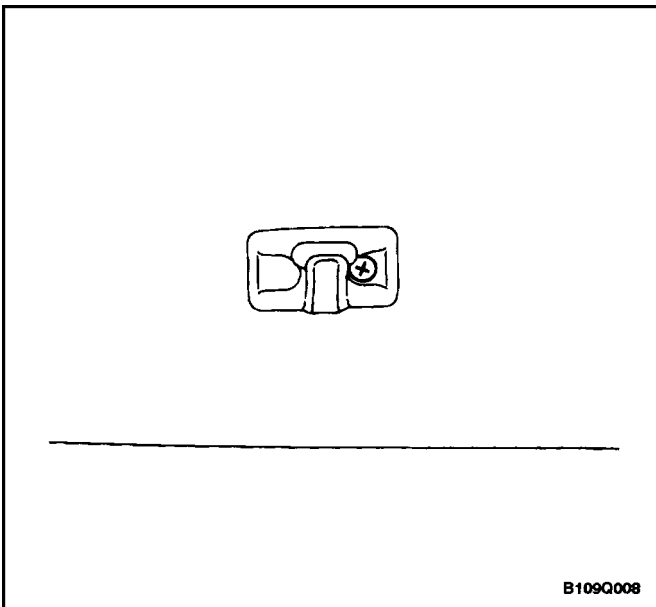
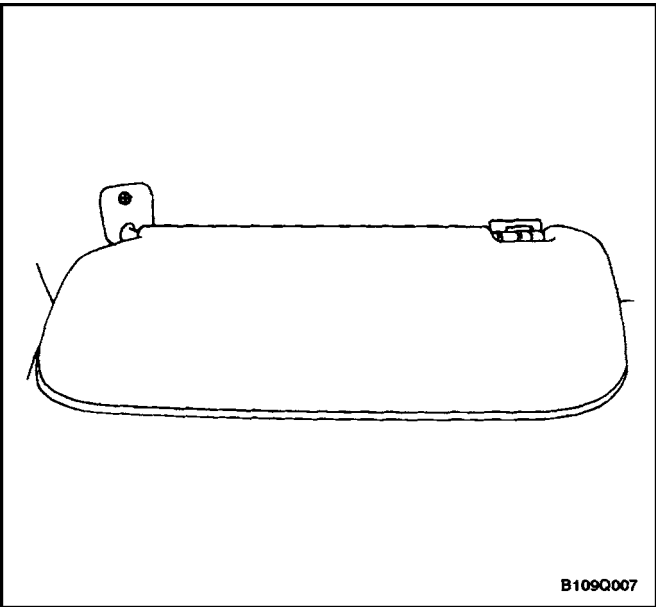


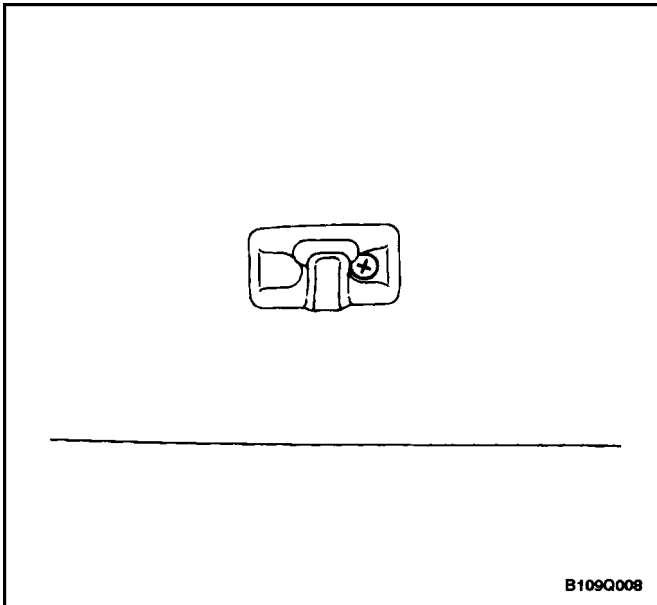
11. Install the left and the right A-pillar trim panels.
12. Install the clock. Refer to *Section 9E, Instrumentation/ Driver Information*.
13. Install the cargo area lamp (wagon only). Refer to *Section 9B, Lighting Systems*
14. Install the interior courtesy lamp or the interior courtesy lamp/power sunroof switch, if equipped. Refer to *Section 9B, Lighting Systems* or "Interior Courtesy Lamp/Power Sunroof Control Switch" in this section.
15. Install the sun visor and the sun visor supports. Refer to "Sun Visors" in this section.
16. Install the ticket holder. Refer to *Section 9E, Instrumentation/ Driver Information*.
17. Install the passenger assist handles. Refer to "Passenger Assist Handles" in this section.
18. Install the headliner/sunroof molding, if equipped.
19. Connect the negative battery cable.

## SUN VISORS

### Removal Procedure

1. Remove the screw and the sun visor from the headliner.
2. Remove the screw and the sun visor support from the headliner.





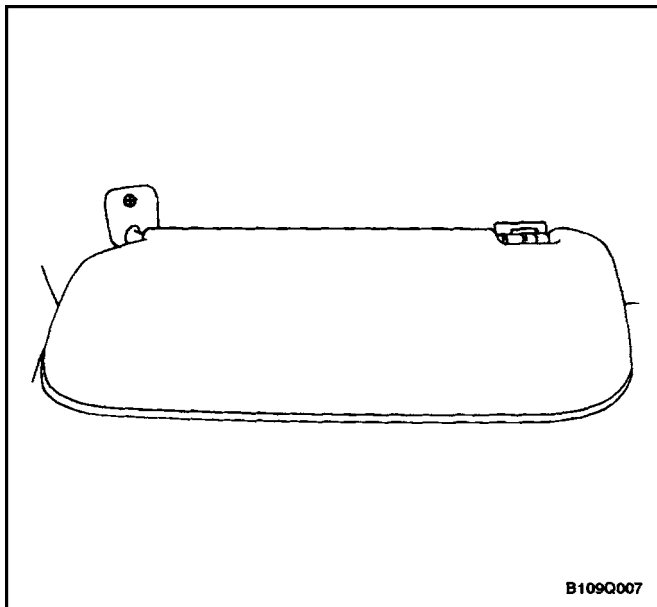
## Installation Procedure

**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

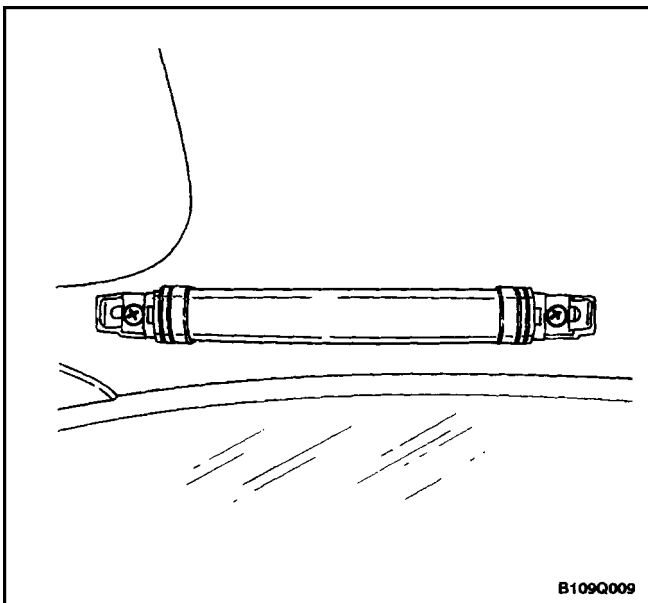
Tighten the sun visor support screw to 2 N•m (18 lbin).



2. Install the sun visor to the headliner with the screw.

### Tighten

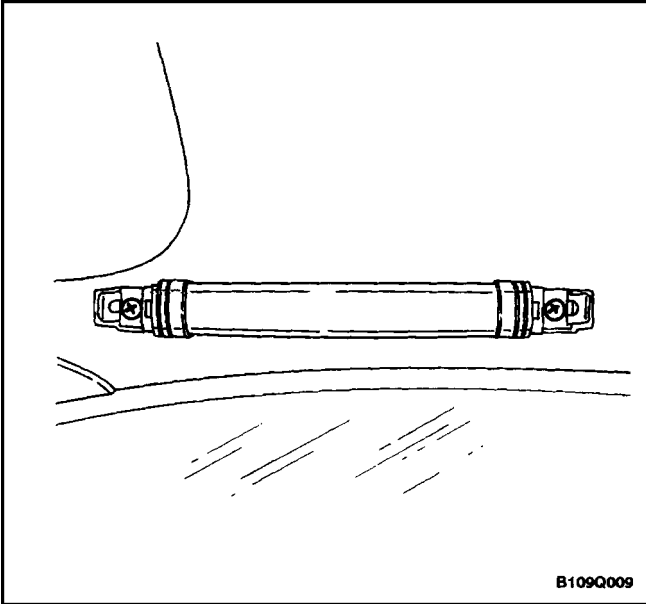
Tighten the sun visor screw to 2 N•m (18 lb-in).



## PASSENGER ASSIST HANDLES

### Removal Procedure

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



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### Installation Procedure

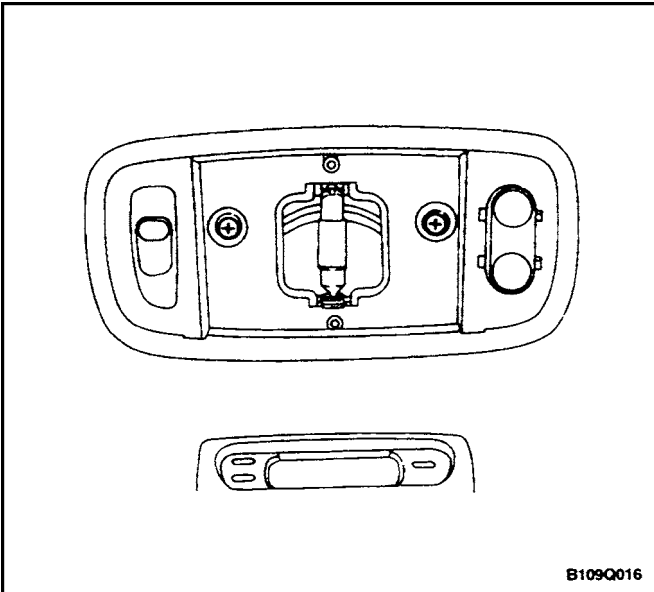
**Notice :** Dissimilar metals in direct contact with each other may corrode rapidly. Make sure to use the correct fasteners to prevent premature corrosion.

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

### Tighten

Tighten the passenger assist handle screws to 3.5 N•m (31 lb-in).

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

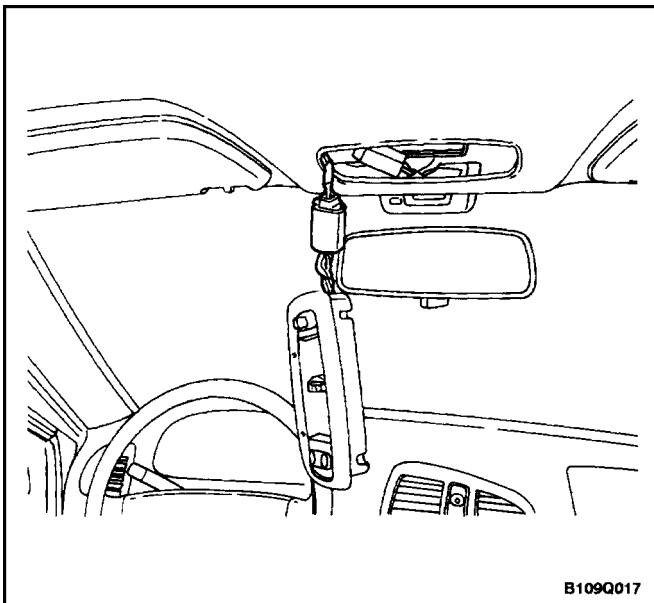


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## INTERIOR COURTESY LAMP/POWER SUNROOF CONTROL SWITCH

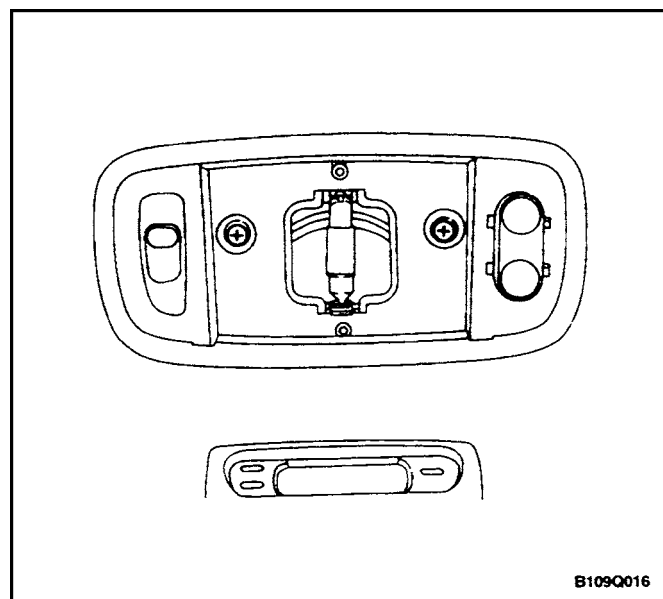
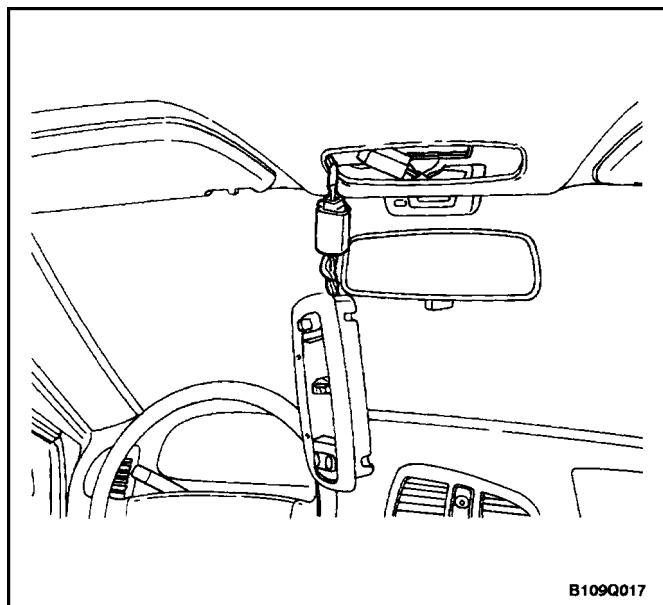
### Removal Procedure

1. Disconnect the negative battery cable.
2. Pry off the lamp lens.
3. Remove the screws and the lamp/power sunroof control switch.



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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 lamp/power sunroof control switch with the screws.

### Tighten

Tighten the lamp/power sunroof control switch screws to 4 N•m (35 lb-in).

3. Install the 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 the headliner be serviced as a complete assembly.

### POWER SUNROOF

The sunroof is

- 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.

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

To operate the sunroof, the ignition must be in the ON position.

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.

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.

To close the sunroof from a slid-open position,

### ROOF RACK (WAGON)

The sun visors swing down in order to block out glare. They also swing to the side when they are released from the support.

### SUN VISORS

The sun visors swing down and to the side to block out glare.

### 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.

### INTERIOR COURTESY LAMP/POWER SUNROOF CONTROL SWITCH

The courtesy lamp is located on the headliner above the rearview mirror. The lamp switch is located on the left side of the lamp/switch assembly and has three positions. If the switch is in the center position, the lamp will go on whenever a door is opened and go off when it is closed. In the forward position, the lamp will stay on until it is turned off. In the rear position, the lamp will not come on, even when a door is opened. The sunroof control switch is also located on the interior courtesy lamp assembly.

### COAT HOOK

A coat hook is located on the left rear passenger assist handle for convenience. The coat hook will not interfere with passenger assist handle operation.