

## Fastener Tightening Specifications

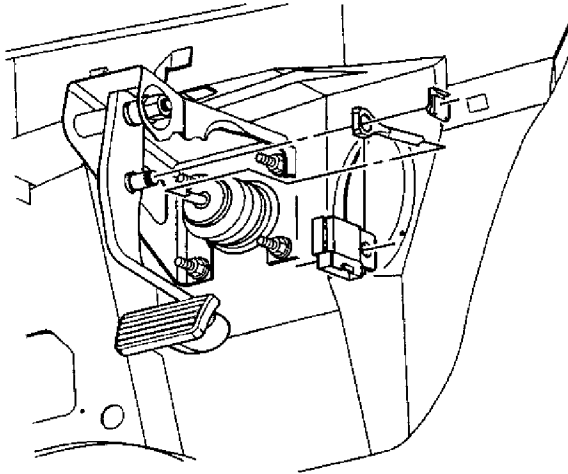
Application	Specification	
	Metric	English
Backup Lens to Lamp Assembly Screws	1.5 N·m	13 lb in
Fog Lamp Lens to Fog Lamp Assembly Screws	1.5 N·m	13 lb in
Headlamp to Radiator Support Bolts	10 N·m	89 lb in
High Mounted Stop Lamp to Upper Lamp Applique Screws	1.5 N·m	13 lb in
License Plate Lamp to License Plate Pocket Screws	1.5 N·m	13 lb in
Park/Turn Signal Lamp to Radiator Grille Screws	1.5 N·m	13 lb in
Retaining Ring to Headlamp Housing Screws	1.5 N·m	13 lb in
Side Marker Lamp to Body Screws	1.5 N·m	13 lb in
Tail Lamp to Quarter Panel Nuts	5 N·m	44 lb in

## Stop Lamp Switch Replacement

### Removal Procedure

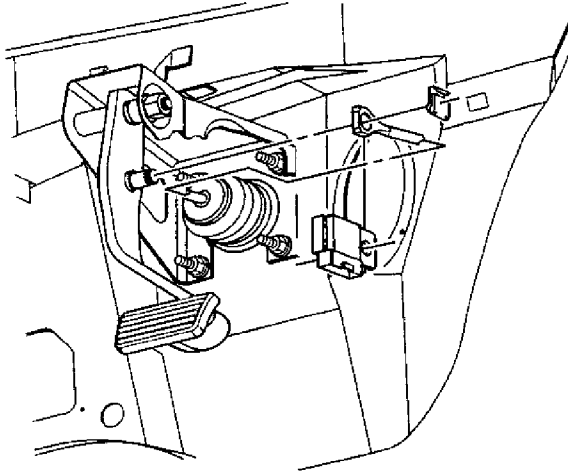
**Warning:** Refer to [Battery Disconnect Warning](#) in the Preface section.

1. Disconnect the battery negative cable. Refer to [Battery Negative Cable Disconnection and Connection](#).



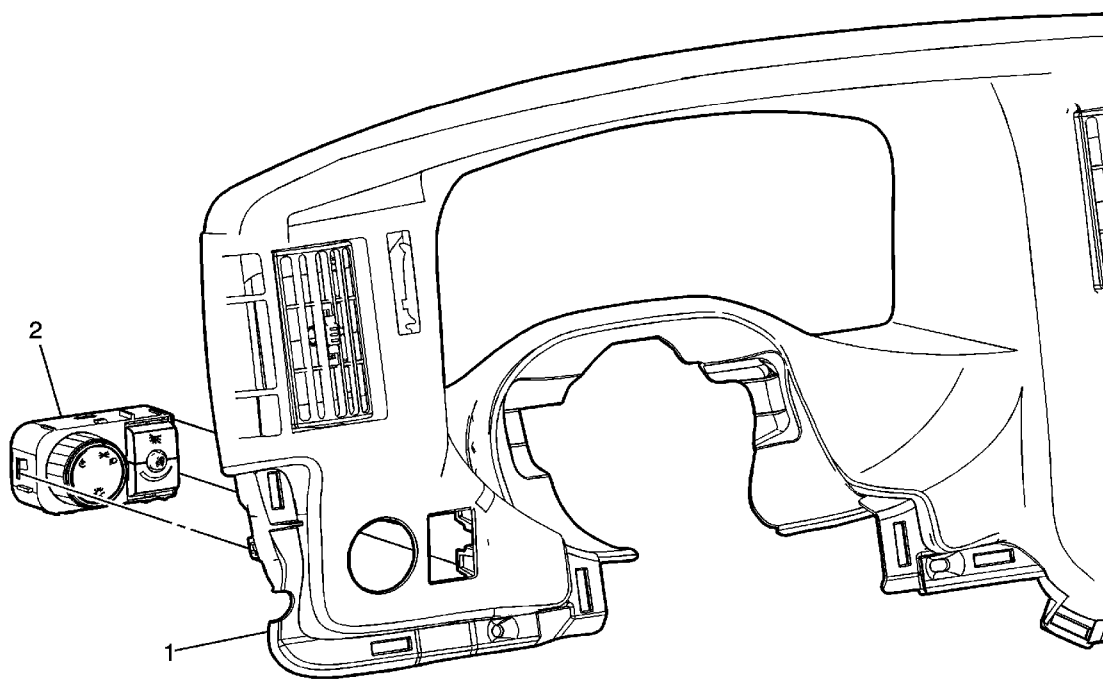
2. Disconnect the electrical connector from the stop lamp switch.
3. Remove the retainer from the brake pedal pin.
4. Remove the stop lamp switch and the pushrod to the power brake booster from the brake pedal pin.
5. Unsnap the stop lamp switch from the power brake booster pushrod.

### Installation Procedure



1. Snap the stop lamp switch onto the pushrod to the power brake booster.
2. Install the stop lamp switch with the pushrod on the brake pedal pin.
3. Install brake switch retainer.
4. Connect the electrical connector to the stop lamp switch.
5. Connect the battery negative cable. Refer to [Battery Negative Cable Disconnection and Connection](#).

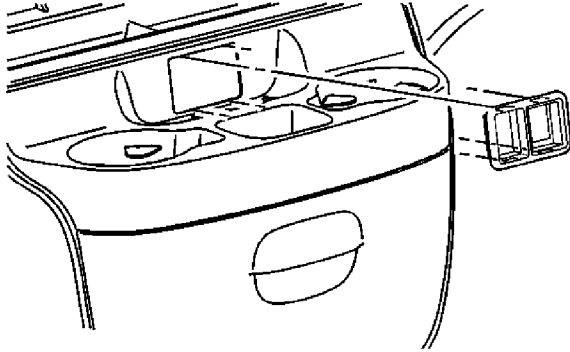
## Headlamp Switch Replacement



Callout	Component Name
1	Instrument Panel Cluster Trim Plate Bezel Assembly Refer to <a href="#">Instrument Panel Cluster Trim Plate Bezel Replacement</a> .
2	Headlamp Switch Assembly <b>Procedure</b> Release the retaining tabs on the switch and remove switch from the cluster trim bezel assembly.

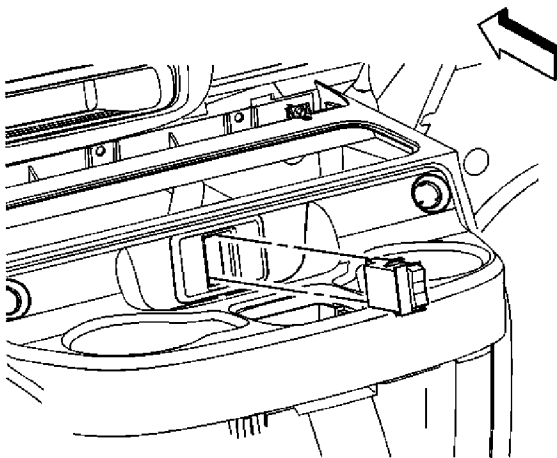
## Rear Fog Lamp Switch Replacement

### Removal Procedure



**Important:** Avoid excessive force when prying the bezel from the instrument panel extension.

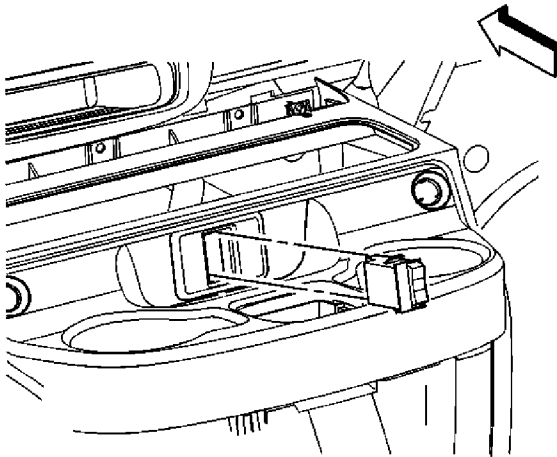
1. Pry the bezel from the instrument panel extension using a flat-bladed tool.
2. Remove the electrical connector from the rear fog lamp switch.



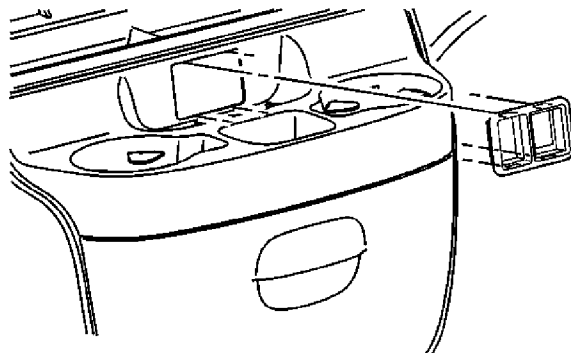


3. Press the tabs on the rear fog lamp switch in order to disengage the tabs from the bezel.
4. Remove the rear fog lamp switch from the vehicle.

## Installation Procedure



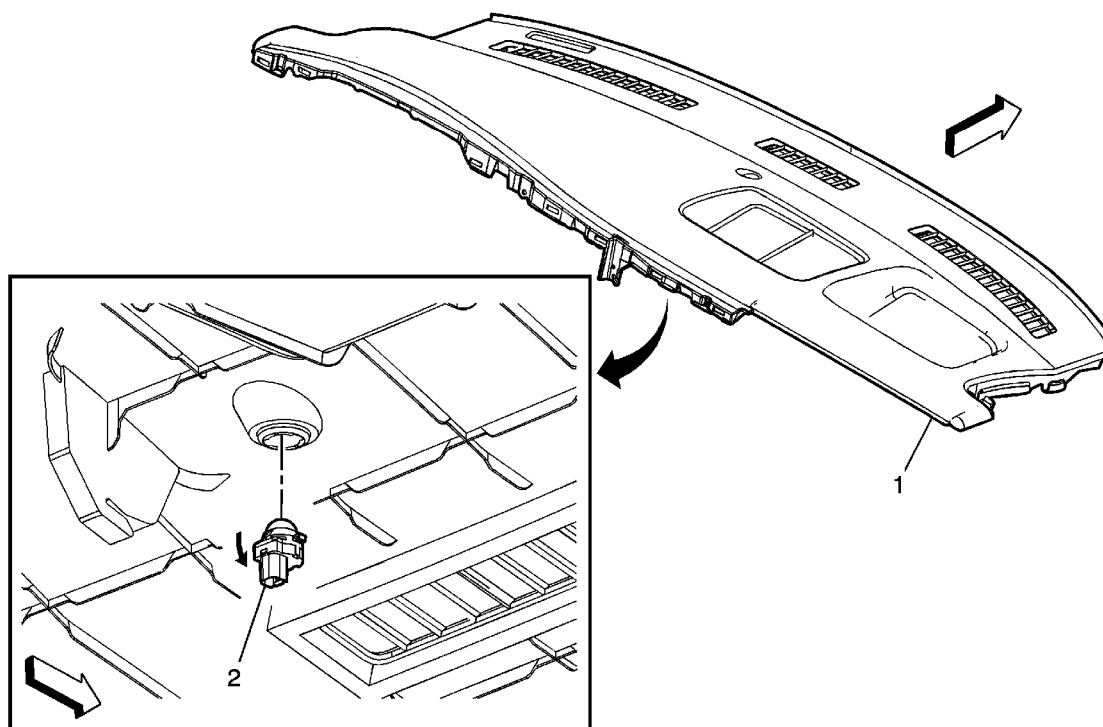
1. Install the following components to the instrument panel extension:
  - The rear fog lamp switch
  - The bezel
2. Apply pressure to the rear fog lamp switch in order to engage the tabs on the switch to the bezel.
3. Install the rear fog lamp switch.





4. Install the electrical connector to the rear fog lamp switch.
5. Install the bezel to the lower panel extension.

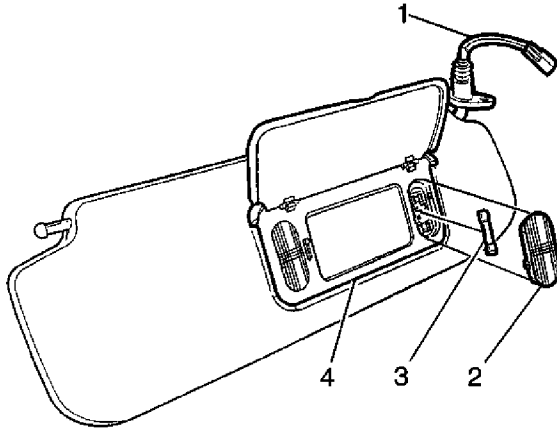
## Daytime Running Lamp (DRL) Ambient Light Sensor Replacement



Callout	Component Name
1	Instrument Panel Upper Trim Pad Refer to <a href="#">Instrument Panel Upper Trim Pad Replacement</a> .
2	Daytime Running Lamp Ambient Light Sensor Assembly <b>Procedure</b> <ol style="list-style-type: none"><li>1. Twist and pull down to remove.</li><li>2. Disconnect electrical connector.</li></ol>

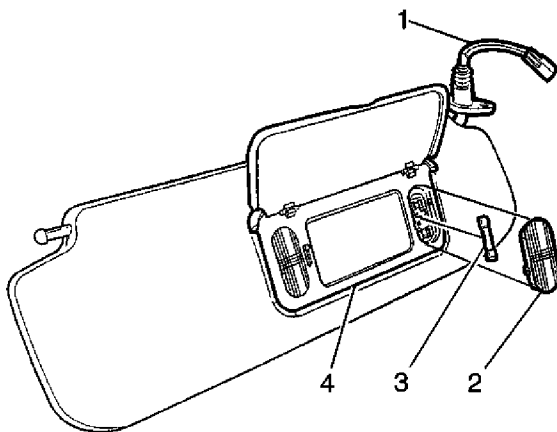


## Sunshade Illuminated Mirror Lamp Bulb Replacement Removal Procedure



1. Gently pry out the lens (2) of the vanity mirror assembly (4) with a suitable flat-bladed tool.
2. Remove the bulb (3) from the socket.

## Installation Procedure

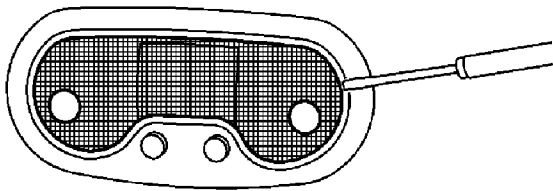




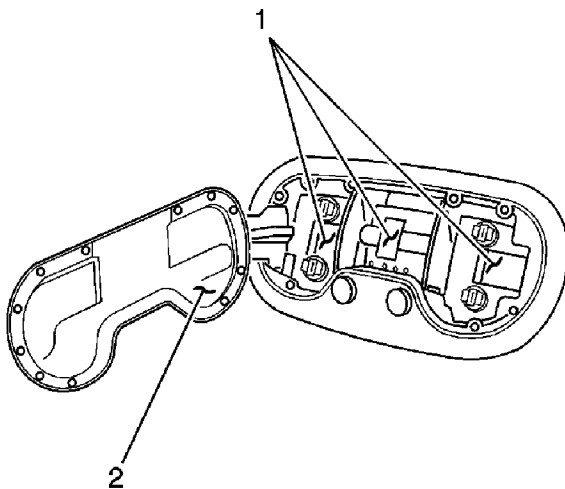
1. Install the bulb (3) into the bulb socket.
2. Install the lens (2) to the vanity mirror assembly (4) by pressing it into place.

## Dome Lamp Replacement

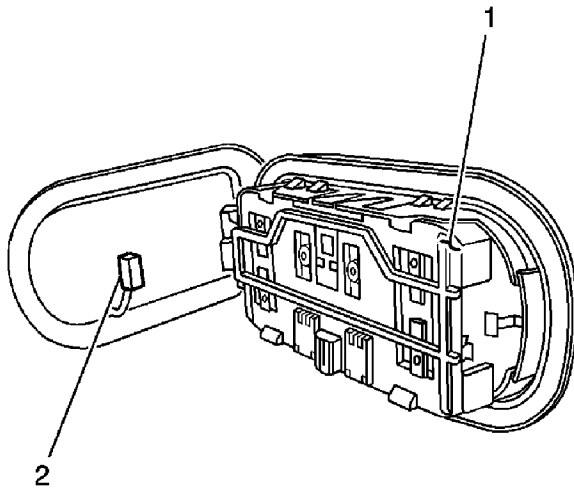
### Removal Procedure



1. Using a flat bladed tool, pry the dome lamp lens open.

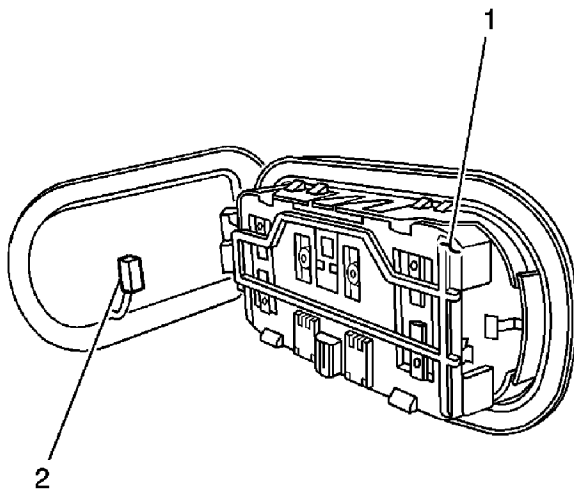


2. Remove the dome lamp lens (2) completely from the dome lamp housing.

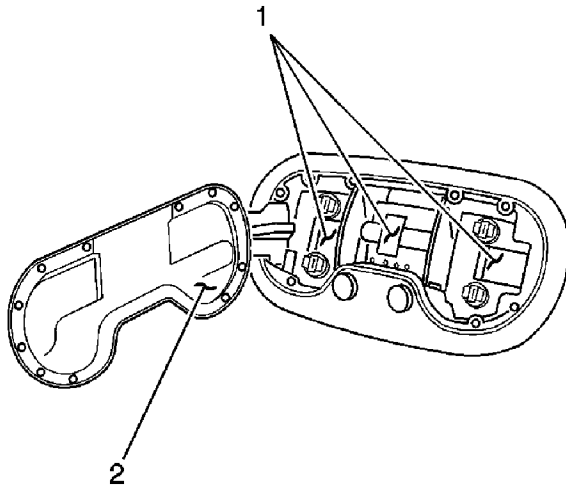


3. Partially remove the dome lamp housing (1) from the headliner.
4. Disconnect the electrical connector (2) from the dome lamp housing.

## Installation Procedure



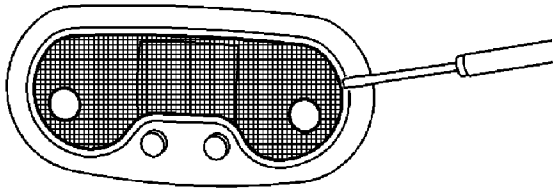
1. Partially install the dome lamp housing (1) to the headliner.
2. Connect the dome lamp electrical connector (2).



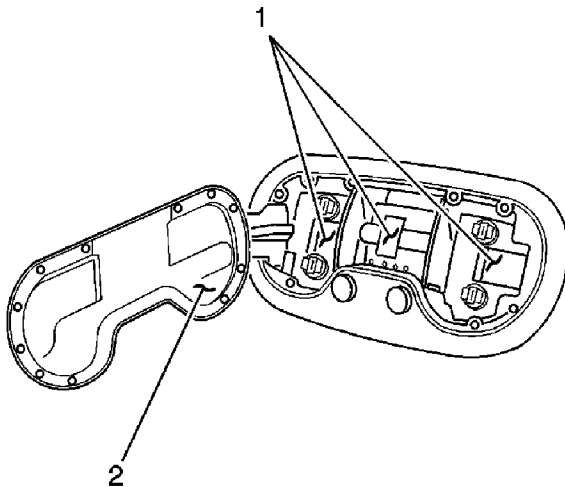
3. Install the dome lamp lens (2) to the dome lamp housing.
4. Snap the dome lamp lens (2) into the dome lamp housing.

## Dome Lamp Bulb Replacement

### Removal Procedure



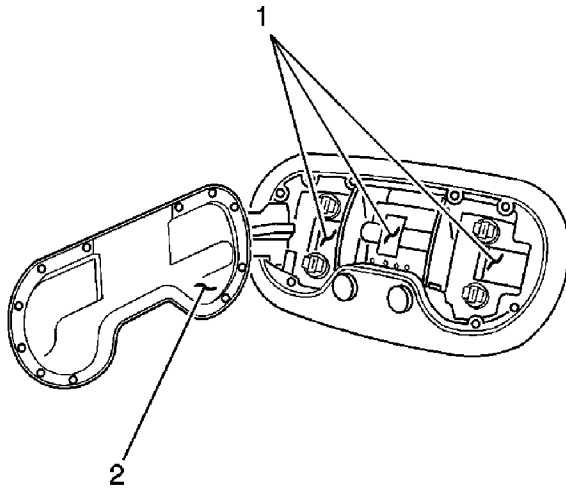
1. Using a flat bladed tool, pry the dome lamp lens open.



2. Remove the dome lamp bulbs (1) from the dome lamp housing.

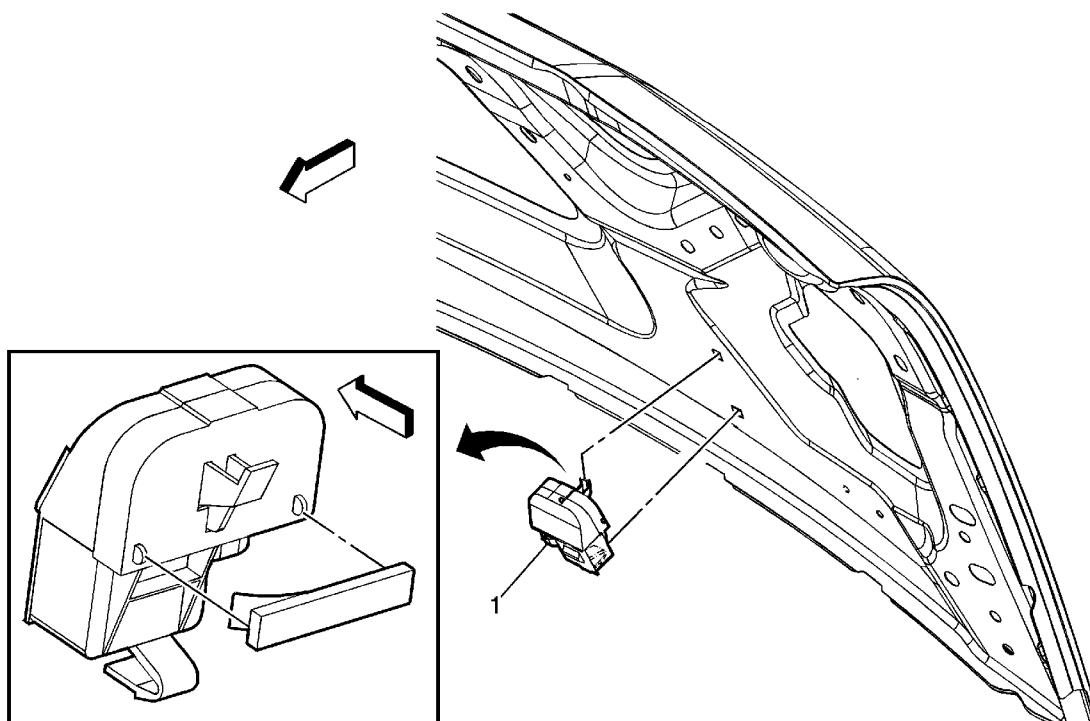
### Installation Procedure

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1. Install the dome lamp bulbs (1).
2. Snap the dome lamp lens (2) into the housing.

## Underhood Lamp Replacement



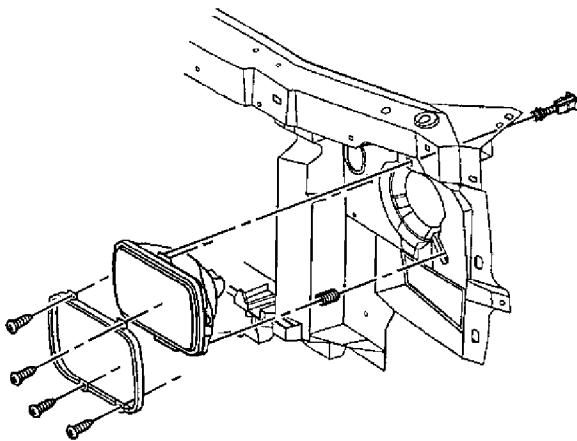
Callout	Component Name
<b>Preliminary Procedure</b>	
<ol style="list-style-type: none"><li>1. Open and support the hood.</li><li>2. Disconnect the electrical harness connector to the underhood lamp assembly.</li><li>3. Release the locking tab securing the underhood lamp to the inner hood panel.</li><li>4. Pull the lamp downward in order to remove.</li></ol>	
1	<p>Underhood Lamp Assembly</p> <p><b>Tip</b> Ensure the foam tape strip is attached to the lamp as shown, prior to installation.</p>



## Sealed Beam Headlamp Replacement

### Removal Procedure

1. Turn OFF the headlamp switch.

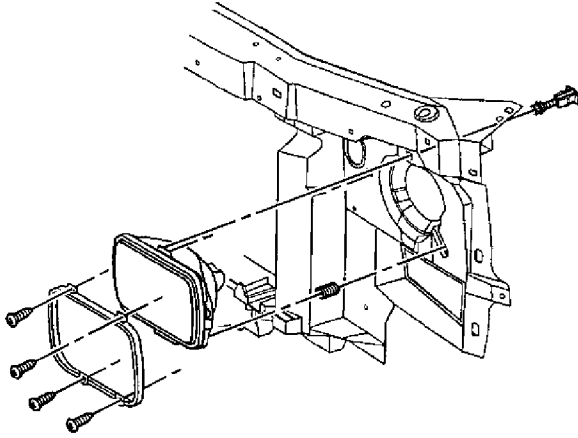


2. Remove the retaining ring screws from the headlamp.

Do not move the adjustment screws.

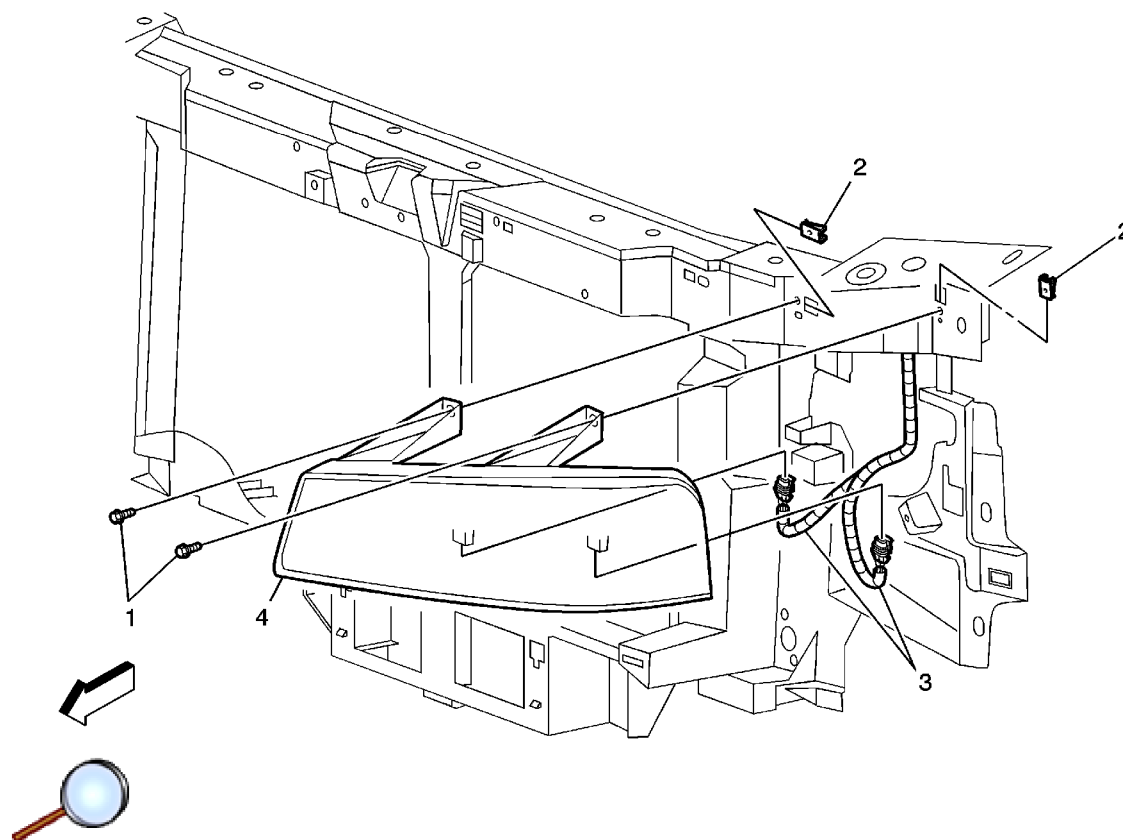
3. Remove the retaining ring from the headlamp.
4. Remove the headlamp from the housing.
5. Disconnect the electrical connector from the headlamp.

### Installation Procedure



1. Connect the electrical connector to the headlamp.
2. Install the headlamp to the housing.
3. Install the retaining ring to the headlamp.
4. Install the screws to the retaining ring.

## Headlamp Replacement (V22)

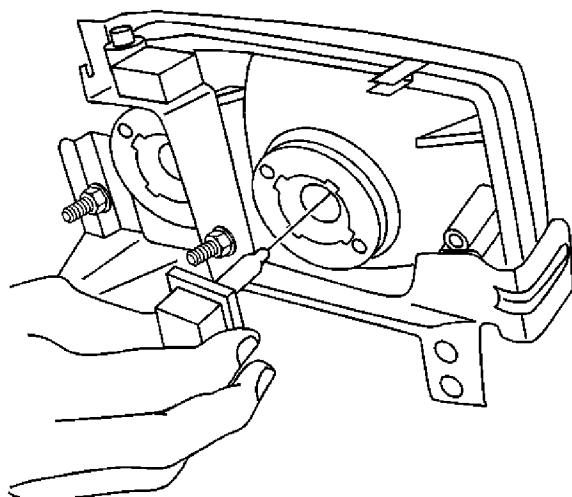


Callout	Component Name
<b>Preliminary Procedure</b>	
<ol style="list-style-type: none"><li>1. Remove the uplevel radiator grille assembly. Refer to <a href="#">Grille Replacement</a></li><li>2. Aim the headlamps after the headlamp assembly has been replaced. Refer to <a href="#">Headlamp Aiming</a>.</li></ol>	
1	Headlamp Screw (Qty: 2) <b>Caution:</b> Refer to <a href="#">Fastener Caution</a> in the Preface section. <b>Tighten</b> 10 N·m (89 lb in)
2	Headlamp Radiator Support Nut (Qty: 2)
3	Forward Lamp Harness Electrical Connector (Qty: 2)
4	Headlamp Assembly <b>Warning:</b> Refer to <a href="#">Halogen Bulb Warning</a> in the Preface section. <b>Tip</b> Transfer the headlamp bulb sockets as needed.

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## Headlamp Bulb Replacement

### Removal Procedure



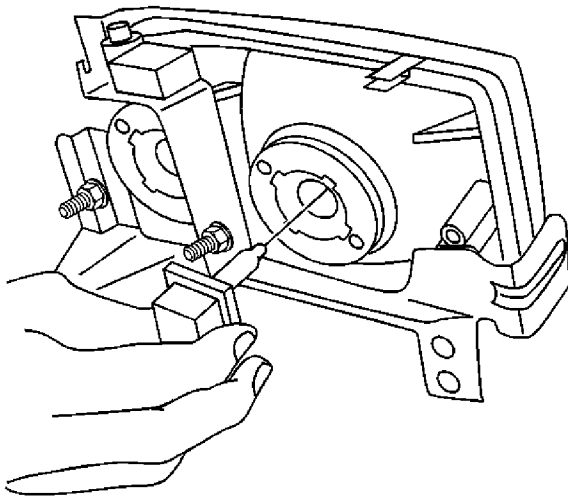
1. Turn OFF the headlamp switch.
2. Disconnect the electrical connector from the headlamp bulb.

**Warning:** Halogen bulbs contain gas under pressure. Handling a bulb improperly could cause it to shatter into flying glass fragments. To help avoid personal injury:

- Turn off the lamp switch and allow the bulb to cool before changing the bulb.
- Leave the lamp switch OFF until the bulb change is complete.
- Always wear eye protection when changing a halogen bulb.
- Handle the bulb only by its base. Avoid touching the glass.
- Keep dirt and moisture off the bulb.
- Properly dispose of the used bulb.
- Keep halogen bulbs out of the reach of children.

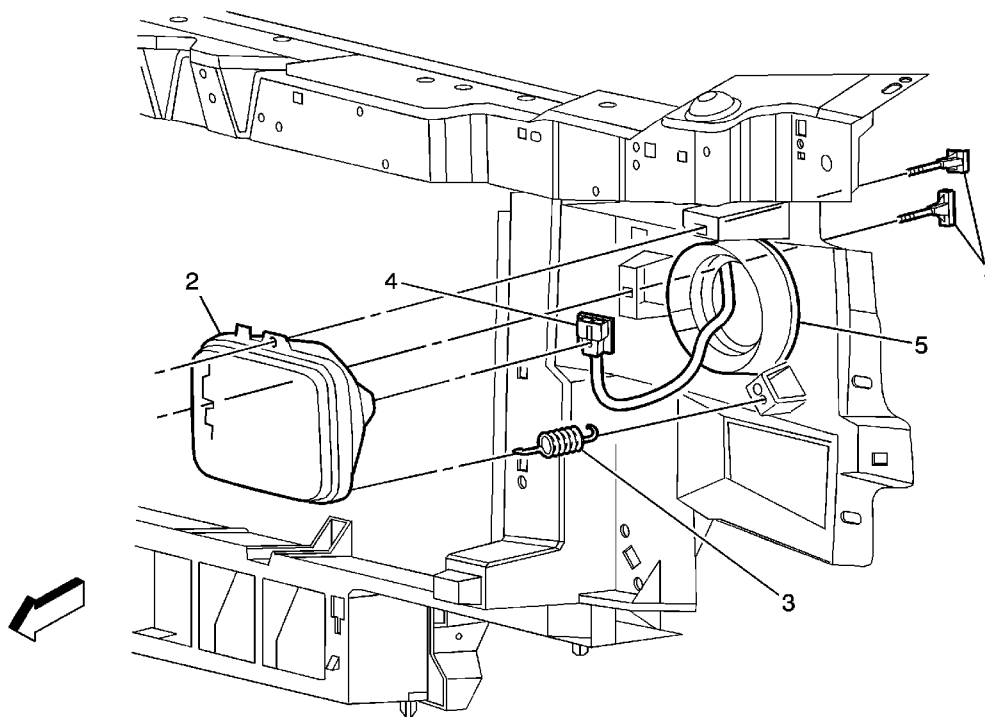
3. Rotate the bulb counterclockwise in order to disengage the bulb from the headlamp.
4. Remove the bulb from the headlamp.

### Installation Procedure



1. Install the bulb to the headlamp.
2. Rotate the bulb clockwise in order to engage the bulb in the headlamp.
3. Connect the electrical connector to the headlamp bulb.

## Headlamp Capsule Replacement (Minus V22)



Callout	Component Name
<b>Preliminary Procedure</b> <ol style="list-style-type: none"> <li>1. Remove the base front radiator grille assembly. Refer to <a href="#">Grille Replacement</a>.</li> <li>2. Aim the headlamps after the headlamp capsule has been replaced. Refer to <a href="#">Headlamp Aiming</a>.</li> </ol>	
1	Headlamp Adjuster Screw (Qty: 2) <b>Tip</b> Loosen the screws to assist with the removal of the headlamp capsule from the radiator support.
2	Headlamp Capsule <b>Tip</b> Hold the headlamp capsule when removing the support spring.
3	Headlamp Capsule Support Spring
4	Headlamp Capsule Electrical Harness Connector
5	Radiator Support

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**Tip**

Lubricate the perimeter of the headlamp prior to installing the headlamp into the radiator support pocket.

## Headlamp Aiming

The screen method is preferred for aiming headlamps. If the headlamp is equipped with aiming pads, headlamp aiming may be performed using the alternate procedure.

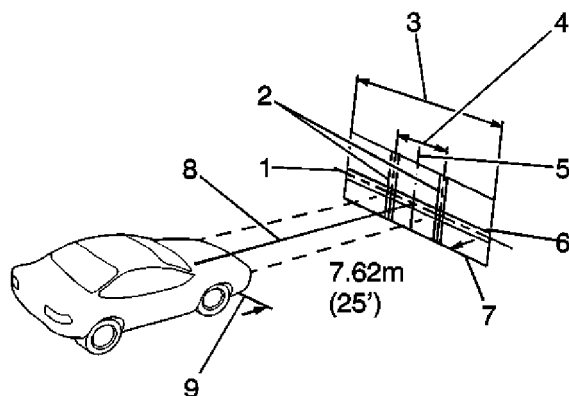
Headlamp aiming is done with the vehicle's low beam lamps. The high beam lamps will be correctly aimed if the low beam lamps are aimed properly. If the high beam needs adjustment, follow the screen method using the high beam bulb as the reference for measurements.

### Screen Method for Headlamp Aiming (Visual Aim)

**Important:** Some state and local laws specify requirements for headlamp aim. All of these laws must be complied with when performing any headlamp aiming operations.

Headlamp aim should be checked:

- When a new headlamp capsule is installed
- If service or repairs to the front end area have (or may have) disturbed the headlamps or their mounting
- I The area will consist of a level surface large enough to allow for a vehicle and an additional 7.62 m (25 feet) measured from face of lamps to the front of the aiming screen.
- I The screen will be 1.52 m (5 ft) high x 3.66 m (12 ft) wide with a matte white surface well shaded from extraneous light, and properly adjusted to the floor on which the vehicle stands. Provisions may be made for moving the screen so it can be aligned parallel with the vehicle.
- I The screen shall be provided with a fixed vertical centerline, two laterally adjustable vertical tapes, and one vertically adjustable horizontal tape.
- I If a regular commercial aiming screen is not available, the screen may consist of a vertical wall having a clear uninterrupted area approximately 1.83 m (6 ft) high and 3.66 m (12 ft) wide. The surface should be finished with a washable non-gloss white paint.
- 





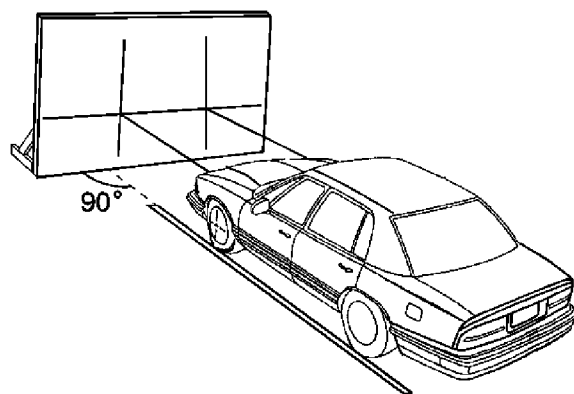


After the aiming screen has been set up in its permanent location, it is necessary to paint a reference line on the floor directly under the lens of the lamps to indicate the proper location of the headlamps when they are being aimed:

- Distance between headlamps (1)
- Center line of screen (2)
- Adjustable vertical pointer (3)
- Adjustable horizontal tape (4)
- Diagram of light screen (5)
- Vertical center line ahead of right headlamp pointer position (6)
- 7.62 m (25 ft) (7)
- Car axis (8)
- Adjustable vertical pointer
- Horizontal center line of lamps
- Vertical center line ahead of left headlamp

Prior to aiming the headlamps, the following steps must be taken:

1. Remove any snow, ice or mud from the vehicle.
2. The vehicle must have a full tank of gas.
3. Stop all other work on the vehicle.
4. If any service has been performed on the vehicle, make sure that all of the components are back in their original place.
5. The vehicle must be on a level surface.

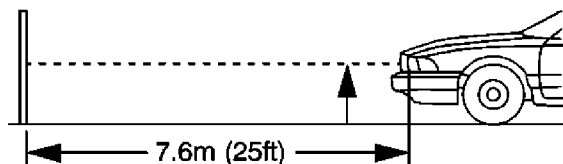


6. The vehicle left tires must be aligned with the reference line extending from the screen with the headlamps aligned with the reference line.
7. Do not load any cargo in the vehicle.
8. The vehicle must contain one person or 72.56 kg (160 lb) on the driver's seat.

9. Inflate the tires to the proper pressure.
10. Simulate the vehicle loads if the intended use of the vehicle is for hauling heavy loads or towing a trailer.
11. Rock the vehicle in order to stabilize the suspension.
12. Turn on the headlamps to low beam and observe the left and the top edges of the high intensity zone on the screen. The edges of the high intensity zone should fall within the specifications.

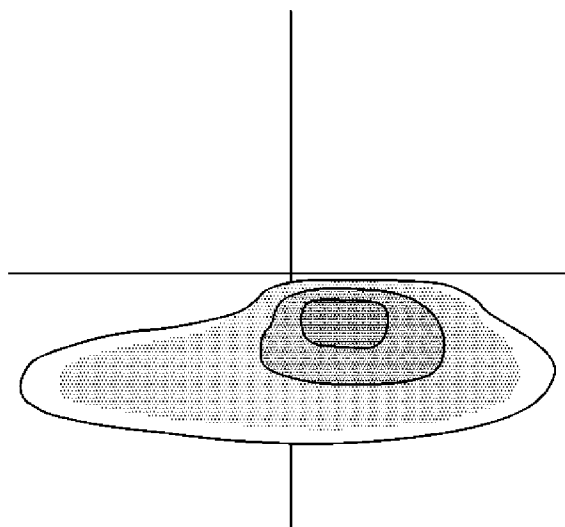
## Headlamp Aiming Procedure

1. Open the hood.



2. Measure from the floor to the center of the headlamp bulb. (Some headlamps have an aim dot marked on the headlamp lens).
3. At the screen, measure from the floor and place the horizontal tape at the measured distance.
4. Measure from the reference line on the floor to the left headlamp bulb centerline.
5. At the screen, measure from the reference line and place the vertical tape at the measured distance.
6. Measure from the reference line on the floor to the right headlamp bulb centerline.
7. At the screen, measure from the reference line and place the vertical tape at the measured distance.

**Important:** Do not cover the headlamp, this may cause excessive heat build up.



8. Turn on the low beam headlamps and block the light from projecting onto the screen from the passenger side headlamp.
9. Adjust the vertical aim of the headlamps to the specifications required by the state and the local authorities, or as shown in step number 8.
10. Rotate the headlamp adjuster (1) to change the vertical aim of the headlamp.
11. Repeat the aiming procedure for the passenger side headlamp while blocking the light from projecting onto the screen from the driver side headlamp.
12. Close the hood.
13. This illustration represents the visual optics left (VOL) pattern.
14. This illustration represents the visual optics right (VOR) pattern.
15. This illustration represents all headlamps, except the VOL and VOR.
16. This illustration represents the high beam pattern for all headlamps, including VOL and VOR.

## Alternate Aiming Procedure

### Tool Required

Composite Headlight Aimer Adapter

Instructions for use accompany the tool.

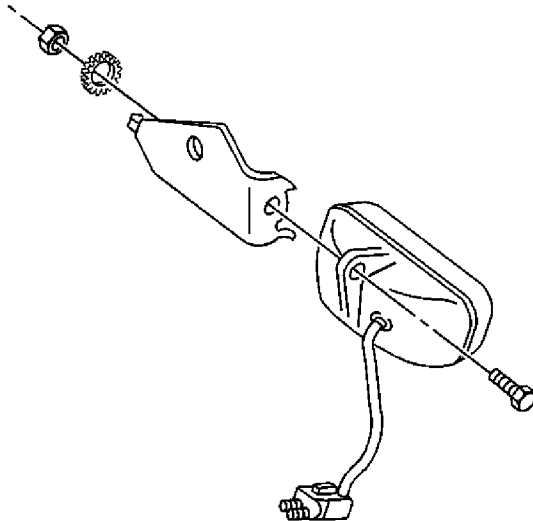
This procedure may only be used on headlamps equipped with aiming pads. Adjustment settings are embossed on the headlamp lens. They are typically located near the aiming pads. In some cases, the adjustment settings are located in other areas of the lens. They will be represented by a number followed by the letter V or the letter H.

1. Remove any snow, ice or mud from the vehicle.
2. The vehicle should be fully assembled and all other work stopped while the headlamp aiming is being done.
3. The vehicle should contain cargo or be loaded to represent normal vehicle use.
4. Tires should be properly inflated.
5. Rock the vehicle to stabilize the suspension.
6. Using , adjust the headlamps to the specifications required by state and local authorities.

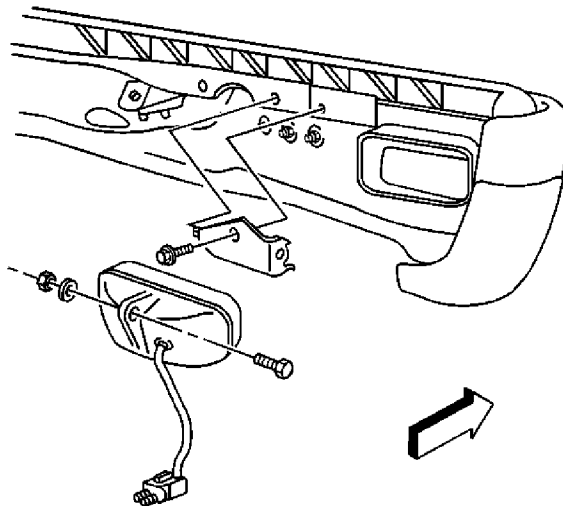
## Rear Fog Lamp Replacement

### Removal Procedure

1. Disconnect the electrical connector from the lamp assembly.



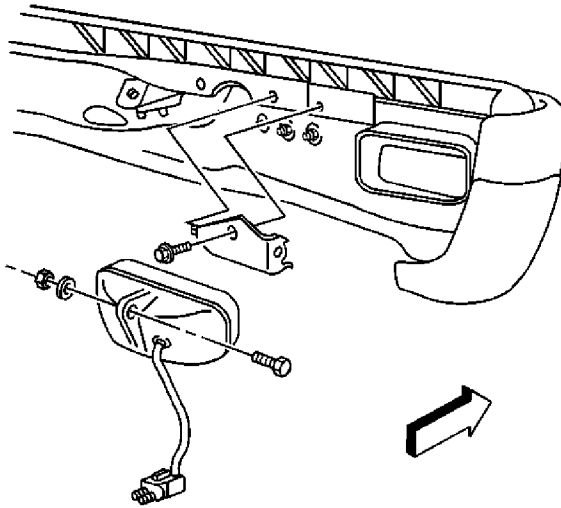
2. Remove the nut retaining the lamp assembly to the bracket.



3. Remove the lamp assembly from the bumper.

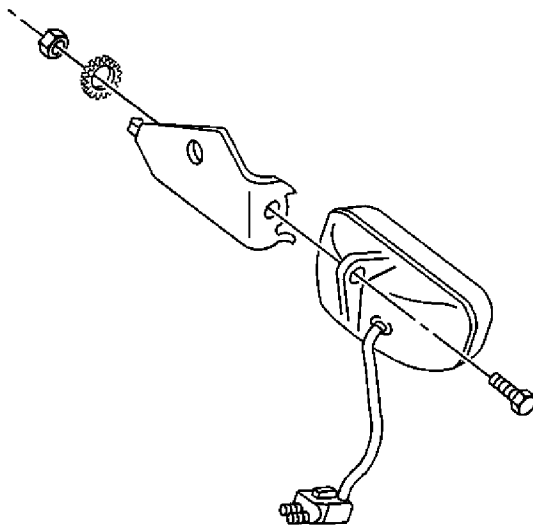
### Installation Procedure

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1. Install the lamp assembly to the bumper.

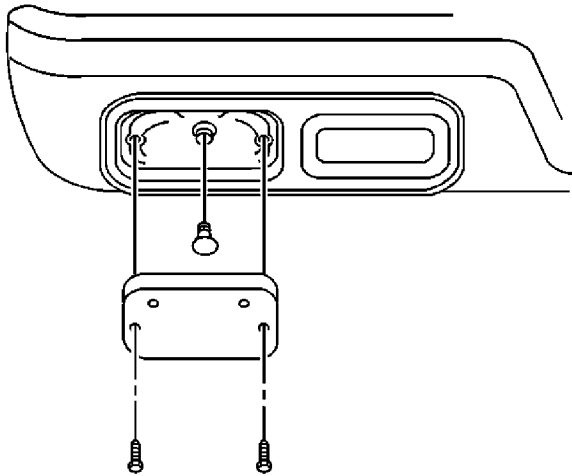
**Caution:** Refer to [Fastener Caution](#) in the Preface section.



2. Install the nut to retain the lamp assembly to the bracket and tighten to **2 N·m (18 in lb)**.
3. Install the electrical connector to the lamp assembly.

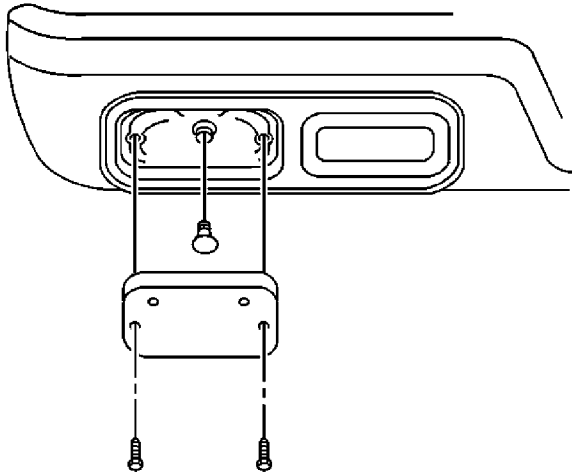
## Rear Fog Lamp Bulb Replacement

### Removal Procedure



1. Remove the screws retaining the lens to the lamp.
2. Remove the lens from the lamp.
3. Gently push in on the bulb and turn the bulb 1/4 turn counterclockwise.
4. Remove the bulb from the socket.

### Installation Procedure



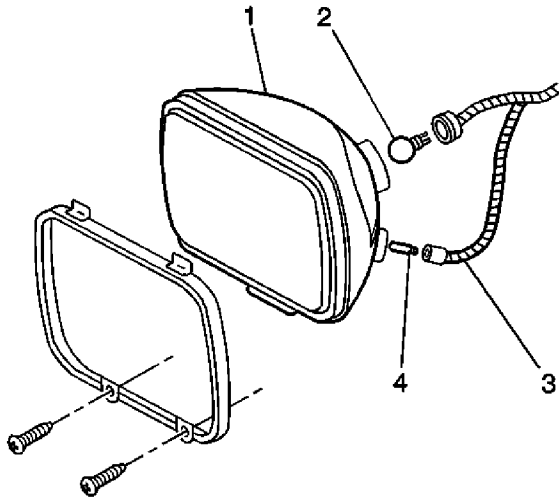
1. Install the bulb to the socket.
2. Gently push in on the bulb and turn the bulb 1/4 turn clockwise.
3. Install the lens to the lamp assembly.

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

4. Install the screws to retain the lens to the lamp assembly and tighten to **1.5 N·m (13 lb in)**.

## Front Position Lamp Replacement

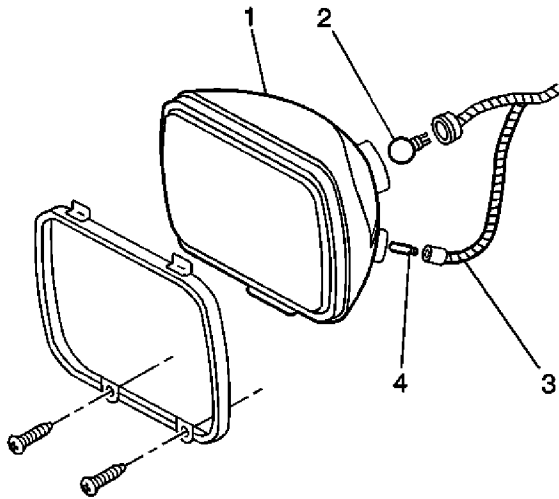
### Removal Procedure



1. Remove the screws holding the retaining ring to the headlamp housing assembly.
2. Remove the retaining ring from the position lamp.
3. Remove the headlamp capsule (1) from the position lamp.
4. Remove the bulb (4) and socket from the rubber grommet in the lamp capsule.
5. Push in on the side of the bulb (4) and turn the bulb 1/4 turn counterclockwise.
6. Remove the bulb (4) from the socket.

### Installation Procedure





1. Install the bulb (4) to the socket.
2. Push in on the bulb (4) and turn 1/4 turn clockwise.
3. Install the bulb (4) and socket into the rubber grommet in the headlamp capsule (1).
4. Install the headlamp capsule (1) to the headlamp housing.
5. Install the retaining ring to the headlamp housing assembly.

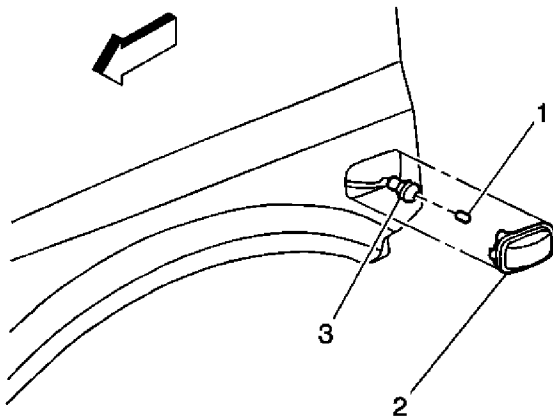
**Caution:** Refer to [Fastener Caution](#) in the Preface section.

6. Install the screws to the retaining ring to the headlamp housing assembly and tighten to **1.5 N·m (13 lb in)**.

## Repeater Lamp Replacement

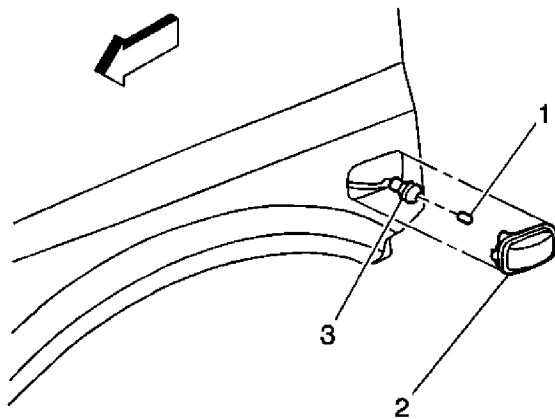
### Removal Procedure

1. Push the light assembly (2) towards the front of the vehicle while gently prying the rear edge of the light assembly away from the fender with a small flat-bladed tool in order to remove the light assembly.



2. Remove the bulb and socket from the light assembly (3) by turning the socket 1/4 turn counterclockwise.
3. Remove the bulb (1) from the socket.

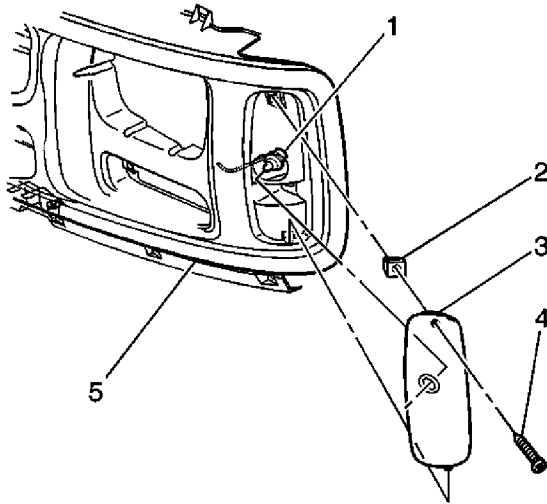
### Installation Procedure



1. Install the bulb (1) into the socket.
2. Turn the socket (3) 1/4 turn clockwise in order to install the socket into the light assembly.
3. Hook the front tab on the lens into the fender and press the light assembly (2) retaining clip into the fender until fully seated.

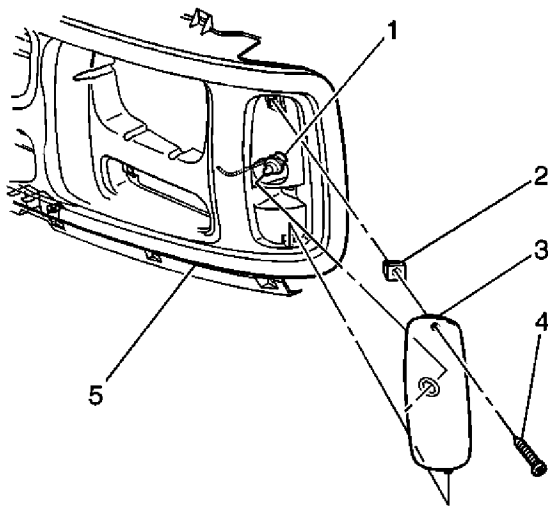
## Front Side Marker Lamp Replacement (T90)

### Removal Procedure



1. Remove the screw (4) that retains the front side marker lamp to the radiator grille.
2. Lift the side marker lamp (3) up and out in order to disengage the tab.
3. Disconnect the bulb socket (1) from the side marker lamp.
4. Remove the bulb (1) from the socket.

### Installation Procedure



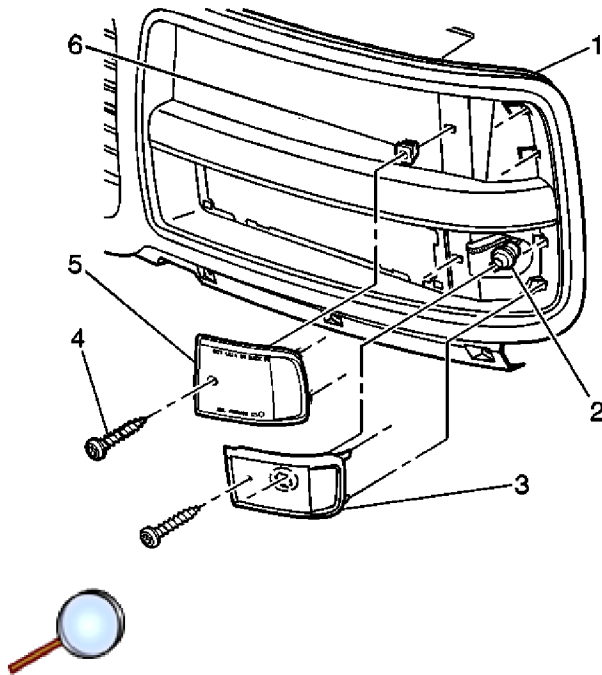
1. Connect the bulb (1) into the socket.
2. Connect the bulb socket (1) into the side marker lamp.
3. Install the side marker lamp (3) to the radiator grille (5).

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

4. Install the side marker lamp retaining screw (4) and tighten to **1.5 N·m (13 lb in)**.

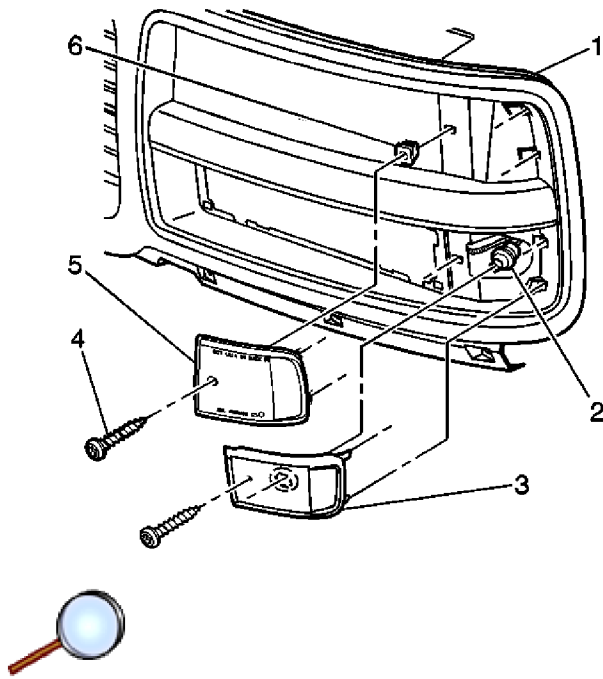
## Front Side Marker Lamp Replacement (X88/Z88)

### Removal Procedure



1. Remove the screw (4) that retains the side marker or the reflector to the grille.
2. Remove the side marker lamp (3) or the reflector (5) from the grille.
3. Disconnect the bulb socket (2) from the side marker lamp.
4. Remove the bulb (2) from the socket by turning the bulb in a counter clockwise direction.

### Installation Procedure

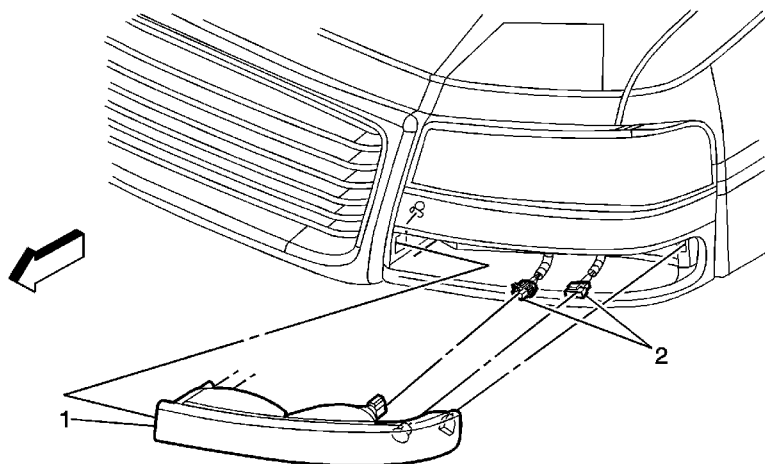


1. Install the bulb (2) into the socket by turning the bulb in a clockwise direction.
2. Connect the bulb socket (2) into the side marker lamp.
3. Install the side marker lamp (3) or the reflector (5) to the radiator grille (1).

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

4. Install the side marker lamp or reflector retaining screw (4) to the grille and tighten to **1.5 N·m (13 lb in)**.

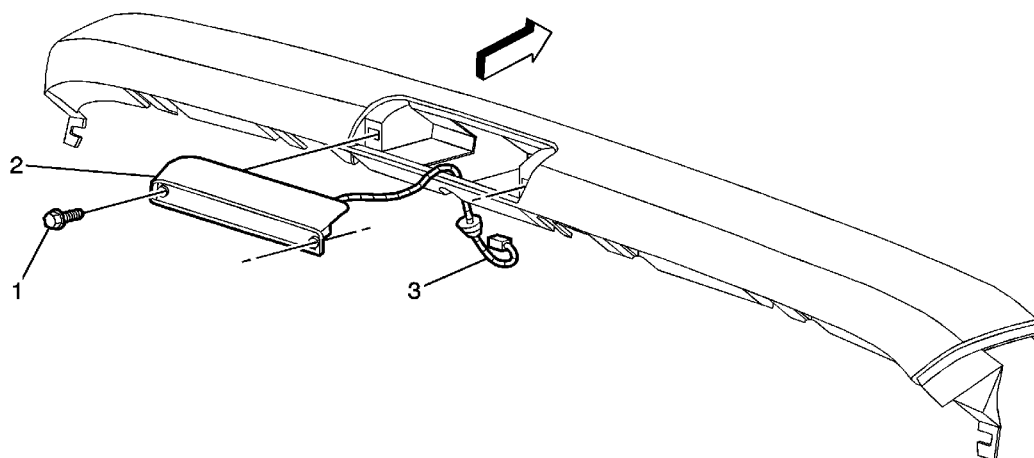
## Parking and Turn Signal Lamp Replacement



Callout	Component Name
<b>Preliminary Procedure</b>	
Grasp the outboard edge of the turn signal lamp and give a quick pull to release the lamp from the radiator grille assembly.	
1	Park and Turn Signal Lamp Assembly <b>Tip</b> Transfer the sockets and bulbs as needed.
2	Forward Lamp Harness Electrical Connector (Qty: 2)



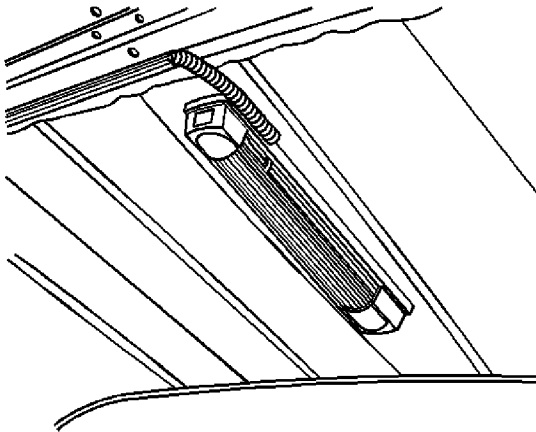
## High Mount Stop Lamp Replacement



Callout	Component Name
1	High Mounted Stop Lamp Screw (Qty: 2) <b>Caution:</b> Refer to <a href="#">Fastener Caution</a> in the Preface section. <b>Tighten</b> 1.5 N·m (13 lb in)
2	High Mounted Stop Lamp <b>Tip</b> Disengage the bulb socket from the lamp assembly.
3	High Mounted Stop Lamp Electrical Harness

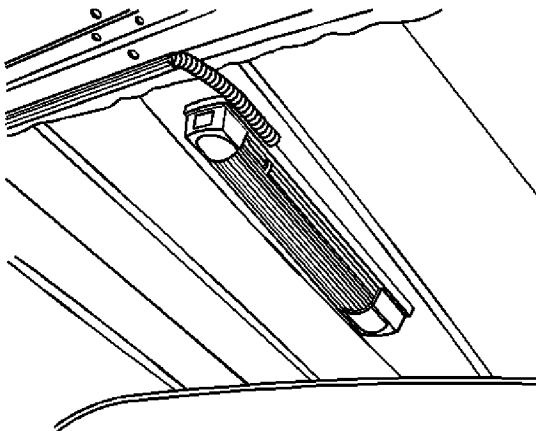
## Cargo Lamp Replacement

### Removal Procedure



1. Disconnect the electrical connector.
2. Using a plastic flat bladed tool, release the double sided tape that retains the light assembly to the vehicle.

### Installation Procedure





1. Install the light assembly into the vehicle with double sided tape.

**Important:** In order to insure a good replacement of new adhesive or of old adhesive, verify that the surface meets the following conditions:

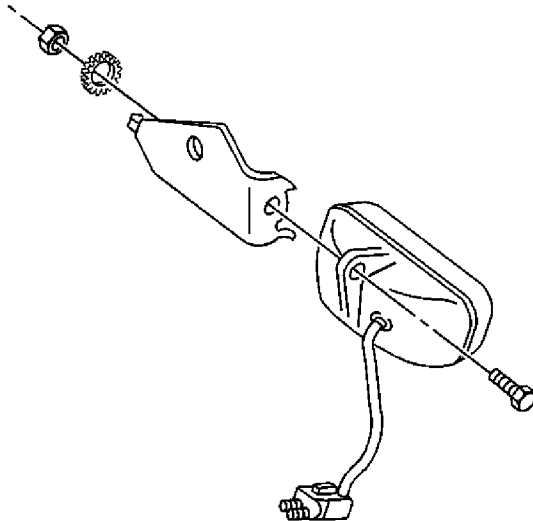
- The temperature of the surface is approximately 24-41 °C (80-105 °F).
- The surface is clean.
- The surface is free of wax or of oily film.

2. Connect the electrical connector.

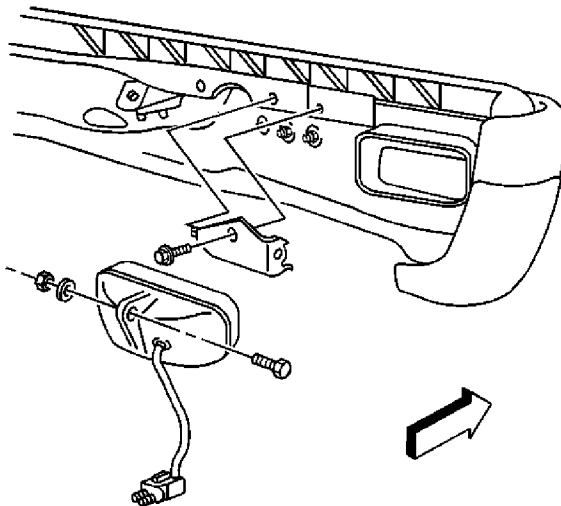
## Backup Lamp Replacement

### Removal Procedure

1. Disconnect the electrical connector from the lamp assembly.



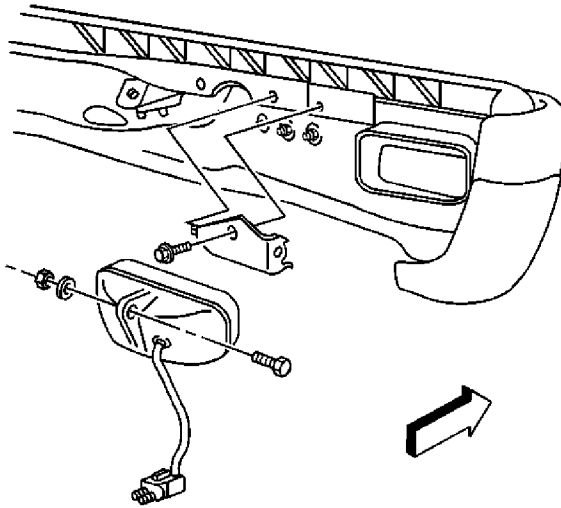
2. Remove the nut retaining the lamp assembly to the bracket.



3. Remove the lamp assembly from the bumper.

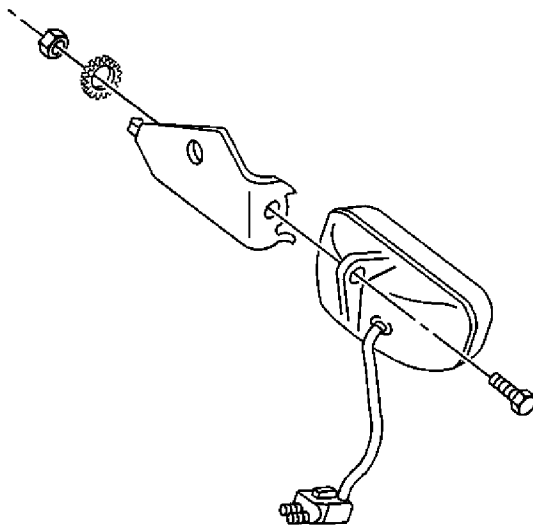
### Installation Procedure

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1. Install the lamp assembly to the bumper.

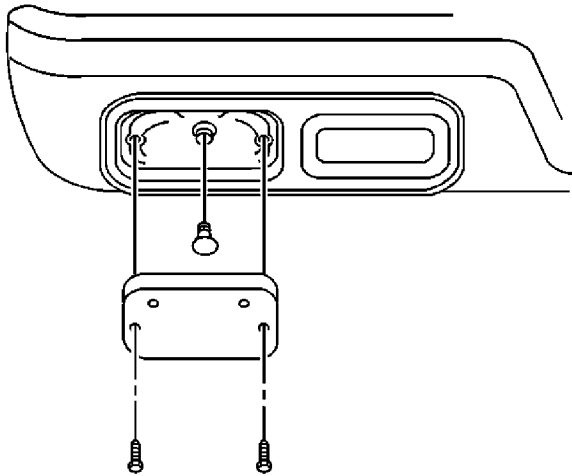
**Caution:** Refer to [Fastener Caution](#) in the Preface section.



2. Install the nut to the lamp and tighten to **2 N·m (18 in lb)**.
3. Connect the electrical connector to the lamp assembly.

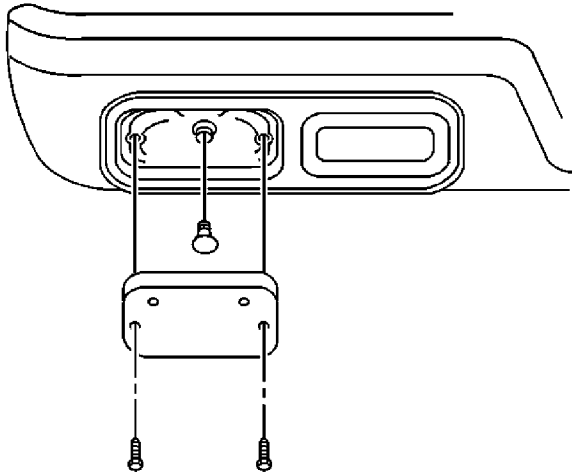
## Backup Lamp Bulb Replacement

### Removal Procedure



1. Remove the screws the lens to the lamp assembly.
2. Remove the lens from the lamp assembly.
3. Gently push in on the bulb and turn the bulb 1/4 turn counterclockwise.
4. Remove the bulb from the socket.

### Installation Procedure

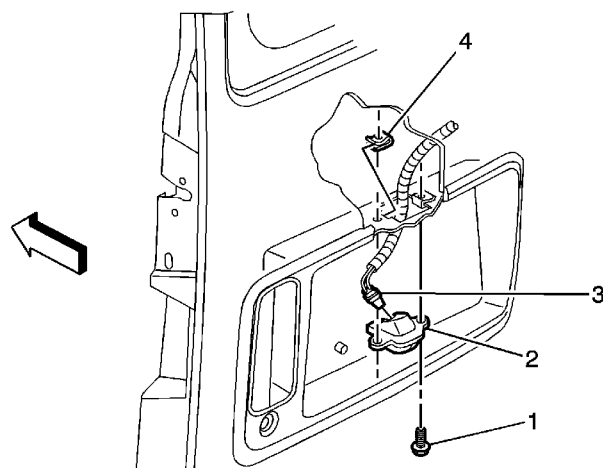


1. Install the bulb to the socket.
2. Gently push in on the bulb and turn the bulb 1/4 turn clockwise.
3. Install the lens to the lamp assembly.

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

4. Install the screws in order to retain the lens to the lamp assembly and tighten to **1.5 N·m (13 lb in)**.

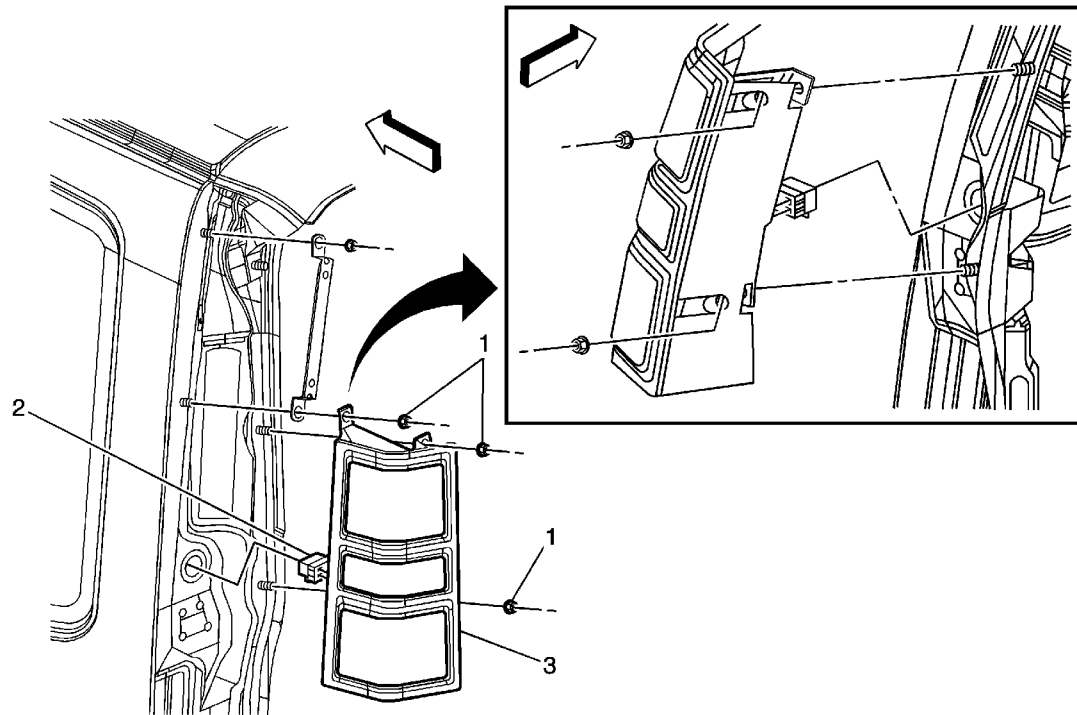
## Rear License Plate Lamp Replacement



Callout	Component Name
1	<p>License Lamp Screw (Qty: 2)</p> <p><b>Caution:</b> Refer to <a href="#">Fastener Caution</a> in the Preface section.</p> <p><b>Tighten</b> 1.5 N·m (13 lb in)</p>
2	License Plate Lamp Housing
3	<p>Electrical Connector</p> <p><b>Tip</b> Service the bulb as needed.</p>
4	Clip Nut (Qty: 2)



## Tail Lamp Replacement



Callout	Component Name
<b>Preliminary Procedure</b>	
Remove the back body side opening applique. Refer to <a href="#">Back Body Opening Side Applique and Tail Lamp Replacement</a> .	
1	<p>Tail Lamp Nut (Qty: 3)</p> <p><b>Caution:</b> Refer to <a href="#">Fastener Caution</a> in the Preface section.</p> <p><b>Tighten</b> 5 N·m (44 lb in)</p>
2	<p>Tail Lamp Electrical Connector</p> <p><b>Procedure</b></p> <ol style="list-style-type: none"><li>1. Pull the lamp assembly rearward.</li><li>2. Release the electrical harness rubber grommet.</li><li>3. Disconnect the electrical connector from the rearward lamp harness.</li></ol>
	<p>Tail Lamp Assembly</p> <p>© 2010 General Motors Corporation. All rights reserved.</p>

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**Tip**

Remove the bulb sockets and service the bulbs as needed.