

LAMPS

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LAMP DIAGNOSIS

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DESCRIPTION AND OPERATION

HEADLAMP LEVELING MOTOR

This vehicle is equipped with a remote headlamp leveling system. This system allows the driver to adjust the vertical headlamp aim from the interior of the vehicle to compensate for passenger or cargo load. A headlamp leveling switch is located in the instrument panel and controls the headlamp leveling motor found mounted to the headlamp module.

DIAGNOSIS AND TESTING

DIAGNOSTIC PROCEDURES

When a vehicle experiences problems with the headlamp system, verify the condition of the battery connections, fuses, charging system, headlamp bulbs, wire connectors, relay, high beam switch, dimmer switch, and headlamp switch. Refer to Group 8W, Wiring Diagrams for component locations and circuit information.

DIAGNOSIS AND TESTING (Continued)

DIAGNOSIS AND TESTING*HEADLAMP LEVELING MOTOR DIAGNOSIS*

CONDITION	POSSIBLE CAUSES	CORRECTION
ONE MOTOR DOES NOT OPERATE	1. Poor connection at motor. 2. No voltage at motor. 3. Defective motor.	1. Secure connector on motor. 2. Repair circuit. Refer to Group 8W, Wiring. 3. Replace motor.
BOTH MOTORS DO NOT OPERATE	1. No voltage at headlamp leveling switch. 2. No voltage at both motors. 3. Poor connection at motors. 4. Both motors defective.	1. Repair circuit or replace fuse. Refer to Group 8W, Wiring. 2. Repair circuit or replace fuse. Refer to Group 8W, Wiring. 3. Secure connectors on motors. 4. Replace motors.

HEADLAMP AND FOG LAMP ALIGNMENT

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SERVICE PROCEDURES

HEADLAMP ALIGNMENT PREPARATION

- (1) Verify headlamp are on low beam setting.
- (2) Verify that the headlamp leveling switch is in the "0" position.
- (3) Inspect and correct damaged or defective components that could interfere with proper headlamp alignment.
- (4) Verify proper tire inflation.
- (5) Clean headlamp lenses.
- (6) Verify that luggage area is loaded as the vehicle is routinely used.
- (7) Fuel tank should be FULL. Add 2.94 kg (6.5 lbs.) of weight over the fuel tank for each estimated gallon of missing fuel.

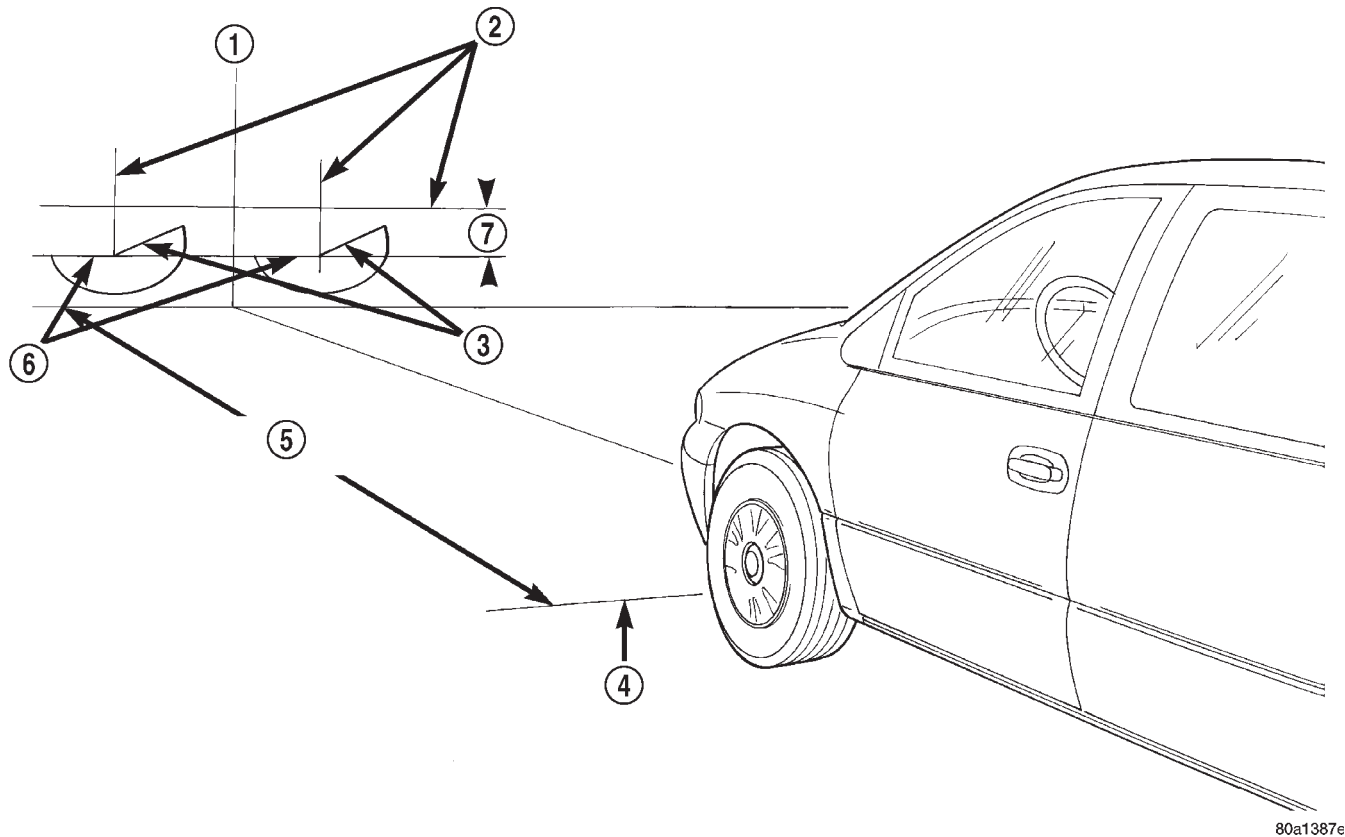
ADJUSTMENTS

HEADLAMP/FOG LAMP ADJUSTMENT USING ALIGNMENT SCREEN

ALIGNMENT SCREEN PREPARATION

- (1) Position vehicle on a level surface perpendicular to a flat wall 10 meters (32.8 ft.) away from front of headlamp lens (Fig. 1).
- (2) Place 75 kg in the driver's seat to simulate the ride height of the vehicle when driven.
- (3) If necessary, tape a line on the floor 10 meters (32.8 ft) away from and parallel to the wall.
- (4) From the floor up 1.27 meters (5 ft), tape a line on the wall at the centerline of the vehicle. Sight along the centerline of the vehicle (from rear of vehicle forward) to verify accuracy of the line placement.
- (5) Rock vehicle side-to-side three times and allow suspension to stabilize.
- (6) Jounce front suspension three times by pushing downward on front bumper and releasing.
- (7) Measure the distance from the center of headlamp lens to the floor. Transfer measurement to the alignment screen (with tape). Use this line for up/down adjustment reference.
- (8) Place a tape line 130 mm below and parallel to the center of headlamp line.
- (9) Measure distance from the centerline of the vehicle to the center of each headlamp being aligned. Transfer measurements to screen (with tape) to each side of vehicle centerline. Use these lines for left/right adjustment reference.

ADJUSTMENTS (Continued)

**Fig. 1 Headlamp Alignment Screen—Typical**

- 1 – CENTER OF VEHICLE
- 2 – CENTER OF HEADLAMPS
- 3 – 15° CUT-OFF LINE
- 4 – FRONT OF HEADLAMP

- 5 – 10 METERS (32.8 ft.)
- 6 – HORIZONTAL CUT-OFF LINE
- 7 – 130mm

HEADLAMP ADJUSTMENT

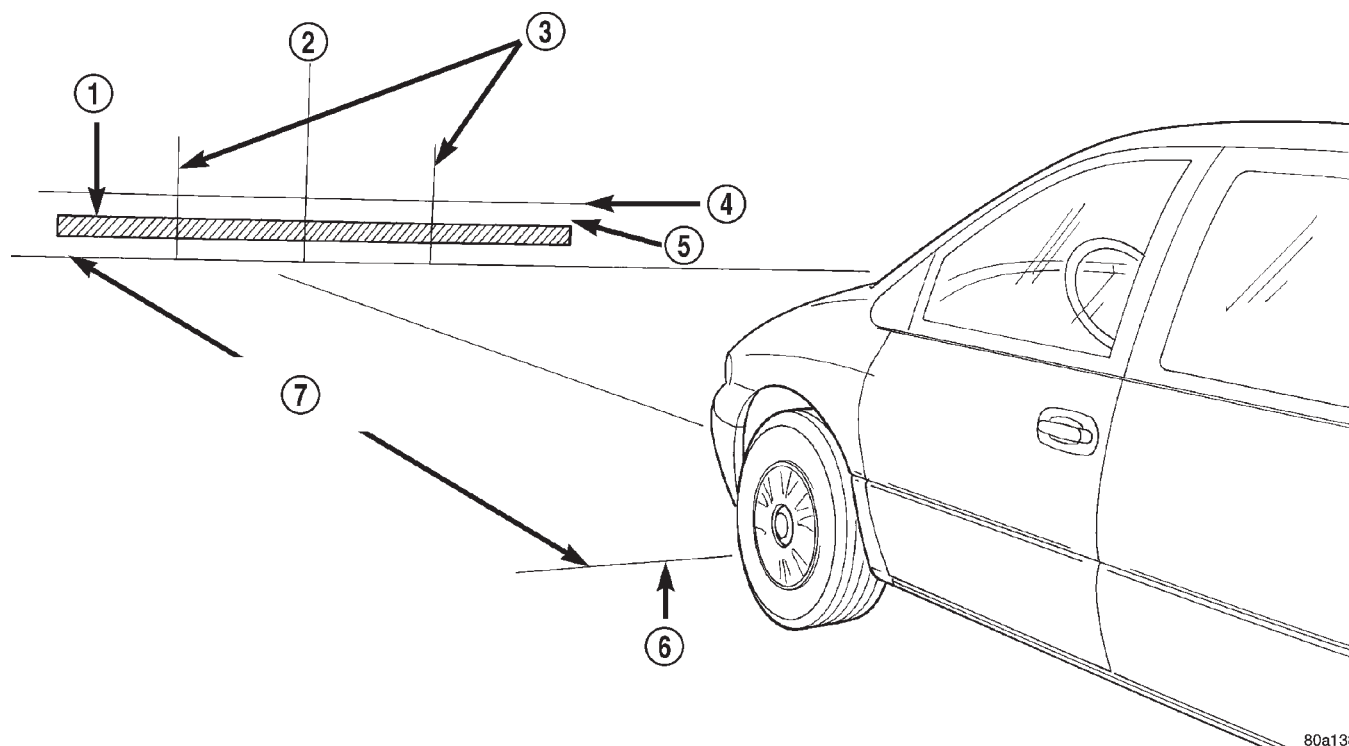
A properly aimed low beam headlamp will project a high intensity light pattern on the screen with the horizontal cut-off line aligned with the tape line 130 mm (5.12 in.) below the headlamp centerline (Fig. 1). The intersection of the horizontal and 15 degree cut-off lines in the projected pattern should align to the intersection of the headlamp centerline vertical tape line and the tape line 130 mm (5.12 in.) below the headlamp horizontal centerline. The high beams on a vehicle with aero headlamps cannot be aligned. The high beam pattern should be correct when the low beams are aligned properly.

To adjust headlamp alignment, rotate alignment screws to achieve the specified low beam hot spot pattern.

FOG LAMP ALIGNMENT

Prepare an alignment screen. Refer to the Alignment Screen Preparation paragraph in this section. A properly aligned fog lamp will project a pattern on the alignment screen 200 mm (8 in.) below the fog lamp centerline and straight ahead (Fig. 2). To improve visual interpretation of the fog lamp pattern on the alignment screen, disable the headlamps by disengaging the wire connectors from the headlamp bulbs.

ADJUSTMENTS (Continued)



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Fig. 2 Fog Lamp Alignment-Typical

- 1 - HIGH INTENSITY AREA
- 2 - CENTER OF VEHICLE
- 3 - VERTICAL CENTER OF FOG LAMP
- 4 - HORIZONTAL CENTER OF FOG LAMP

- 5 - 200mm (8 in.)
- 6 - FRONT OF FOG LAMP
- 7 - 10 METERS (32.8 ft.)

LAMP BULB SERVICE

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REMOVAL AND INSTALLATION

HEADLAMP BULB

REMOVAL

- (1) Release hood latch and open hood.
- (2) Remove headlamp module retaining screws (Fig. 1).

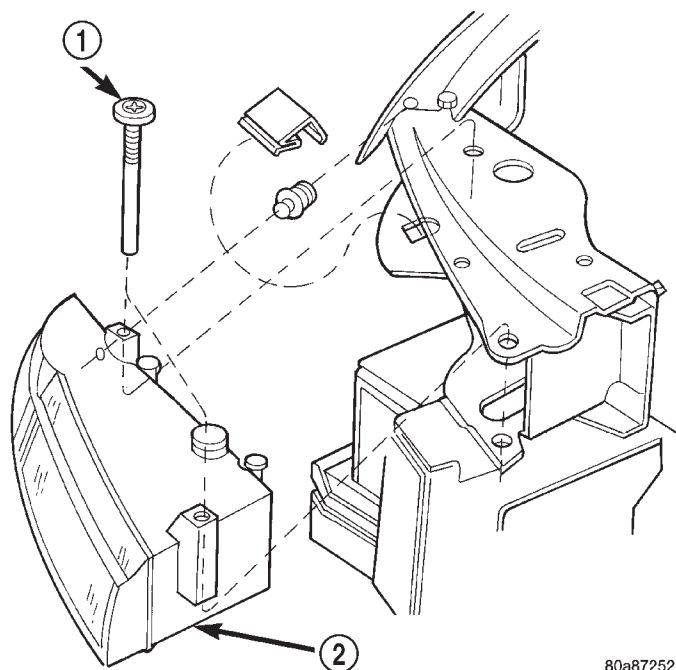


Fig. 1 Headlamp Module Retaining Screws

- 1 - MODULE SCREWS
2 - HEADLAMP MODULE

NOTE: Place a towel between front fascia and headlamp assembly to prevent vehicle paint damage.

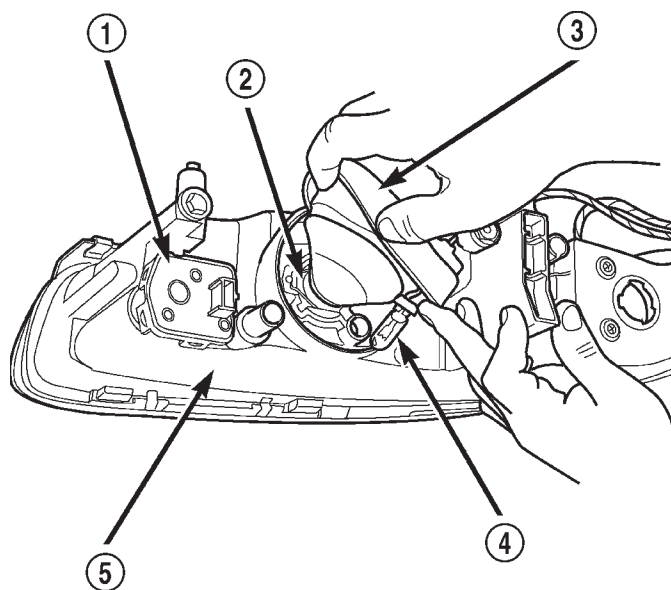
- (3) Pull headlamp module away from the radiator closure panel.

- (4) Disconnect necessary electrical from back of headlamp module.

- (5) Pull back protective rubber boot seal (Fig. 2).

- (6) Loosen headlamp bulb retaining ring screw from headlamp module (Fig. 3).

- (7) Remove the headlamp bulb from headlamp module (Fig. 3).



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Fig. 2 Headlamp Module Orientation

- 1 - HEADLAMP LEVELING MOTOR
2 - HEADLAMP
3 - PROTECTIVE RUBBER BOOT
4 - FRONT POSITION LAMP
5 - HEADLAMP MODULE

INSTALLATION

CAUTION: Do not touch the glass of halogen bulbs with fingers or other possibly oily surface, reduced bulb life will result.

REMOVAL AND INSTALLATION (Continued)

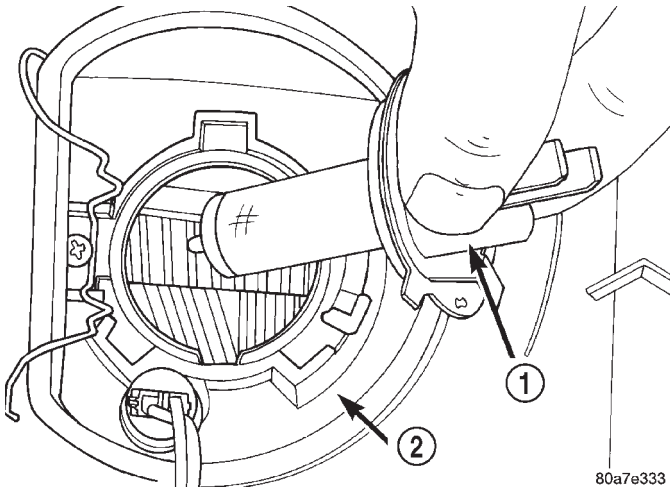


Fig. 3 Headlamp Bulb

- 1 – HEADLAMP BULB
2 – HEADLAMP MODULE

(1) Install headlamp bulb in module, position retaining ring and tighten retaining screw until bulb secure.

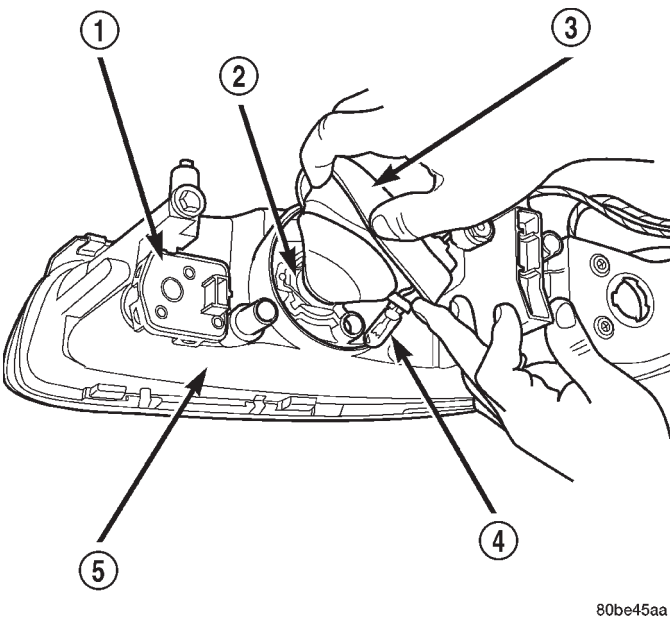


Fig. 4 Headlamp Module Orientation

- 1 – HEADLAMP LEVELING MOTOR
2 – HEADLAMP
3 – PROTECTIVE RUBBER BOOT
4 – FRONT POSITION LAMP
5 – HEADLAMP MODULE

(2) Install rubber boot in its original position (Fig. 4).
(3) Connect electrical on back of headlamp module.
(4) Verify lamp operation.
(5) Position the headlamp module and install retaining screws. Torque screws to 1 N·m (10in. lbs.).

TURN SIGNAL LAMP BULB

REMOVAL

(1) Release hood latch and open hood.
(2) Remove the headlamp module retaining screws (Fig. 5).

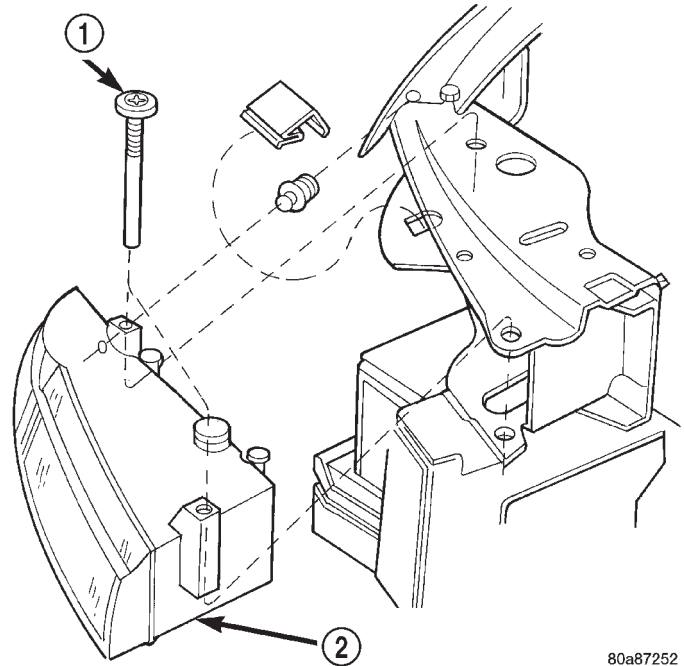


Fig. 5 Headlamp Module Retaining Screws

- 1 – MODULE SCREWS
2 – HEADLAMP MODULE

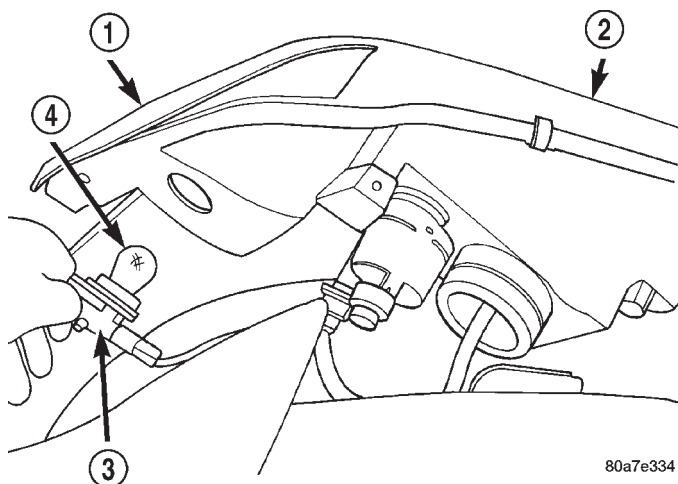
CAUTION: Place a clean shop towel between the headlamp module and front fascia to prevent vehicle paint damage.

(3) Pull the headlamp module away from the radiator closure panel far enough to access the turn signal lamp bulb (Fig. 6).
(4) Rotate the turn signal lamp socket counter clockwise one quarter turn and pull straight from the module (Fig. 6).
(5) Rotate and pull bulb from socket.

INSTALLATION

(1) Install bulb in its socket.
(2) Verify lamp operation.
(3) Position headlamp module and install retaining screws. Torque retaining screws to 1 N·m (10in. lbs.).

REMOVAL AND INSTALLATION (Continued)

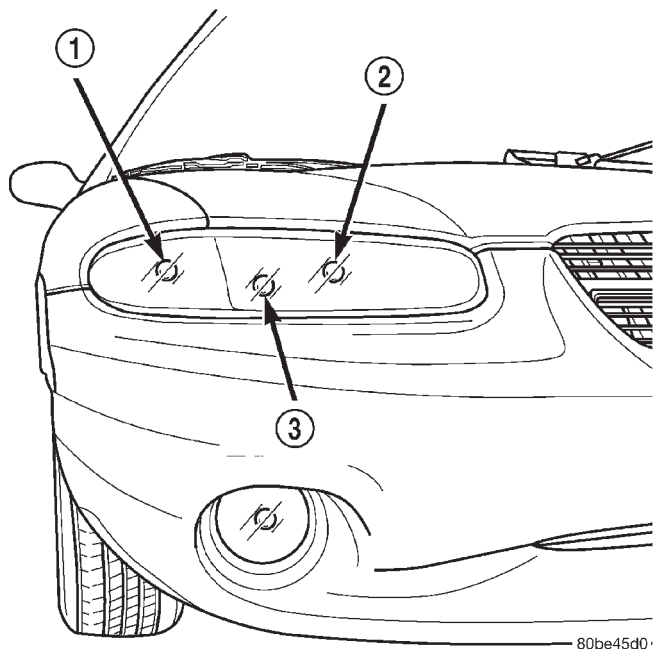
**Fig. 6 Turn Signal Lamp Bulb**

- 1 - TURN SIGNAL LAMP
- 2 - HEADLAMP MODULE
- 3 - SOCKET
- 4 - BULB

FRONT POSITION LAMP BULB

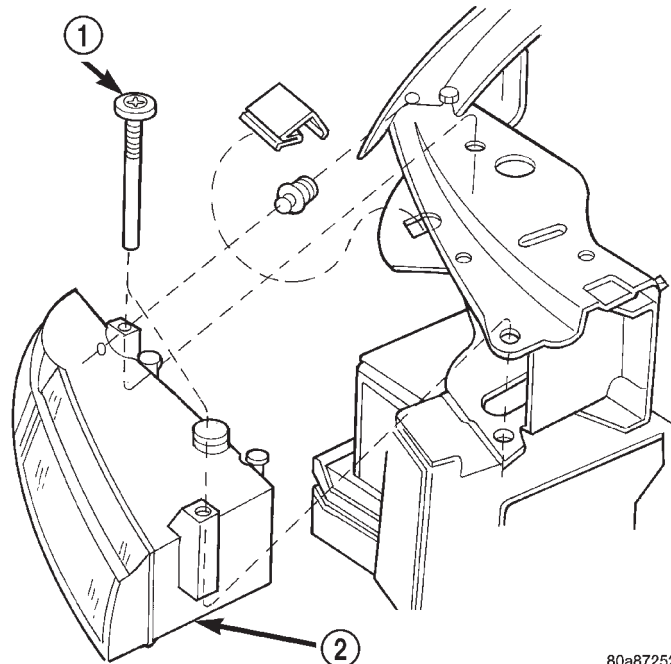
REMOVAL

- (1) Release hood latch and open hood.

**Fig. 7 Front Position Lamp Location**

- 1 - PARK, TURN SIGNAL LAMP BULB
- 2 - HEADLAMP BULB
- 3 - FRONT POSITION LAMP BULB

- (2) Remove headlamp module retaining screws (Fig. 8).

**Fig. 8 Headlamp Module Retaining Screws**

- 1 - MODULE SCREWS
- 2 - HEADLAMP MODULE

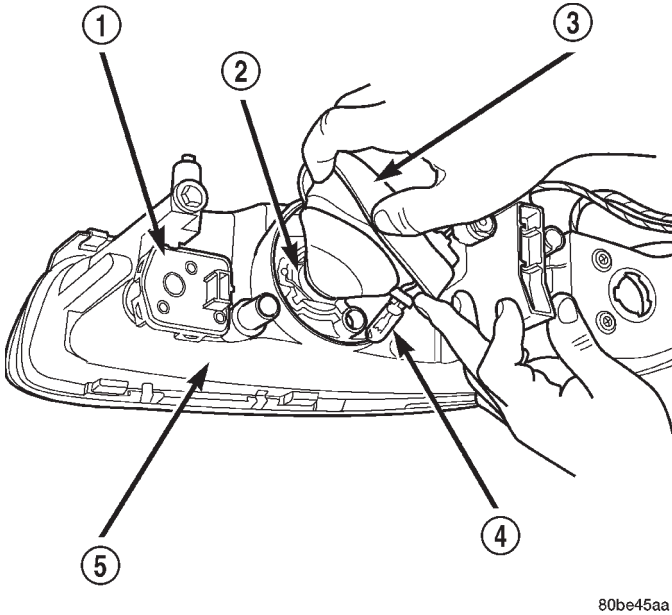
NOTE: Place a towel between front fascia and headlamp assembly to prevent vehicle paint damage.

- (3) Pull headlamp module away from the radiator closure panel.
- (4) Pull back protective rubber boot seal (Fig. 9).
- (5) Remove front position lamp socket from headlamp module by pulling straight out (Fig. 9).
- (6) Remove front position lamp bulb by rotating counter-clockwise.

INSTALLATION

- (1) Install bulb in socket.
- (2) Verify lamp operation.
- (3) Install front position lamp and socket in headlamp module (Fig. 10).
- (4) Install protective rubber boot seal in its original position (Fig. 10).
- (5) Position the headlamp module and install retaining screws (Fig. 11). Torque screws to 1 N·m (10in lbs.).

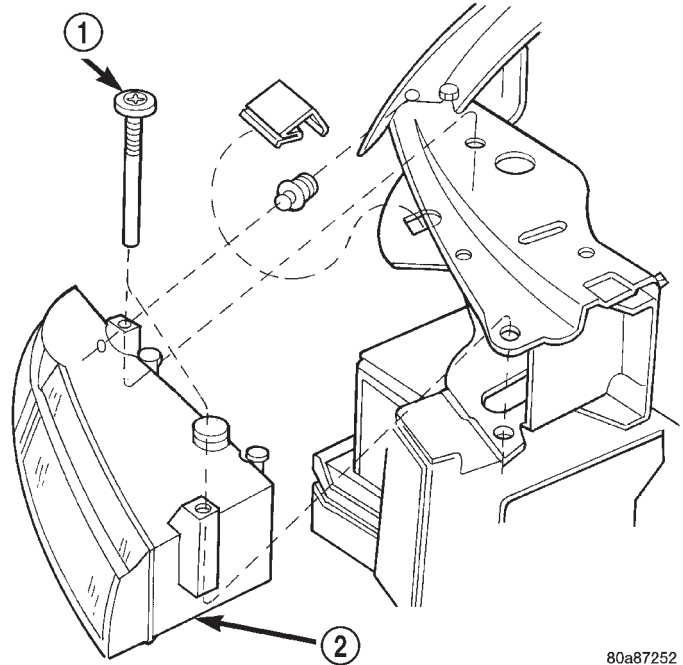
REMOVAL AND INSTALLATION (Continued)



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Fig. 9 Headlamp Module Orientation

- 1 - HEADLAMP LEVELING MOTOR
- 2 - HEADLAMP
- 3 - PROTECTIVE RUBBER BOOT
- 4 - FRONT POSITION LAMP
- 5 - HEADLAMP MODULE



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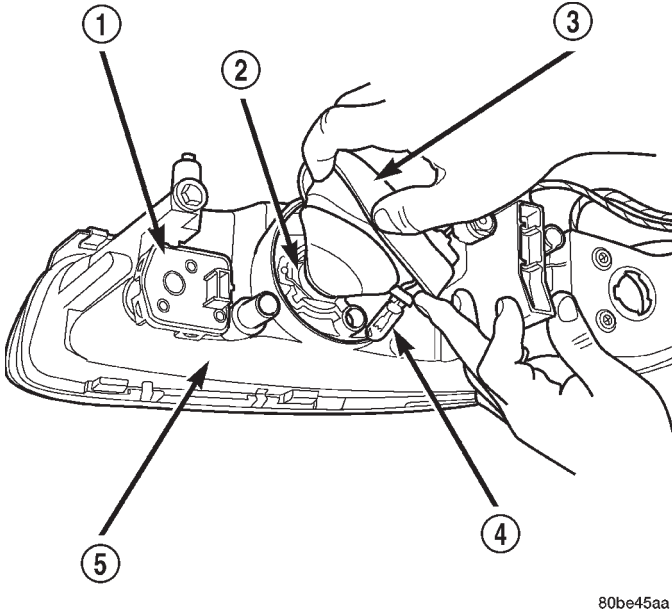
Fig. 11 Headlamp Module Retaining Screws

- 1 - MODULE SCREWS
- 2 - HEADLAMP MODULE

SIDE TURN SIGNAL REPEATER LAMP BULB

REMOVAL

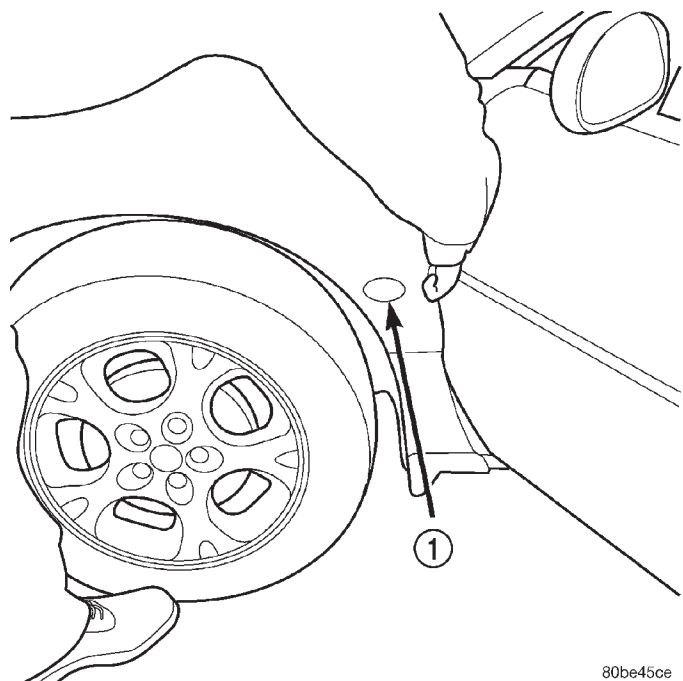
(1) Open door to gain access to the rear of side repeater lamp (Fig. 7).



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Fig. 10 Headlamp Module Orientation

- 1 - HEADLAMP LEVELING MOTOR
- 2 - HEADLAMP
- 3 - PROTECTIVE RUBBER BOOT
- 4 - FRONT POSITION LAMP
- 5 - HEADLAMP MODULE



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Fig. 12 Access to Side Turn Signal Repeater Lamp

- 1 - SIDE TURN SIGNAL REPEATER LAMP

REMOVAL AND INSTALLATION (Continued)

(2) Depress upper and lower tabs on repeater lamp to release lamp from fender (Fig. 8).

(3) Rotate side repeater lamp socket counter clockwise one quarter turn and pull from lamp (Fig. 8).

(4) Rotate bulb counter clockwise one quarter turn and pull from socket.

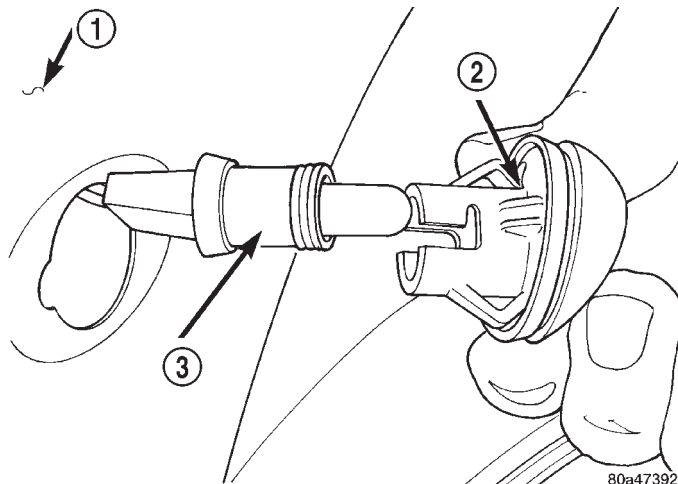


Fig. 13 Side Repeater Lamp

- 1 - FRONT FENDER
- 2 - SIDE REPEATER LAMP
- 3 - REPEATER LAMP SOCKET

INSTALLATION

(1) Install bulb in socket.

(2) Verify lamp operation.

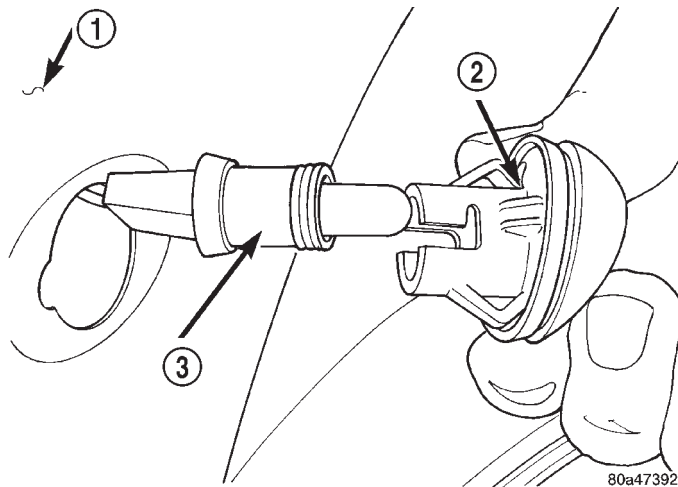


Fig. 14 Side Repeater Lamp

- 1 - FRONT FENDER
- 2 - SIDE REPEATER LAMP
- 3 - REPEATER LAMP SOCKET

(3) Install side repeater lamp on lamp socket (Fig. 9).

(4) Install lamp in front fender opening.

Rear Fog, Tail, Stop, Turn and Backup Lamp Bulbs

REMOVAL

(1) Open decklid

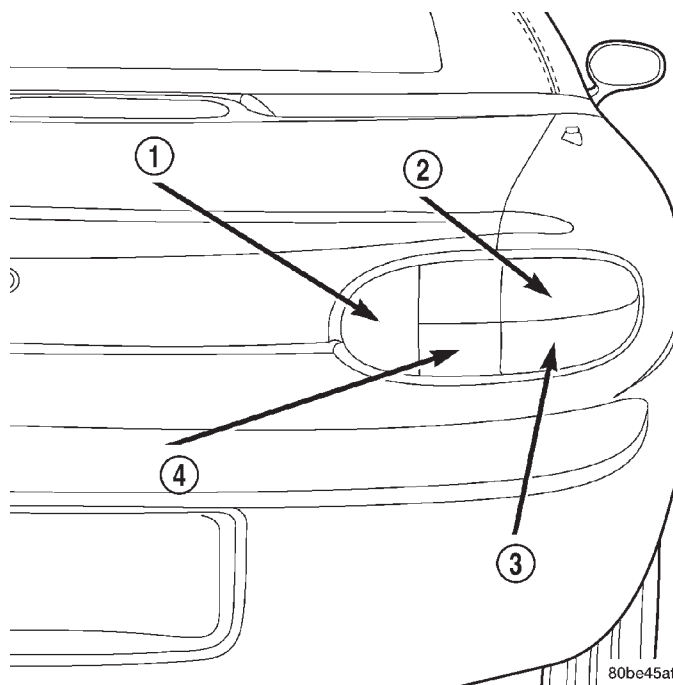


Fig. 15 Tail lamp Orientation

- 1 - REAR FOG LAMP
- 2 - TAIL, STOP LAMP
- 3 - TURN SIGNAL LAMP
- 4 - BACKUP LAMP

(2) Working from inside the trunk, remove the (3) plastic retaining nuts from the tail lamp assembly.

NOTE: Place a towel between rear fascia and tail lamp assembly to prevent vehicle paint damage.

REMOVAL AND INSTALLATION (Continued)

(3) Pull the tail lamp assembly straight away from the quarter panel until the mounting studs clear there locating holes.

(4) Rotate the appropriate bulb socket counter-clockwise and pull it straight from the tail lamp assembly (Fig. 15).

(5) Pull the lamp bulb straight from its socket (Fig. 15).

INSTALLATION

(1) Install the lamp bulb in its socket.

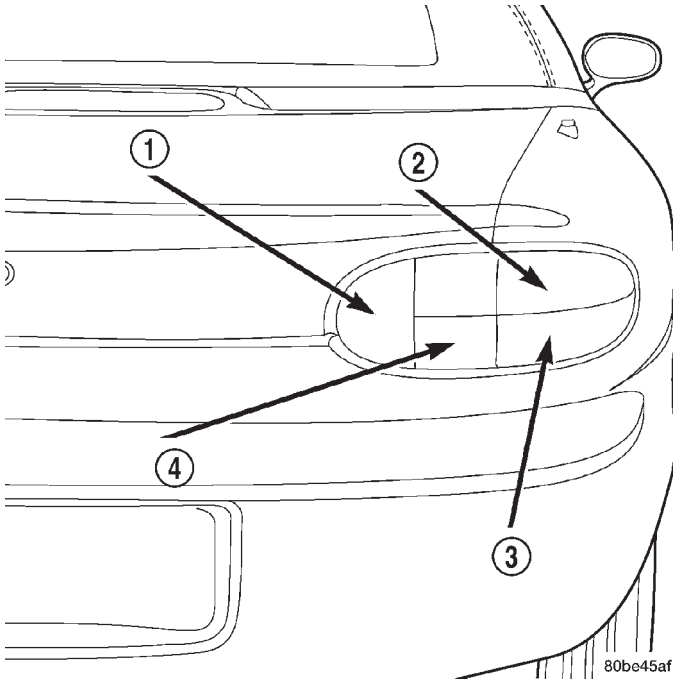


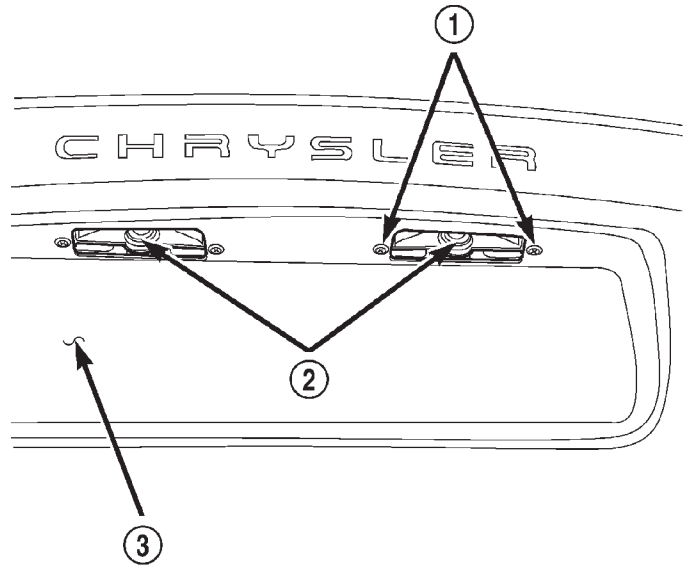
Fig. 16 Tail lamp Orientation

- 1 - REAR FOG LAMP
- 2 - TAIL, STOP LAMP
- 3 - TURN SIGNAL LAMP
- 4 - BACKUP LAMP

- (2) Verify lamp operation (Fig. 16).
- (3) Install the lamp socket in the tail lamp assembly.
- (4) Install the tail lamp assembly on the vehicle. Tighten retaining nuts until slight tension is felt.

LICENSE PLATE LAMP BULB

REMOVAL

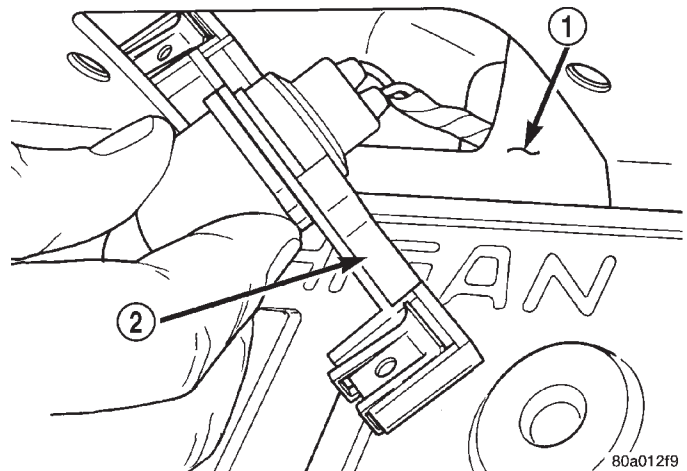


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Fig. 17 License Plate Lamps

- 1 - LAMP RETAINING SCREWS
- 2 - DUAL REAR LICENSE PLATE LAMPS
- 3 - REAR FASCIA

- (1) Remove screws holding license plate lamp to rear fascia.
- (2) Remove lamp from opening in rear fascia (Fig. 18).



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Fig. 18 Removing License Plate Lamp

- 1 - REAR BUMPER FASCIA
- 2 - LICENSE PLATE LAMP

REMOVAL AND INSTALLATION (Continued)

(3) Rotate lamp socket counter clockwise one quarter turn and pull lamp socket from lamp housing.

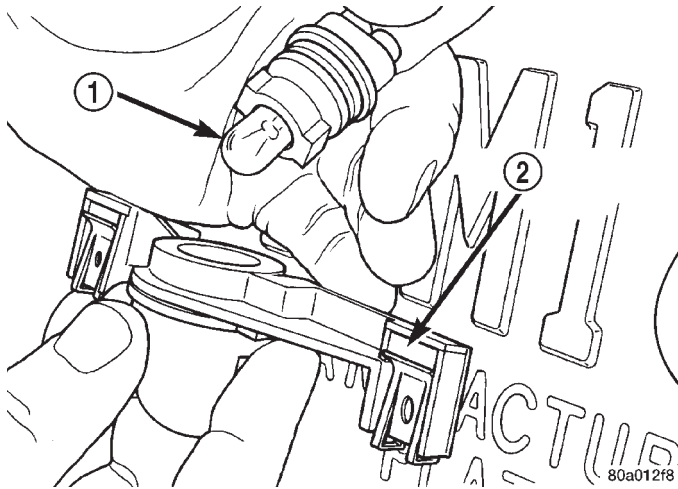


Fig. 19 License Plate Lamp Bulb

- 1 - BULB
2 - LICENSE PLATE LAMP

(4) Pull bulb from socket (Fig. 19).

INSTALLATION

- (1) Install bulb in lamp socket.
(2) Verify lamp operation.

(3) Install lamp socket in lamp housing.

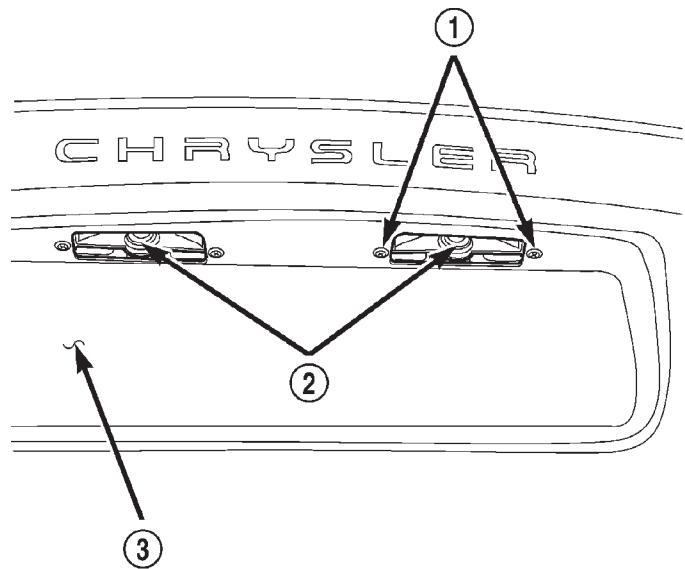


Fig. 20 License Plate Lamps

- 1 - LAMP RETAINING SCREWS
2 - DUAL REAR LICENSE PLATE LAMPS
3 - REAR FASCIA

(4) Position lamp and install retaining screws.

LAMP SERVICE

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REMOVAL AND INSTALLATION

HEADLAMP MODULE

The headlamp module contains a front position, park, turn and headlamp bulb as well as a headlamp leveling motor.

REMOVAL

- (1) Release hood latch and open hood.
- (2) Remove headlamp module retaining screws (Fig. 1).

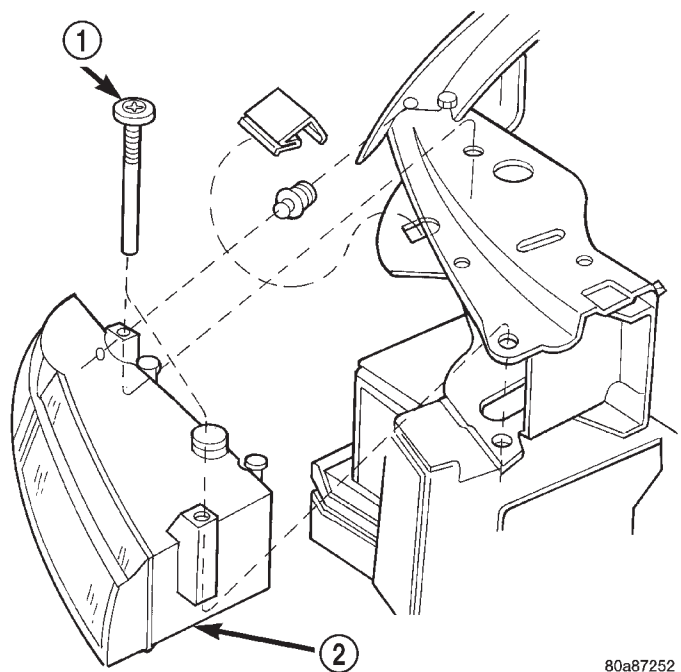


Fig. 1 Headlamp Module Retaining Screws

- 1 - MODULE SCREWS
- 2 - HEADLAMP MODULE

- (3) Pull headlamp module away from radiator closure panel.
- (4) Disconnect all electrical from rear of headlamp module and place module on bench.

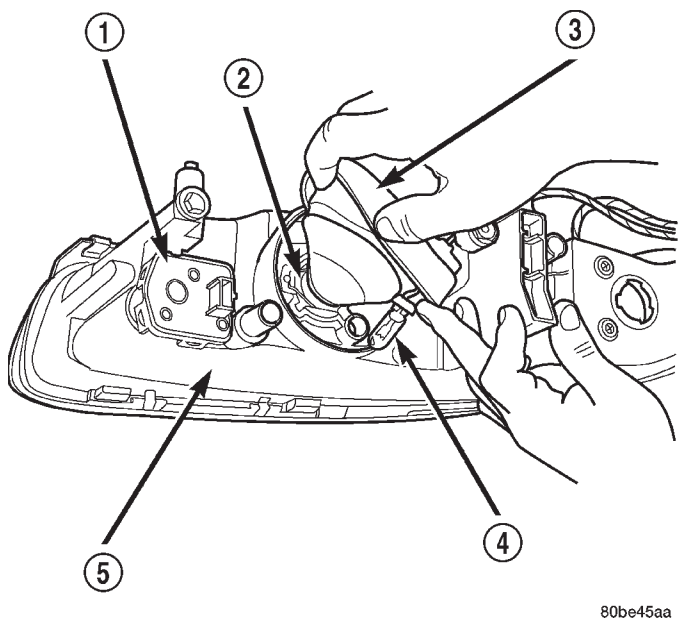


Fig. 2 Headlamp Module Orientation

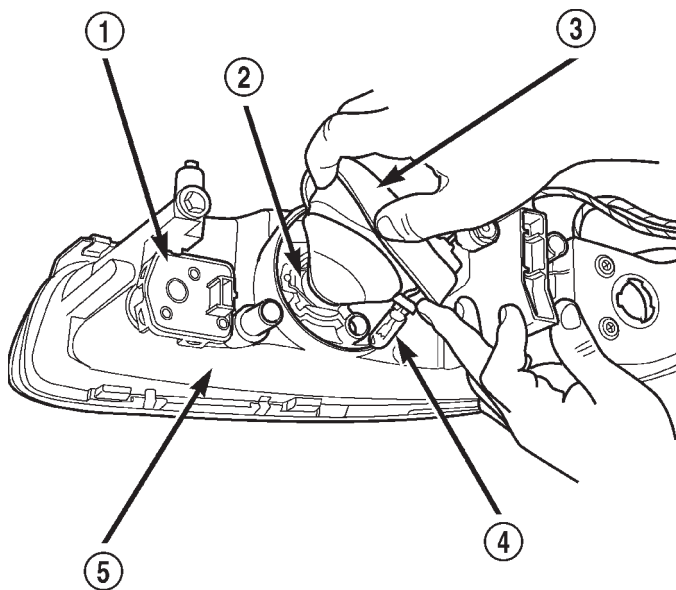
- 1 - HEADLAMP LEVELING MOTOR
- 2 - HEADLAMP
- 3 - PROTECTIVE RUBBER BOOT
- 4 - FRONT POSITION LAMP
- 5 - HEADLAMP MODULE

- (5) Pull back protective rubber boot and remove front position lamp by pulling straight out (Fig. 2).
- (6) Loosen headlamp bulb retaining screw until bulb can be removed (Fig. 2). Remove bulb.
- (7) Remove the headlamp leveling motor by rotating clockwise and pulling straight from headlamp module. Significant force will be required to unsnap the motor push rod from headlamp pivot connection.

REMOVAL AND INSTALLATION (Continued)

INSTALLATION

(1) Install headlamp leveling motor. Push motor/push rod straight in until push rod snaps in place then rotate motor counter clockwise to lock assembly in place.



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Fig. 3 Headlamp Module Orientation

- 1 – HEADLAMP LEVELING MOTOR
- 2 – HEADLAMP
- 3 – PROTECTIVE RUBBER BOOT
- 4 – FRONT POSITION LAMP
- 5 – HEADLAMP MODULE

(2) Install headlamp bulb and secure with retaining ring and screw (Fig. 3).

(3) Install front position lamp and install protective rubber boot (Fig. 3).

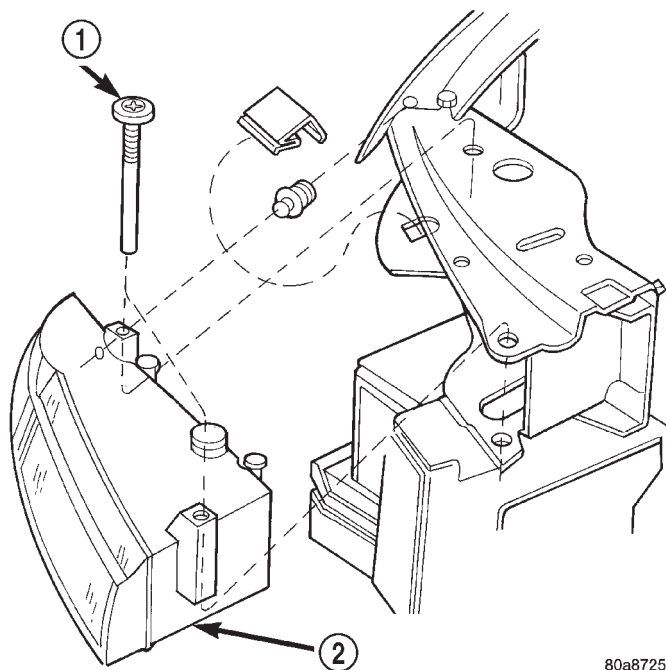
(4) Position module near vehicle and connect park, turn signal lamp and remaining electrical connections.

(5) Position headlamp module and install retaining screws (Fig. 4). Torque to 1 N·m (10in. lbs.).

(6) Check for proper headlamp alignment. Refer to Headlamp Alignment in this group for details.

HEADLAMP LEVELING MOTOR**REMOVAL**

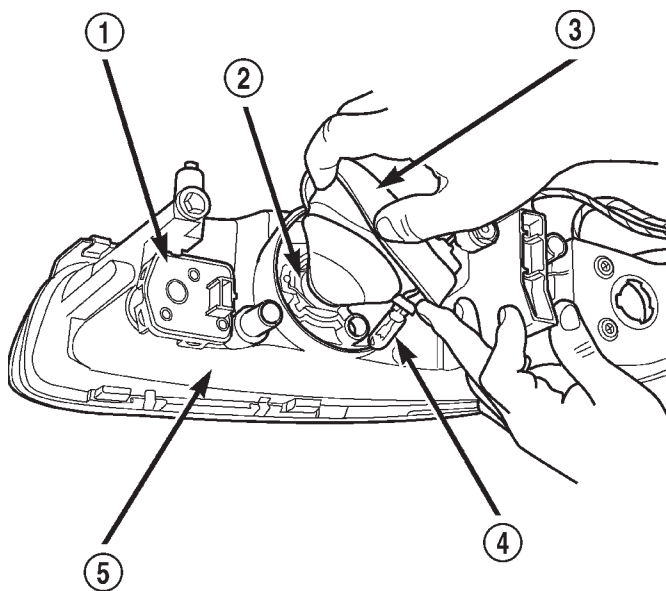
(1) Remove the headlamp module from the vehicle. Refer to Headlamp Module in the Removal and Installation section of this group.



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Fig. 4 Headlamp Module Retaining Screws

- 1 – MODULE SCREWS
- 2 – HEADLAMP MODULE



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Fig. 5 Headlamp Module Orientation

- 1 – HEADLAMP LEVELING MOTOR
- 2 – HEADLAMP
- 3 – PROTECTIVE RUBBER BOOT
- 4 – FRONT POSITION LAMP
- 5 – HEADLAMP MODULE

REMOVAL AND INSTALLATION (Continued)

(2) Rotate headlamp leveling motor counter clockwise one quarter turn (Fig. 5).

(3) Pull headlamp leveling motor from headlamp module. Significant force will be required to separate motor pushrod from headlamp module reflector assembly (Fig. 6).

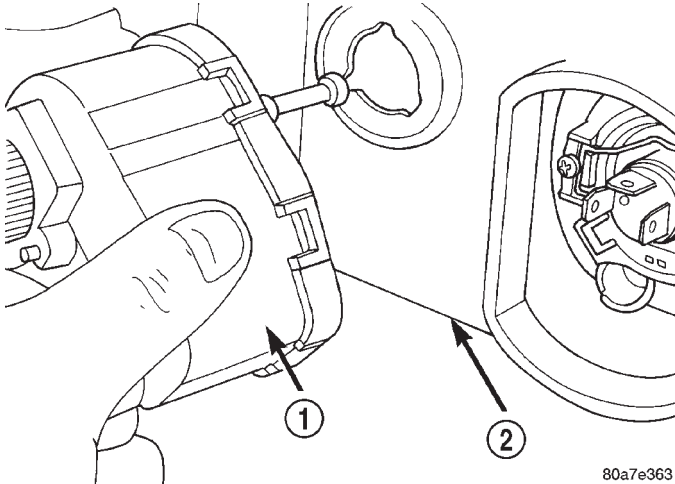


Fig. 6 Headlamp Leveling Motor

- 1 – HEADLAMP LEVELING MOTOR
2 – HEADLAMP MODULE

INSTALLATION

(1) Snap leveling motor pushrod into headlamp module (Fig. 6).

(2) Rotate headlamp leveling motor clockwise to lock in place once pushrod is secured to headlamp reflector.

(3) Install the headlamp module in the vehicle. Refer to Headlamp Module in the Removal and Installation section of this group.

(4) Check for proper headlamp alignment. Refer to Headlamp Alignment in this group for details.

SIDE TURN SIGNAL REPEATER LAMP

REMOVAL

(1) Open door to gain access to the rear of side repeater lamp (Fig. 7).

(2) Depress upper and lower tabs on repeater lamp to release lamp from fender (Fig. 8).

(3) Rotate side repeater lamp socket counter clockwise one quarter turn and pull from lamp (Fig. 8).

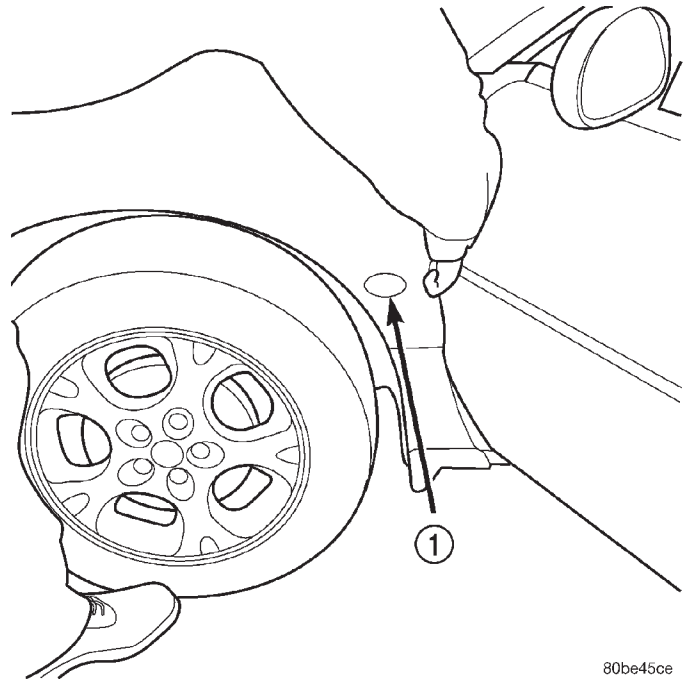


Fig. 7 Access to Side Turn Signal Repeater Lamp

- 1 – SIDE TURN SIGNAL REPEATER LAMP

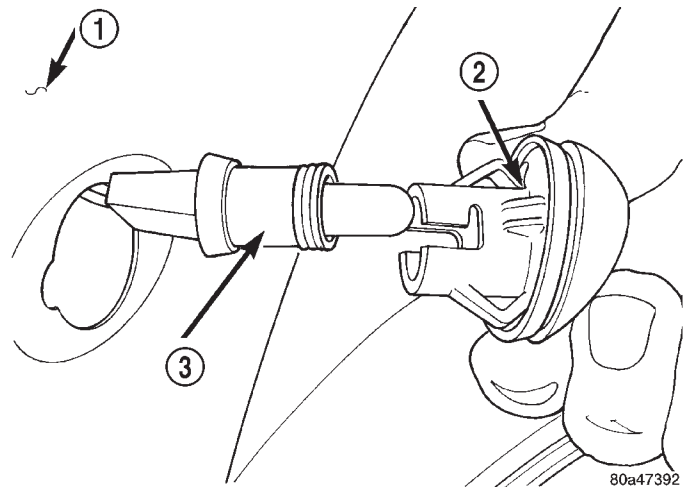
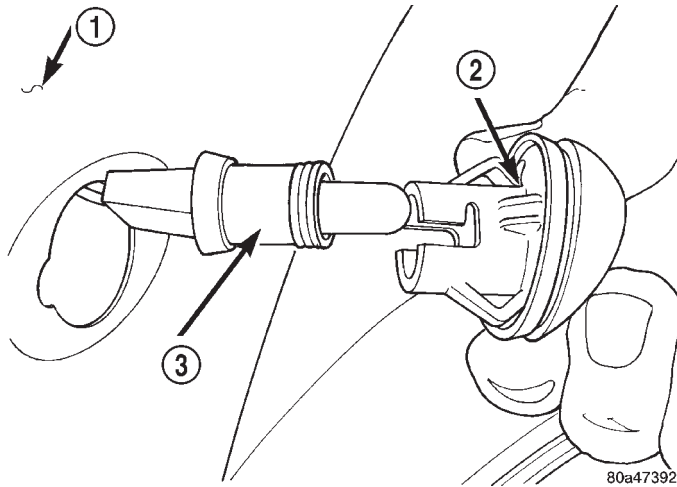


Fig. 8 Side Repeater Lamp

- 1 – FRONT FENDER
2 – SIDE REPEATER LAMP
3 – REPEATER LAMP SOCKET

REMOVAL AND INSTALLATION (Continued)

INSTALLATION

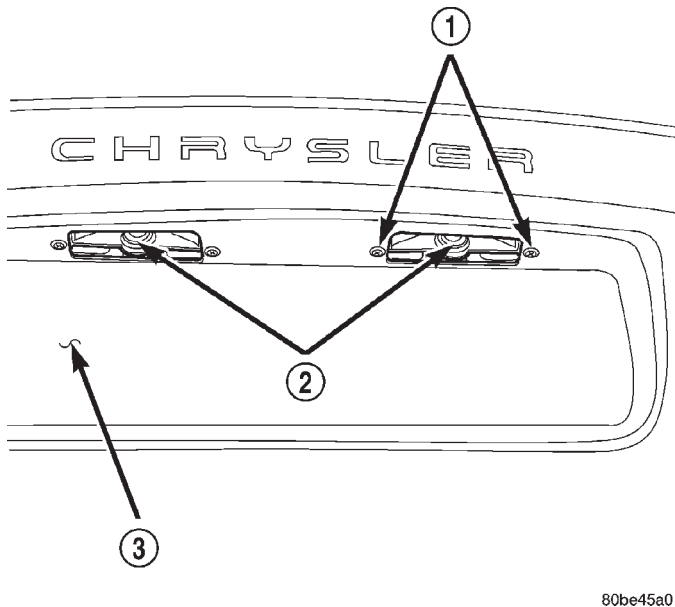
**Fig. 9 Side Repeater Lamp**

- 1 - FRONT FENDER
- 2 - SIDE REPEATER LAMP
- 3 - REPEATER LAMP SOCKET

- (1) Install side repeater lamp on lamp socket (Fig. 9).
- (2) Verify lamp operation.
- (3) Install lamp in front fender opening.

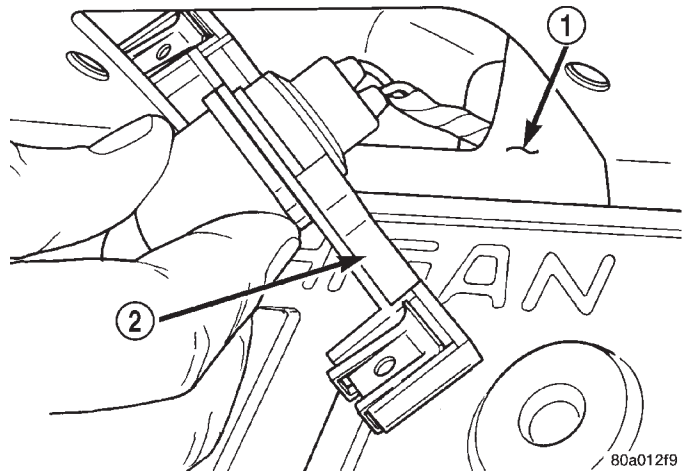
LICENSE PLATE LAMP

REMOVAL

**Fig. 10 License Plate Lamps**

- 1 - LAMP RETAINING SCREWS
- 2 - DUAL REAR LICENSE PLATE LAMPS
- 3 - REAR FASCIA

- (1) Remove license plate lamp retaining screws (Fig. 10).

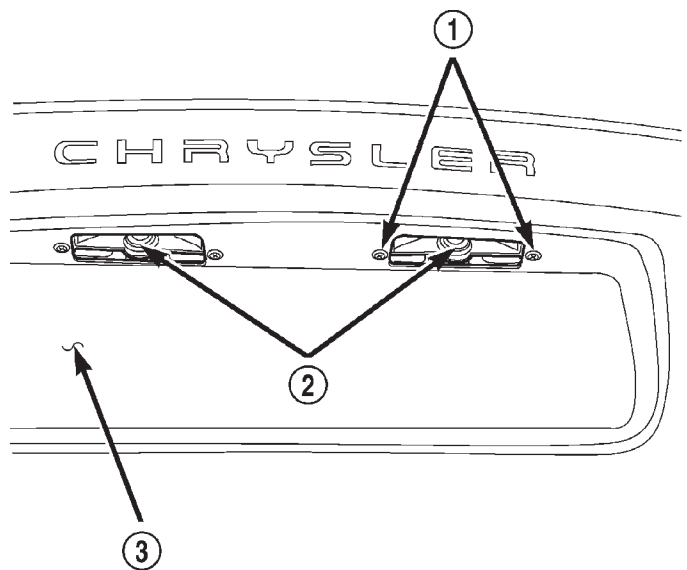
**Fig. 11 License Plate Lamp**

- 1 - REAR BUMPER FASCIA
- 2 - LICENSE PLATE LAMP

- (2) Remove the lamp through the opening in the rear fascia (Fig. 11).
- (3) Remove the bulb and socket from the lamp. Grasp the lamp socket, rotate counter-clockwise and pull straight from the lamp housing.

INSTALLATION

- (1) Install the lamp on the bulb and bulb socket.
- (2) Verify lamp operation.

**Fig. 12 License Plate Lamps**

- 1 - LAMP RETAINING SCREWS
- 2 - DUAL REAR LICENSE PLATE LAMPS
- 3 - REAR FASCIA

REMOVAL AND INSTALLATION (Continued)

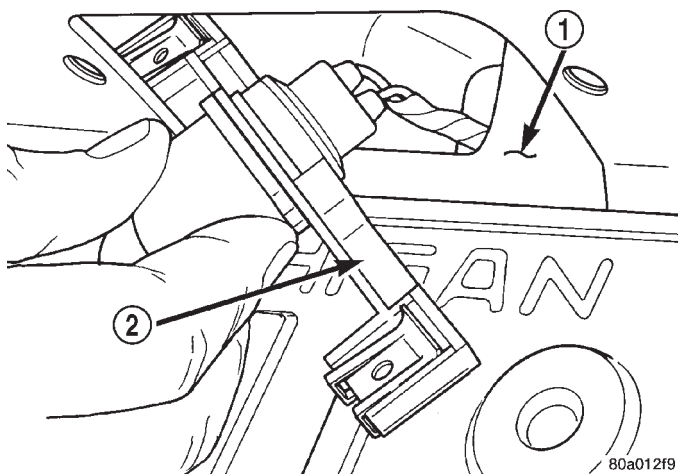


Fig. 13 License Plate Lamp

- 1 - REAR BUMPER FASCIA
2 - LICENSE PLATE LAMP
-

(3) Position the lamp (Fig. 13) and install retaining screws (Fig. 12).

BULB APPLICATION

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SPECIFICATIONS

EXTERIOR LAMPS

Back-up	P21-5W
Fog	9006
Rear Fog	P21W
Headlamp	H4
Park Lamp	W5W
Side Repeater	TW4
License Plate	W5W
Front Turn Signal	PY21W
Tail/Stop	P21/5W
Turn Signal	P21W
CHMSL Lamp	921W/16/W

TORQUE SPECIFICATIONS

DESCRIPTION	TORQUE
Headlamp Module	
Fasteners	1 N·m (10 in. lbs.)
Tail lamp	
Plastic Nuts	1 N·m (10 in. lbs.)
Rear Fog Lamp	
Screws	1 N·m (10 in. lbs.)