

SECTION 11

OFF-ROAD DRIVING AND FOG LAMPS

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LAMP MOUNTING BRACKETS

GENERAL

Three different mountings are available for mounting off-road driving and fog lamps on Jeep vehicles. The mounting bracket used is dependent on vehicle type, intended location of lamps and, in some instances, vehicle model year. In addition, for CJ models, a windshield light bar can be used for mounting off-road lamps and, for Truck models, off-road lamps can be mounted on the roll bar.

INSTALLATION

Windshield Light Bar—CJ Models

(1) Centerpunch vertical edge of windshield frame at a point 16 inches from bottom of frame and midway between side edges as shown in figure 11-1.

(2) Drill 11/64-inch hole for first mounting screw.

(3) Duplicate procedure outlined above on opposite side of windshield frame.

(4) Attach light bar to windshield frame by installing a screw into lower hole on either side of bar mounting brace.

(5) Using predrilled holes in light bar brace as guides, drill upper 11/64-inch holes in windshield frame.

(6) Complete installation by installing screws into upper holes.

NOTE: Light bar can be adjusted for use with windshield in either up or down position.

Bumper Mounting Brackets—CJ Models

CJ models have predrilled holes on either side of bumper for purpose of attaching mounting brackets for either fog or off-road driving lamps (fig. 11-2).

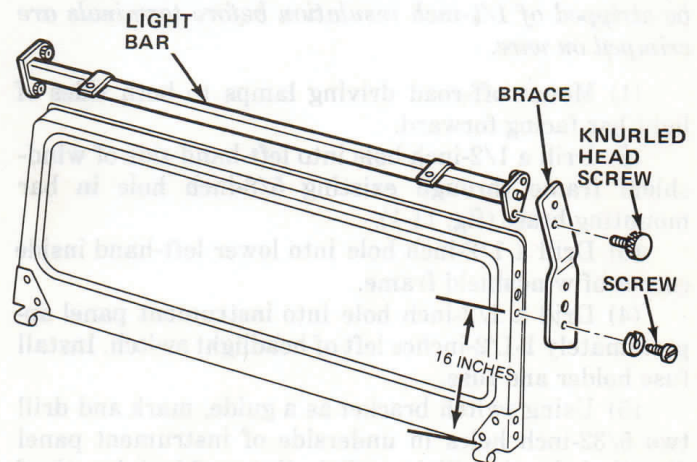
- (1) Position mounting brackets on bumper and install attaching bolts, lockwashers and nuts.
- (2) Tighten nuts to 18 foot-pounds (24 N•m) torque.

Bumper Mounting Brackets—Cherokee-Wagoneer-Truck Models

- (1) Remove nuts from bumper guard attaching studs.
- (2) Position mounting brackets on bumper guard studs and install attaching nuts (fig. 11-3).
- (3) Tighten nuts to 18 foot-pounds (24 N•m) torque.

Roll Bar Lamp Mounting—Truck Models

Lamps are attached to predrilled brackets located on either side of roll bar (fig. 11-4).



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Fig. 11-1 Windshield Light Bar Installation—CJ Models

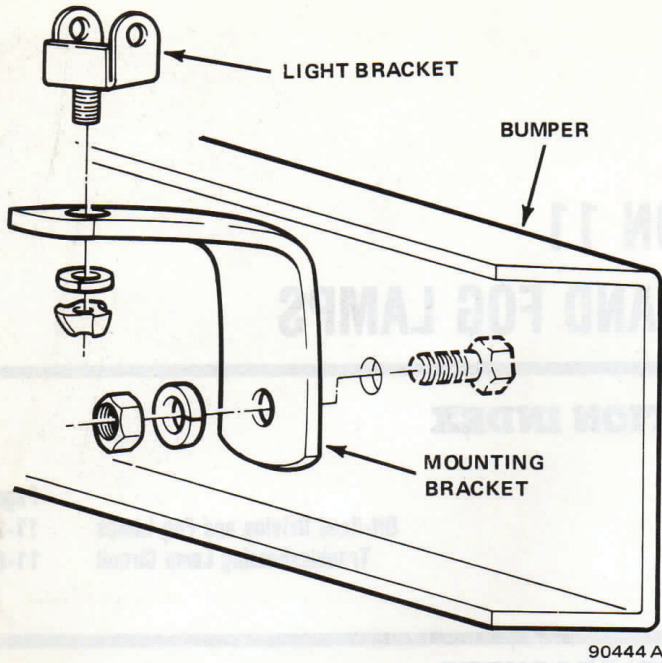


Fig. 11-2 Bumper Mounting—CJ Models

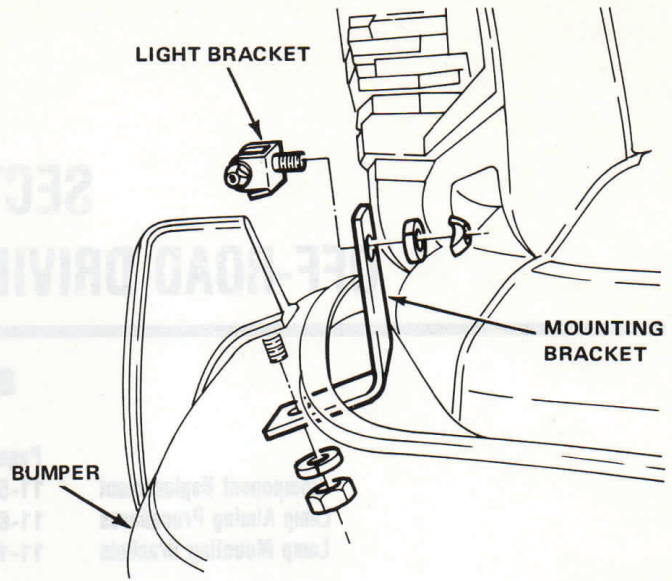


Fig. 11-3 Bumper Mounting—Cherokee-Wagoneer-Truck Models

OFF-ROAD DRIVING AND FOG LAMPS

GENERAL

The same off-road driving and fog lamp kits are used for all Jeep model installations. The kits include the necessary wiring, switch and fuse holder.

INSTALLATION

Light Bar Mounted Lamps

NOTE: Throughout wiring procedures, wire ends must be stripped of 1/4-inch insulation before terminals are crimped on wire.

- (1) Mount off-road driving lamps to both sides of light bar facing forward.
- (2) Drill a 1/2-inch hole into left-hand side of windshield frame through existing 5/8-inch hole in bar mounting brace (fig. 11-1).
- (3) Drill a 1/2-inch hole into lower left-hand inside corner of windshield frame.
- (4) Drill a 1/2-inch hole into instrument panel approximately 1-1/2-inches left of headlight switch. Install fuse holder and fuse.
- (5) Using switch bracket as a guide, mark and drill two 5/32-inch holes in underside of instrument panel directly below headlight switch. Cut an 8-inch length of wire, crimp on a 3/16-inch loop terminal on one end and a spade terminal on other end. Attach bracket to in-

strument panel with loop terminal grounded under right hand sheet metal screw. Connect spade terminal to negative (-) terminal on switch and snap switch into bracket.

NOTE: If vehicle is equipped with air conditioning, mount switch on underside of lower evaporator housing.

- (6) Cut a 95-inch length of wire and route one end into 1/2-inch hole on left-hand underside of light bar. Pull wire up through 1/2-inch hole in bar at vicinity of right-hand lamp, crimp on a round terminal and insert

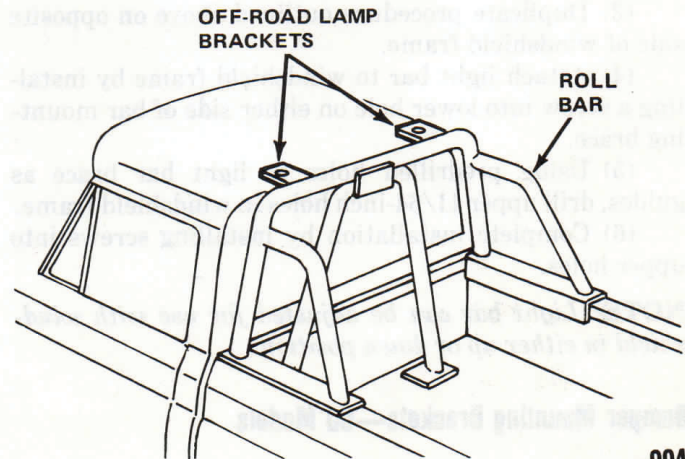


Fig. 11-4 Roll Bar Mounting—Truck Models

it into lamp connector. Take up slack in wire to allow connector to be situated inside bar and install strain relief bushing around connector wire and in 1/2-inch hole.

(7) Snag wire through 1/2-inch hole located at vicinity of left-hand lamp and pull out a workable loop of wire. Cut wire loop and a 4-inch length of wire. Crimp a round terminal onto one end of wire and insert it into lamp connector. Join remaining three wire ends by crimping them into 3-way butt connector. Take up slack in wire to allow lamp connector to be situated inside bar and install strain relief bushing around connector wire and in 1/2-inch hole.

(8) Insert end of 95-inch wire through 8-inch plastic insulation sleeve and route wire into top and out bottom windshield frame hole. Arrange sleeve so that it is positioned between windshield frame and bar. Install a strain relief bushing around wire at each end of insulation sleeve and in 1/2-inch holes. Insert end of 95-inch wire through 6-inch plastic insulation sleeve and install strain relief bushing around wire and end of insulation sleeve and in bottom windshield 1/2-inch hole (fig. 11-5).

NOTE: Ensure insulation sleeves are firmly held in place by strain relief bushings.

(9) Pivot windshield to down position and route 95-inch length of wire through hole for wiper motor wire harness, to underside of dash and to switch. Cut off excess wire, crimp on a spade terminal and connect to unmarked switch terminal.

(10) Cut a 7-inch length of wire, crimp on a spade terminal at both ends. Connect one end to side terminal on fuse holder and other end to positive (+) switch terminal.

(11) Cut a 12-inch length of wire and crimp on a fuse block connector on one end, a spade terminal on other end. Connect spade terminal to center terminal of fuse holder and fuse block connector to fuse block (fig. 11-6).

(12) Secure all wires with nylon cable ties.

(13) Refer to Lamp Aiming Procedures at end of this section.

NOTE: Power is available to lamp circuit only when ignition switch is turned on. California and some other states require the off-road lamp fuse to be removed when on public thoroughfares.

CJ Bumper Mounted Lamps

NOTE: Throughout wiring procedures, wire ends must be stripped of 1/4-inch insulation before terminals are crimped on wire.

(1) With brackets in place, mount either a fog lamp or off-road lamp on each side of bumper facing forward.

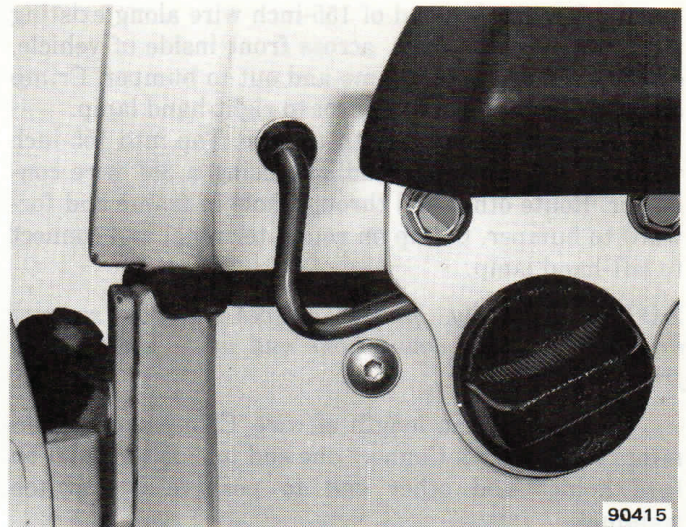


Fig. 11-5 Plastic Sleeve Secured at Bottom of Windshield Frame

(2) Drill a 1/2-inch hole into instrument panel approximately 1-1/2-inches left of headlight switch. Install fuse holder and fuse.

(3) Using bracket for rocker switch as a guide, mark and drill two 5/32-inch holes in underside of instrument panel directly below headlight switch. Cut an 8-inch length of wire, crimp on a 3/16-inch loop terminal on one end and a spade terminal on other end. Attach bracket to instrument panel with loop terminal grounded under right-hand sheet metal screw. Connect spade terminal to negative (-) terminal on switch and snap switch into bracket.

NOTE: If vehicle is equipped with air conditioning, mount switch on underside of lower evaporator housing.

(4) Cut a 155-inch length of wire. Route one end through rubber grommet in instrument panel used for sealing speedometer cable. Route wire under dash to switch. Crimp on a spade terminal and connect to unmarked terminal on switch.

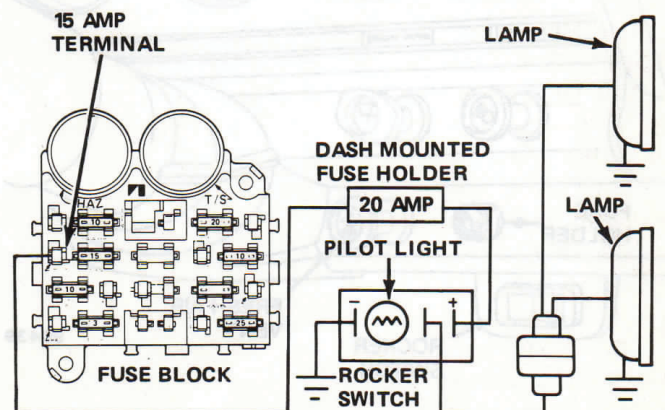


Fig. 11-6 Wiring Diagram for Lamps

(5) Route other end of 155-inch wire along existing wiring harness to grille, across front inside of vehicle, down through hole in frame and out to bumper. Crimp on round terminal and connect to right-hand lamp.

(6) Cut a 42-inch length of wire. Tap into 155-inch wire behind left-hand headlight using a 3M wire connector. Route other end through hole in frame and forward to bumper. Crimp on round terminal and connect to left-hand lamp.

NOTE: *Optionally, plastic sleeves can be secured around lamp wire connections and wires leading into frame.*

(7) Cut a 7-inch length of wire. Crimp a spade terminal on each end. Connect one end to side terminal on fuse holder and other end to positive (+) switch terminal.

(8) Cut a 12-inch length of wire. Crimp on fuse block connector on one end and a spade terminal on other end. Connect spade terminal to center terminal on fuse holder and fuse block connector to fuse block (fig. 11-6).

(9) Secure all wires with nylon cable ties.

(10) Refer to Lamp Aiming Procedures at end of this section.

NOTE: *Power is available to lamp circuit only when ignition switch is turned on. California and some other states require the off-road lamp fuse to be removed when on public thoroughfares.*

Cherokee-Wagoneer-Truck Bumper Mounted Lamps

NOTE: *Throughout wiring procedures, wire ends must be stripped of 1/4-inch insulation before terminals are crimped on wire.*

(1) With brackets in place, mount either a fog lamp or off-road lamp on each side of bumper facing forward.

(2) Drill 1/2-inch hole into instrument panel approximately 1-1/2-inches left of left vent knob. Install fuse holder and fuse (fig. 11-7).

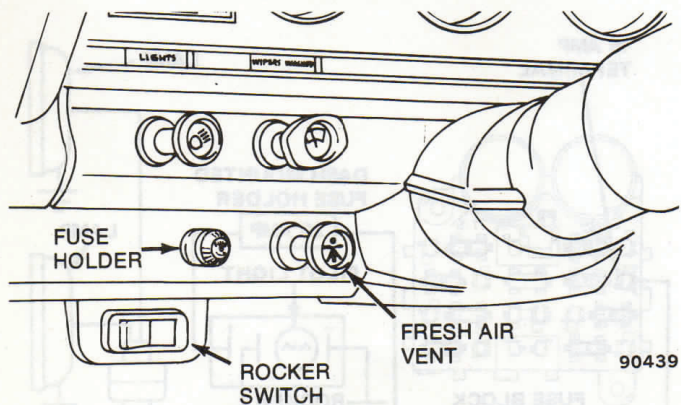


Fig. 11-7 Fuse Holder and Switch Location—Cherokee-Wagoneer-Truck Models

NOTE: *If vehicle has air conditioning, left air conditioning duct extension must be removed before fuse holder can be installed.*

(3) Using bracket for rocker switch as a guide, mark and drill two 5/32-inch holes in underside of instrument panel directly below fuse holder. Attach bracket to instrument panel and snap rocker switch into bracket.

(4) Cut a 175-inch length of wire and route one end through rubber grommet in instrument panel to rocker switch. Crimp on a spade terminal and connect to unmarked terminal on switch. Route opposite end of wire with existing wiring harness to left front of vehicle, across inside of grille and out to right-hand lamp. Crimp on round terminal and connect to lamp.

(5) Cut a 6-inch length of wire, crimp on round terminal and connect to left-hand lamp. Tap opposite end of wire into 175-inch wire with 3M wire connector.

NOTE: *Optionally, plastic sleeves can be secured around lamp wire connections and wires leading into grille.*

(6) Cut a 12-inch length of wire and crimp a spade terminal on each end. Connect one end to side terminal on fuse holder and other end to positive (+) terminal on switch.

(7) Cut a 6-inch length of wire. Crimp a spade terminal on one end and a 3/16-inch loop terminal on opposite end. Connect spade terminal to negative (-) terminal on switch. Using grounded trim attaching screw under steering column, attach loop terminal to underside of dash.

(8) Cut an 18-inch length of wire. Crimp on a spade terminal on one end and a fuse block connector on other end. Connect spade terminal to center terminal on fuse holder and connect fuse block connector to fuse block (fig. 11-6).

(9) Secure all wires with nylon cable ties.

(10) Refer to Lamp Aiming Procedures at end of this section.

NOTE: *Power is available to lamp circuit only when ignition switch is turned on. California and some other states require the off-road lamp fuse to be removed when on public thoroughfares.*

Truck Roll Bar Mounted Lamps

NOTE: *Throughout wiring procedures, wire ends must be stripped of 1/4-inch insulation before terminals are crimped on wire.*

(1) Mount an off-road lamp on each pad on top of bar (fig. 11-4).

(2) Drill 1/2-inch hole into instrument panel approximately 1-1/2-inches left of left vent knob. Install fuse holder and fuse (fig. 11-7).

NOTE: If vehicle has air conditioning, left air conditioning duct extension must be removed before fuse holder can be installed.

(3) Using bracket for rocker switch as a guide, mark and drill two 5/32-inch holes in underside of instrument panel directly below fuse holder. Attach bracket with two sheet metal screws. Snap in switch.

(4) Route a long, stiff wire (e.g., connected coat hangers), from underside of pick-up bed, up through left front stake receptical into bottom of roll bar. Continue with routing until end of wire is visible through 1/2-inch hole adjacent to right-hand lamp. Snag and pull out 2 inches of stiff wire. Securely attach a 25-foot length of wire to end of stiff wire. Pull 25-foot wire through roll bar until approximately 3 inches remain at top of roll bar.

(5) Crimp a round terminal on upper end of wire and connect to right-hand lamp. Install strain relief bushing around wire and in 1/2-inch hole.

(6) Snag wire through 1/2-inch hole adjacent to left-hand lamp and pull out a workable loop. Cut loop and a 6-inch length of wire. Crimp a round terminal on one end of wire and connect to left-hand lamp.

(7) Using a 3-way butt connector, crimp together all three remaining wire ends. Insert connector into 1/2-inch hole. Install strain relief bushing around wire and in 1/2-inch hole.

(8) Route other end of wire along inner side of C channel frame into engine compartment, past brake servo, through rubber grommet in instrument panel and into cab.

(9) Cut off any excess wire, crimp on spade terminal and connect to unmarked switch terminal.

(10) Cut a 12-inch length of wire and crimp a spade terminal on each end. Connect one terminal to side terminal on fuse holder and other to positive (+) switch terminal.

(11) Cut a 6-inch length of wire and crimp a spade terminal on one end and 3/16-inch loop terminal on opposite end. Connect spade terminal to negative (-) switch terminal. Using grounded trim attaching screw under steering column, attach loop terminal to underside of instrument panel.

(12) Cut an 18-inch length of wire. Crimp on a fuse block terminal on one end and a spade terminal on other end. Connect spade terminal to center terminal on fuse holder and fuse block terminal to fuse block (fig. 11-6).

(13) Secure all wires with nylon cable ties.

(14) Refer to Lamp Aiming Procedures at end of this section.

NOTE: Power is available to lamp circuit only when ignition switch is turned on. California and some other states require the off-road lamp fuse to be removed when on public thoroughfares.

COMPONENT REPLACEMENT

QUARTZ ELEMENT

The procedure outlined below applies to both off-road and fog lamps. Refer to figure 11-8 for lamp disassembly.

(1) Remove stone shield from lamp.

(2) Remove screws attaching bezel to lamp body. Remove bezel from lamp body.

(3) Remove lens and reflector assembly from lamp body.

(4) Remove element holder from lens and reflector assembly.

CAUTION: Do not handle quartz elements with bare hands—body oil residue on glass will cause element to fail immediately after ignition. Always handle new elements with a clean cloth.

(5) Remove quartz element and install replacement element.

(6) Install element holder in lens and reflector assembly.

(7) Position lens and reflector assembly in lamp body with TOP of lens at top of lamp body.

(8) Position bezel on lamp body and install attaching screws.

(9) Install stone shield on lamp.

SWITCH

Refer to figure 11-8 for switch components.

(1) Note location or tag connecting wires and disconnect from switch.

(2) Compress sides of switch body and remove switch from bracket.

(3) Install replacement switch in bracket and connect wires.

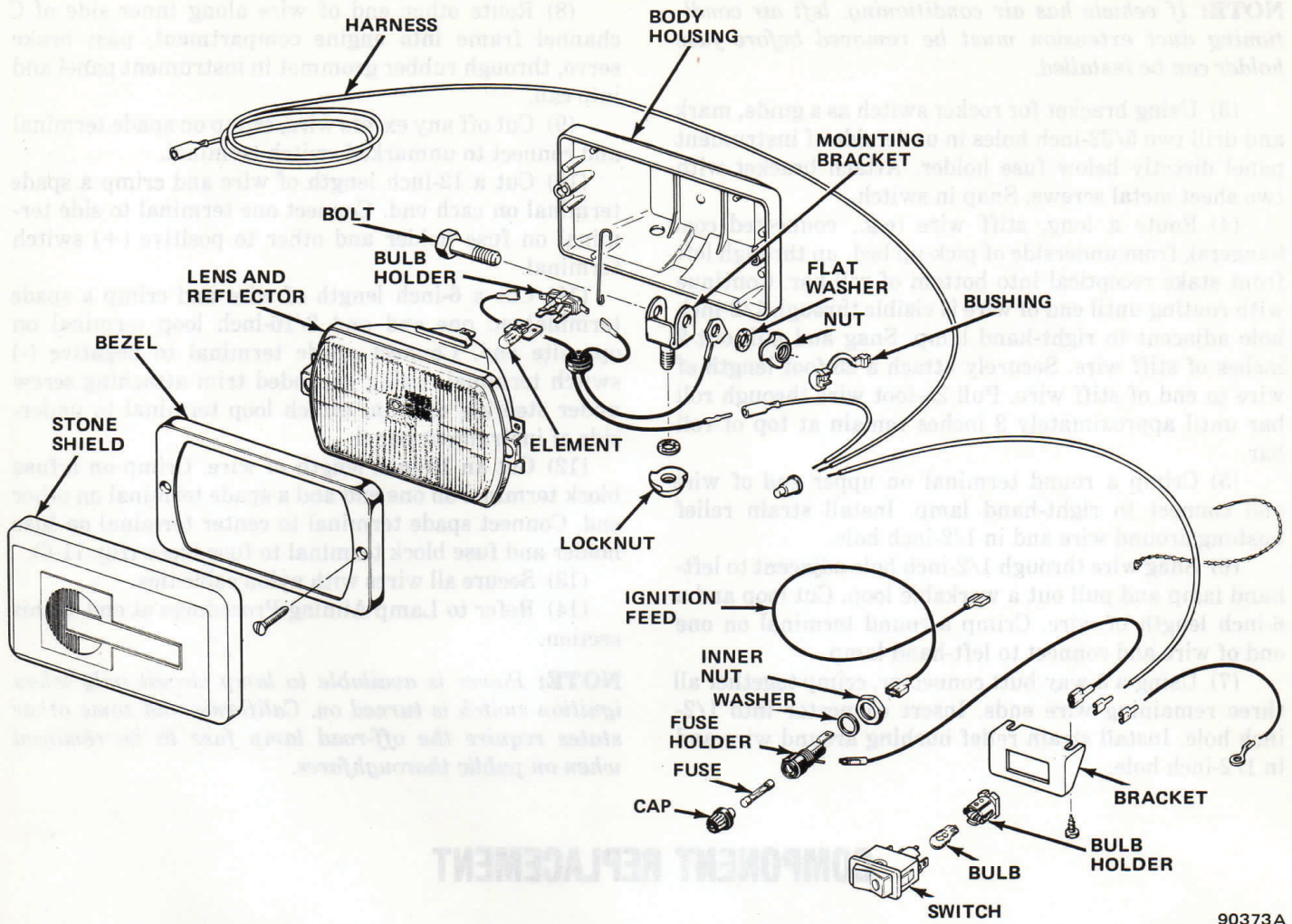
SWITCH BULB

(1) Remove switch as outlined above.

(2) Remove bulb holder from switch.

(3) Remove bulb from bulb holder (fig. 11-8).

(4) Install replacement bulb, install bulb holder, install switch and connect wires.



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Fig. 11-8 Off-Road Driving and Fog Lamp Components

TROUBLESHOOTING LAMP CIRCUIT

Refer to Lamp Circuit Wiring Diagram depicted in figure 11-6.

LAMP AIMING PROCEDURES

Refer to chart for set up procedures and applicable lamp beam specification.

NOTES

LAMP AIMING PROCEDURES

| SET UP VEHICLE FOR AIMING | LAMP TYPE | MOUNTED ON | SPECIFICATIONS |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| 1. Park vehicle on flat level surface 25 feet from a wall or garage door. 2. Leave a normal load in vehicle including gas. Also equalize tire pressure. | Driving, Off-Road (Long Range) | Roll Bar (Trucks) | Center of beam high intensity zone (hot spot) straight ahead of lamp and descending one inch in 25 feet. |
| 3. Using a tape measure, determine: a. Vertical height of lamp centers above ground. b. Horizontal distance between lamp centers. | Driving, Off-Road (Long Range) | Windshield Light Bar (CJ Models) | Center of beam high intensity zone (hot spot) straight ahead of lamp and descending one inch in 25 feet. |
| 4. Mark coordinates on wall along with centerline of vehicle. (Masking tape is useful.) 5. Aim per specifications to the right. | Driving, Off-Road (Long Range) | Bumper (Truck, Cherokee, Wagoneer, CJ Models) | Center of beam high intensity zone (hot spot) straight ahead of lamp and parallel to ground (no descent). |
| Note: Securely tighten adjustment locking nuts when aiming is completed. | Fog (Wide angle beam for weather and cornering) | Bumper (Truck, Cherokee, Wagoneer, CJ Models) | Lamps straight ahead of vehicle with line formed by beam cutoff descending three inches in 25 feet. |