SECTION 8B

LIGHTING SYSTEMS

CAUTION: On vehicles equipped with Supplemental Inflatable Restraint (SIR), refer to CAUTIONS in Section 9J under "ON-VEHICLE SERVICE" and the SIR Component and Wiring Location view in Section 9J before performing service on or around SIR components or wiring. Failure to follow CAUTIONS could result in possible air bag deployment, personal injury, or otherwise unneeded SIR system repairs.

CAUTION: Before removing or installing any electrical unit, or when a tool or equipment could easily come in contact with exposed electrical terminals, make sure the ignition switch and headlamp switch are in the OFF position. In cases where the circuit would still be "live" or "hot at all times," disconnect the negative battery cable. This is to help prevent personal injury and/or damage to the vehicle or components.

NOTICE: ***Always use the correct fastener in the correct location. When you replace a fastener, use ONLY the exact part number for that application. General Motors will call out those fasteners that require a replacement after removal. General Motors will also call out the fasteners that require thread lockers or thread sealant. UNLESS OTHERWISE SPECIFIED, do not use supplemental coatings (paints, greases, or other corrosion inhibitors) on threaded fasteners or fastener joint interfaces. Generally, such coatings adversely affect the fastener torque and joint clamping force, and may damage the fastener. When you install fasteners, use the correct tightening sequence and specifications. Following these instructions can help you avoid damage to parts and systems.***

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ON-VEHICLE SERVICE OF EXTERIOR LIGHTING

CARGO/STOPLAMP REPLACEMENT

Pickup and Cab/Chassis Models

Remove or Disconnect (Figure 1)

- Make sure the headlamp switch is off.

1. Lens screws and lens.
2. Bulb.
3. Lamp assembly screws.
4. Lamp assembly from the roof.
5. Wiring harness from the lamp assembly.
6. Gasket from the roof.

Install or Connect (Figure 1)

1. Gasket to the roof.
2. Wiring harness to the lamp assembly.
3. Lamp assembly to the roof.
4. Lamp assembly screws.
5. Bulb.
6. Lens screws and lens.

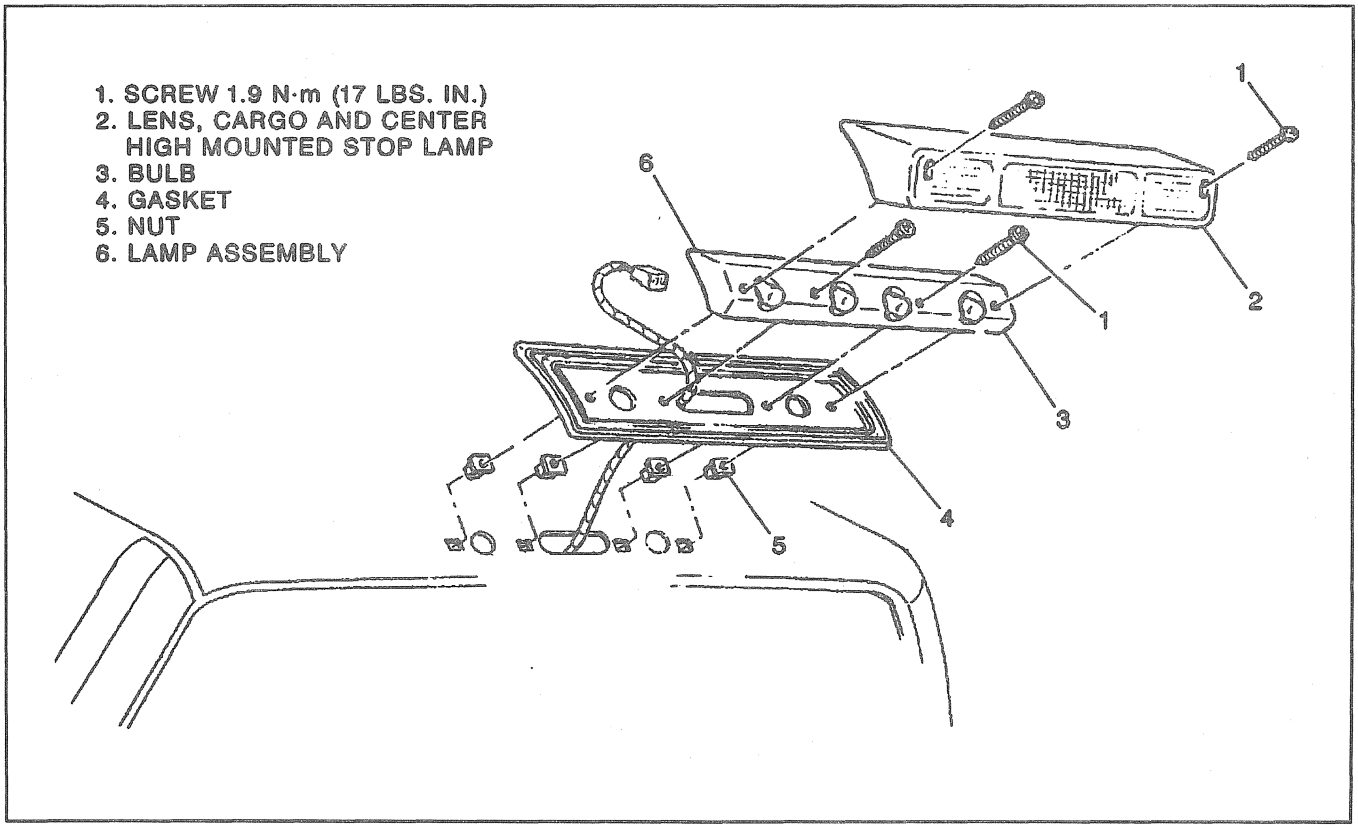


Figure 1—Cargo/Stoplamp Components (Pickup and Cab/Chassis Models)

CENTER HIGH-MOUNTED STOPLAMP (CHMSL) REPLACEMENT

Suburban and Utility Models

Remove or Disconnect (Figure 2)

- Make sure the headlamp switch is OFF.

1. Rear upper garnish molding at headliner.
2. Lower rear of headliner to access electrical connector.
3. Electrical connector.
   - Attach a short piece of wire to the CHMSL connector to assist guiding the harness through the body.
4. CHMSL retaining screws.
5. CHMSL from the vehicle.

Install or Connect (Figure 2)

1. Attach harness to guide wire.
2. Pull lamp wire through hole in roof panel using guide wire.
   - Remove guide wire.
3. CHMSL to the vehicle with screws.

Tighten

- CHMSL screws to 1.9 N·m (17 lb. in.).

4. Electrical connector.
5. Headliner.
6. Rear upper garnish molding.

COMPOSITE HEADLAMP BULB REPLACEMENT

Remove or Disconnect (Figures 3 and 4)

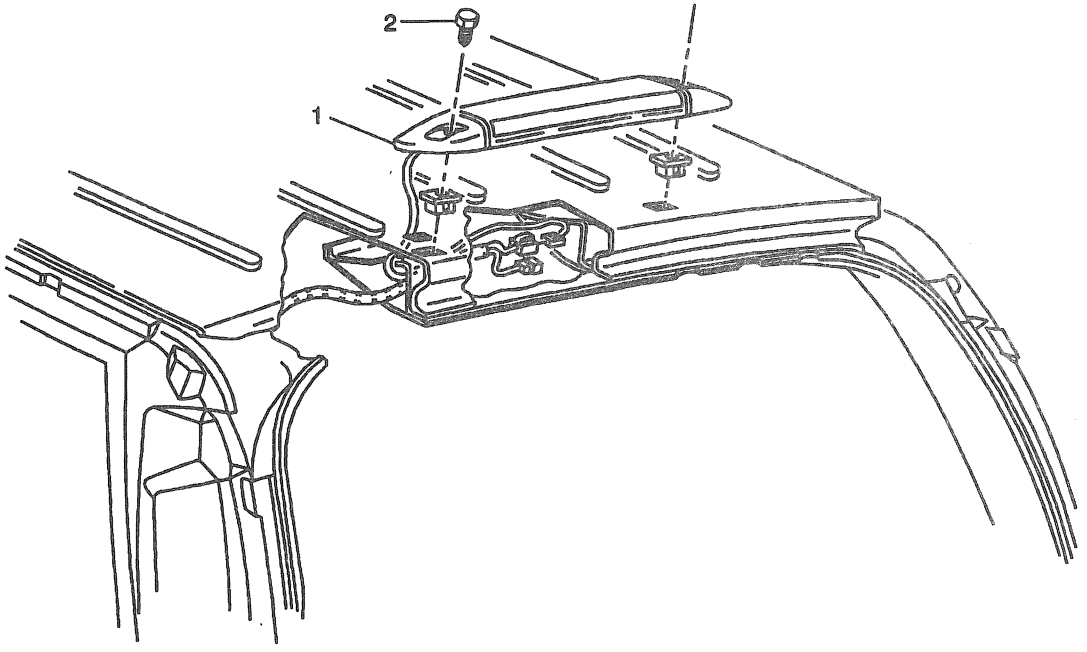
- Make sure the headlamp switch is off.

1. Bulbs from the headlamp capsules by reaching in from the engine compartment and twisting to the left.

CAUTION: Halogen bulbs contain a 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 it. Leave the switch off until change is complete.**
- **Always wear eye protection when changing a halogen bulb.**
- **Handle the bulb only by its base. Avoid touching the glass.**
- **Do not drop or scratch the bulb. Keep moisture away.**
- **Place the used bulb in the new bulb's carton and dispose of it properly.**

NOTICE: ***Avoid touching the bulb or letting it come in contact with anything damp. Oil from your skin or moisture on the bulb can cause the bulb to explode when it is turned on. If either comes in contact with the bulb, clean it with alcohol or a suitable degreaser and wipe the bulb dry.***



1. LAMP ASSEMBLY, CHMSL
2. SCREW 1.9 N·m (17 LBS. IN)

Figure 2—CHMSL Replacement (Suburban and Utility)

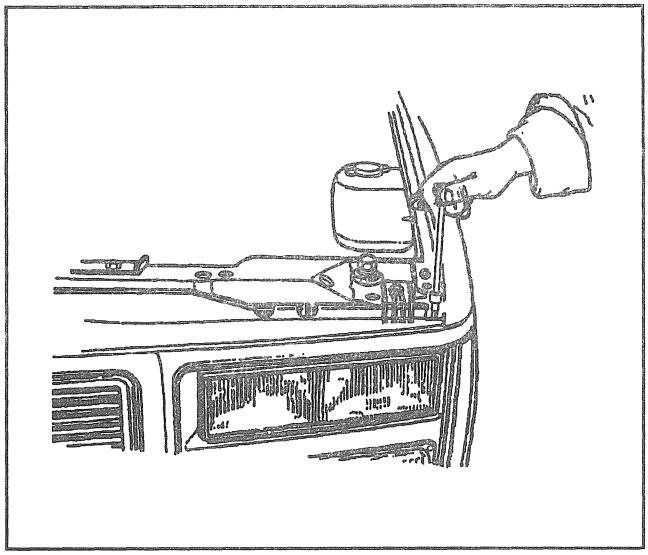


Figure 3—Composite Headlamp Assembly Pin Removal

2. Two long screws from the top of the radiator support (Figure 4).
   - Pull the headlamp assembly forward.
3. Electrical connector from the burned out bulb assembly.

Install or Connect (Figures 3 and 4)

1. New bulb assembly into the headlamp assembly and twist it to the right. It should seat with the connector facing down.
   - Make sure to replace a high beam bulb with another high beam and a low beam bulb with another low beam. The low beam bulb has a gray tip and a yellow gasket at its base. The high beam bulb has a red gasket.
2. Electrical connector to the bulb assembly.
3. Headlamp assembly.
4. Two long screws through the top of the radiator support and tighten.

COMPOSITE HEADLAMP ADJUSTMENT

Horizontal and vertical aiming of each headlamp assembly is done by two adjusting screws. The screws are located within the radiator support, and are not easily seen. Two holes in the radiator support for each headlamp assembly provide access to the recessed adjusting screws (Figures 5 and 6). Turn the screws using a T15 torx head bit.

Adjust the headlamps to the specifications required by state and/or local authorities.

There are three methods for aiming the headlamps.

Visual Headlamp Aiming Procedure (Preferred)

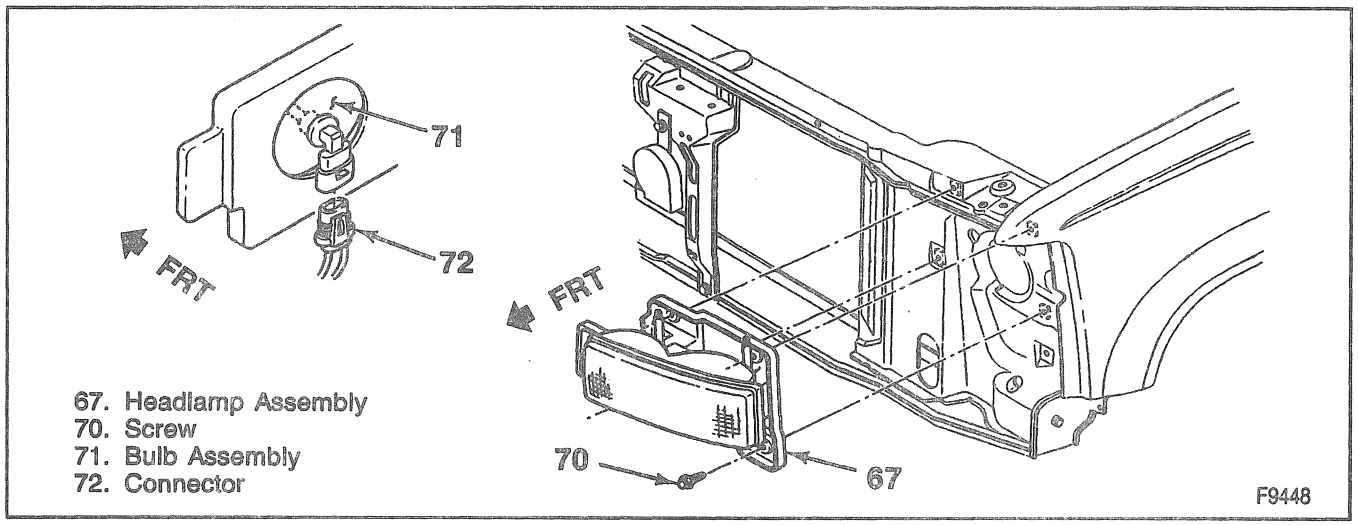
All equipment for testing headlamps must comply with the SAE Recommended Practice for Headlamp Inspection Equipment.

If a headlamp testing machine is used, it should give results equivalent to those obtained using the screen procedure as shown in Figure 7. It should be in good repair and properly adjusted, and should be used in accordance with the manufacturer's instructions. The machine using a photoelectric cell or cells to determine aim should also include a visual screen upon which the beam pattern can be projected proportional to its appearance and aim on a screen at 7.62 m (25 feet). The screen should be easily visible to the technician who is adjusting the headlamps, and should have horizontal and vertical reference lines to permit visual appraisal of the headlamp beam.

Headlamp Aiming by the Screen Method

Location

The area should be darkened and large enough to allow for the vehicle and an additional 7.62 m (25 feet.) measured from the face of the headlamps to the front of the screen. The floor on which the vehicle rests must be flat with the bottom of the screen. If the floor is not level, compensate as necessary.



67. Headlamp Assembly
70. Screw
71. Bulb Assembly
72. Connector

Figure 4—Composite Headlamp Assembly

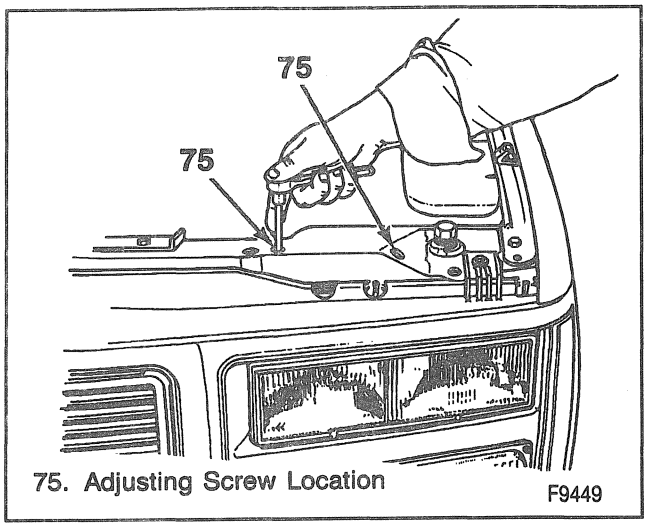


Figure 5—Adjusting the Headlamps

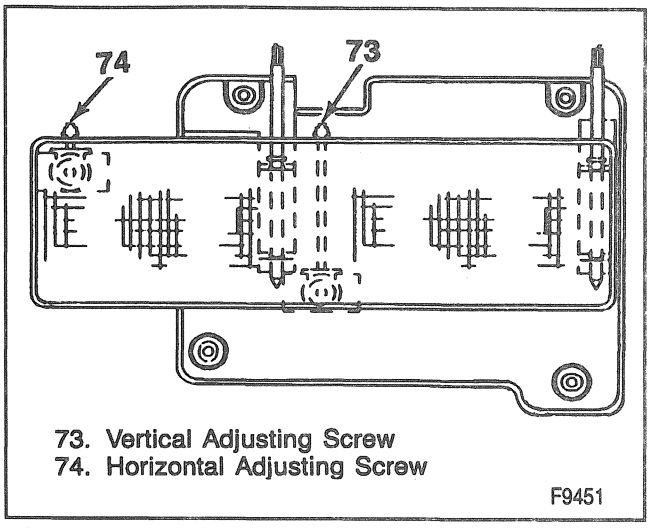


Figure 6—Composite Headlamps Adjusting Screws

Aiming Screen

If a screen is used, it should be at least 1.52 m (5 feet.) high by 3.66 m (12 feet.) wide with a matte white surface well shaded from extraneous light, and properly adjusted to the floor. The screen should be moveable so that it can be aligned parallel with the rear axle of the vehicle. It should be positioned so that a horizontal line drawn perpendicular to the centerline of the screen will pass an equal distance midway between the two headlamps (Figure 7).

The screen should be provided with a vertical centerline, two laterally adjustable vertical tapes, and one vertically adjustable horizontal tape.

If a regular commercial aiming screen is not available, the screen may consist of a wall having a clear uninterrupted area at least 1.83 m (6 feet.) high by 3.66 m (12 feet.) wide. The surface should be finished with a washable no-gloss white paint.

After the aiming screen has been set up and located, paint or tape a reference line on the floor 7.62 m (25 ft.) from the screen. The vehicle should be parked with the front of the headlamps directly over this reference line.

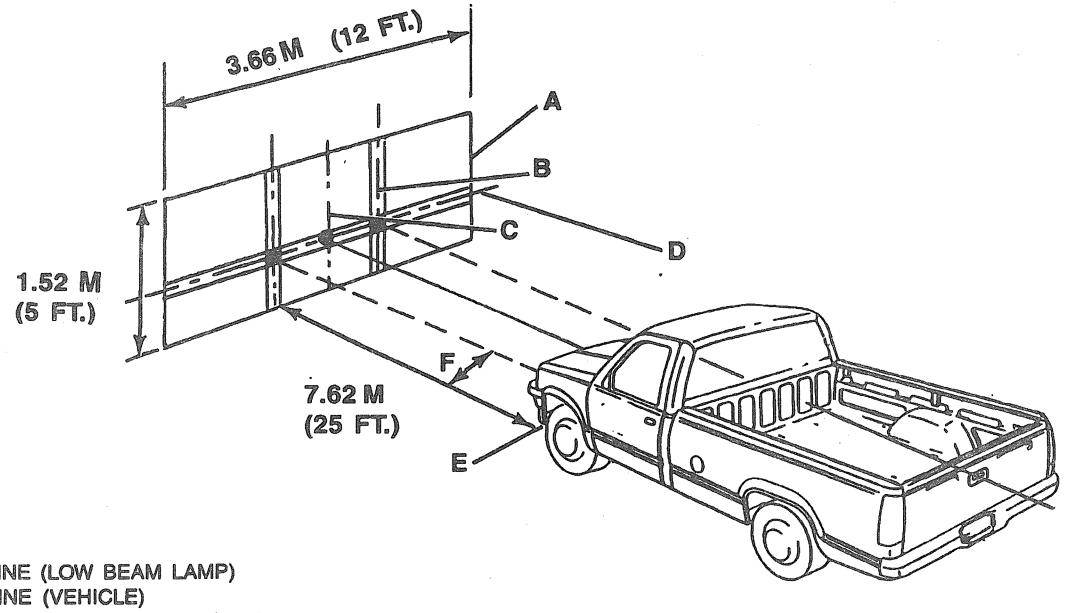


Figure 7—Visual Headlamp Inspection and Adjustment

Headlamp Aiming Procedure

1. Park the vehicle square with the screen and with the headlamps directly over the reference line.
2. Make sure all components are in place, if other work has been done on the vehicle.
3. Make sure the vehicle is on a level surface.
4. Stop all other work on the vehicle.
5. Make sure the vehicle has one-half tank of fuel or less.
6. Close the vehicle's doors.
7. Rock the vehicle sideways.
8. Line up the centerline of the vehicle with the centerline of the aiming screen. This can be done by marking the vertical center of the rear and front windows with tape. Use these lines as "sights" to line up the centerline of the vehicle and screen.
9. Adjust the vertical tapes on the screen to match the vertical centerline of each low beam lamp. (Measure the distance from the centerline of the vehicle to the centerline of a low beam lamp).
10. Adjust the horizontal tapes on the screen to match the horizontal centerline of each low beam headlamp. (Measure the height from floor to the center of a low beam).
11. Turn on the low beam lamps. Observe the left and top edges of the high intensity zone on the screen. Adjust the headlamps so that:

    A. The top edge of the center of intensity on the screen for the low beam is less than 101.6 mm (4 in.) above or below the cross section of the headlamp centerlines.

    B. The left edge of the center of intensity on the screen for the low beam is less than 101.6 mm (4 in.) to the left or right of the cross section of the headlamp centerlines.

Headlamp Aiming Alternative Procedure

Tool Required:
J 25300-A Headlamp Aimer

- Prepare the vehicle.

1. Make sure all components are in place, if other work has been done on the vehicle.
2. Make sure the vehicle is on a level surface.
3. Stop all other work on the vehicle.
4. Make sure the vehicle has one-half tank of fuel or less.
5. Close the doors.
6. Rock the vehicle sideways.
   - Using Headlamp Aimer J 25300-A, adjust the headlamps to the specifications required by state and/or local authorities. Instructions for tool use accompany the tool. This kit contains special adapters for use with composite lenses.

SEALED BEAM HEADLAMP REPLACEMENT

Remove or Disconnect (Figure 8)

- Make sure the headlamp switch is off.

1. Retaining ring screws from the retaining ring.
2. Retaining ring from the headlamp.
3. Headlamp from the headlamp mounting bracket.

16. Headlamp Wiring Harness
65. Retaing Ring
66. Retaining Ring Screws
67. Headlamp
68. Headlamp Mounting Bracket

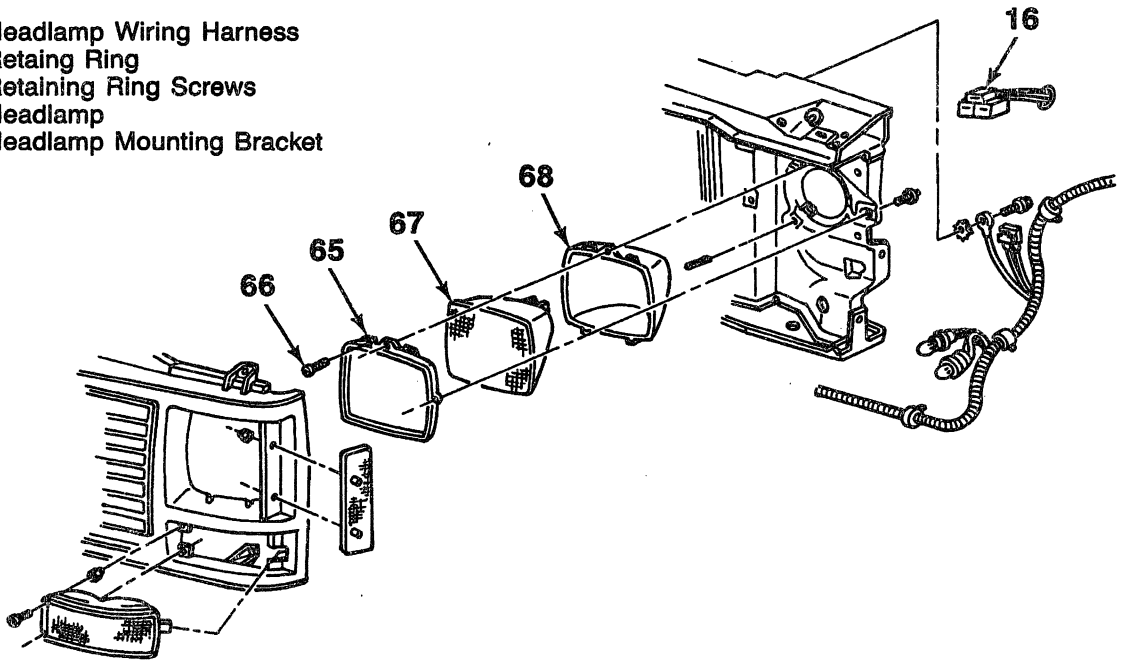


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Figure 8—Sealed Beam Headlamp Components

4. Electrical connector from the headlamp.

Install or Connect (Figure 8)

1. Electrical connector to the headlamp.
2. Headlamp to the headlamp mounting bracket.
3. Retaining ring to the headlamp.
4. Retaining ring screws to the retaining ring.

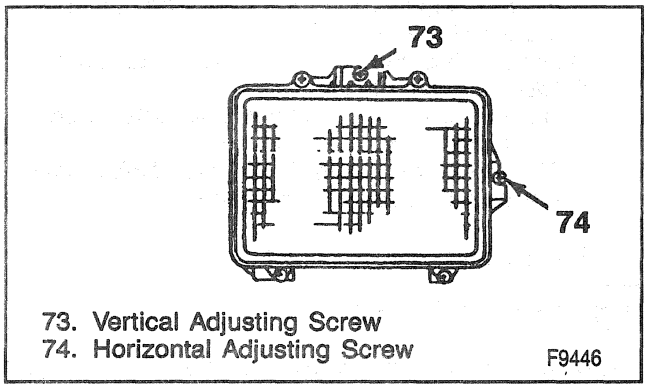
SEALED BEAM HEADLAMP ADJUSTMENT

Tool Required:
J 25300-A Headlamp Aimer

Horizontal and vertical aiming of each headlamp is done by two adjusting screws that move the mounting bracket against the tension of the coil spring (Figure 9). These screws are located in the headlamp bezel area on sealed beam headlamp models (one above and one to the side of the headlamp).

The adjusting screw directly above the headlamp is used to adjust the horizontal position while the screw to the side is used to adjust the vertical position of the headlamp.

Using Headlamp Aimer J 25300-A, adjust the headlamps to the specifications required by state and/or local authorities. Instructions for tool use accompany the tool.



73. Vertical Adjusting Screw
74. Horizontal Adjusting Screw

Figure 9—Headlight Aiming Screws (Sealed Beam Headlamps)

The headlamps can also be adjusted using the screen method described earlier for composite headlamps. Follow the same directions and observe the same tolerances for the aim of the beam.

ENDGATE LAMP REPLACEMENT

Remove or Disconnect (Figure 10)

The lens, lamp, and base must be replaced as one assembly.

- Make sure the headlamp switch is off.

1. Lens.
2. Two screws.
3. Lamp assembly.
4. Electrical connector.

Install or Connect (Figure 10)

1. Electrical connector.
2. Lamp assembly to the endgate.
3. Two screws.
4. Lens.

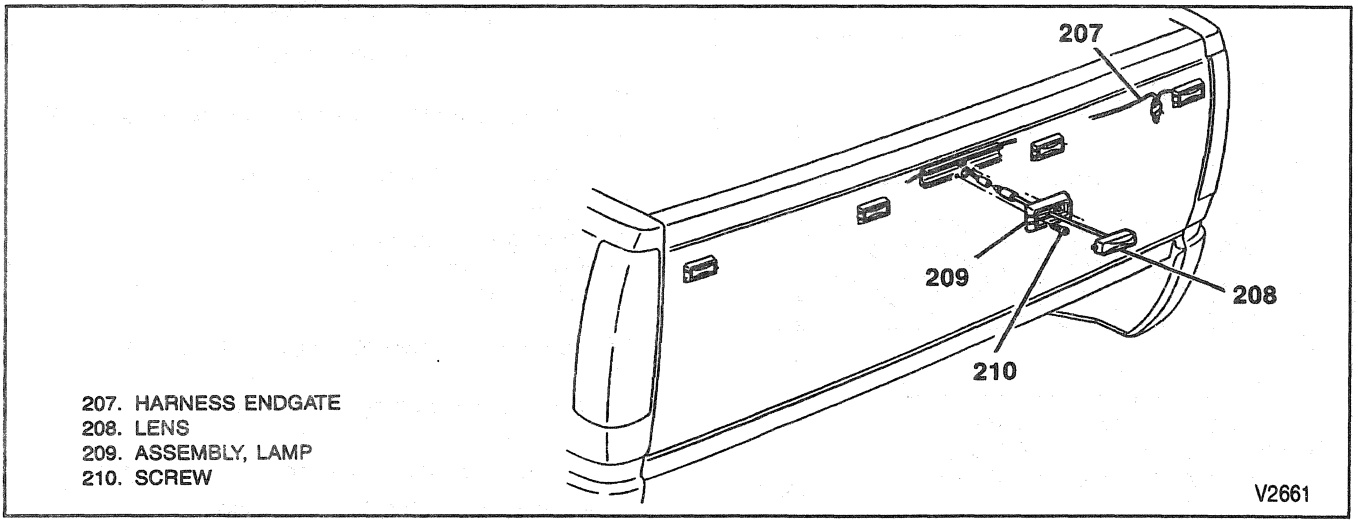
FOG LAMP ADJUSTMENT

The fog lamps are bracket mounted to the air dam and bumper (Figure 11).

Before checking the aim of the fog lamps, prepare the vehicle.

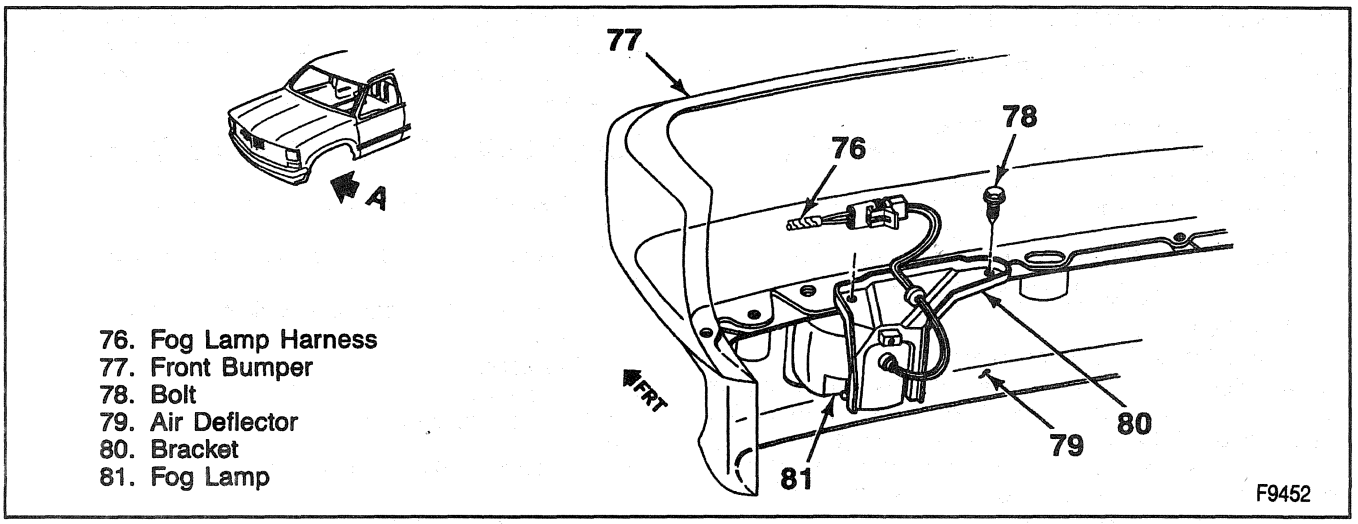
1. Make sure all components are in place, if other work has been done on the vehicle.
2. Make sure the vehicle is on a level surface.
3. Stop all other work on the vehicle.
4. Make sure the vehicle has one-half tank of fuel or less.
5. Close the doors.
6. Rock the vehicle sideways.
7. Make sure the vehicle has no load other than the driver.

Place a screen 760 mm (2.5 ft.) in front of the vehicle. Draw a horizontal line at the same height as the centerline of the lamps (Figure 12). Turn on the fog lamps. The top edge of the high intensity zone should be 5 to 20 mm (0.2 to 0.8 inches) below the centerline of the lamps.



207. HARNESS ENDGATE
208. LENS
209. ASSEMBLY, LAMP
210. SCREW

Figure 10—Endgate Identification Lamps



76. Fog Lamp Harness
77. Front Bumper
78. Bolt
79. Air Deflector
80. Bracket
81. Fog Lamp

Figure 11—Fog Lamps

The fog lamps can be adjusted vertically by turning the adjusting screw above the lens on the lamp assembly. The lamps cannot be adjusted horizontally.

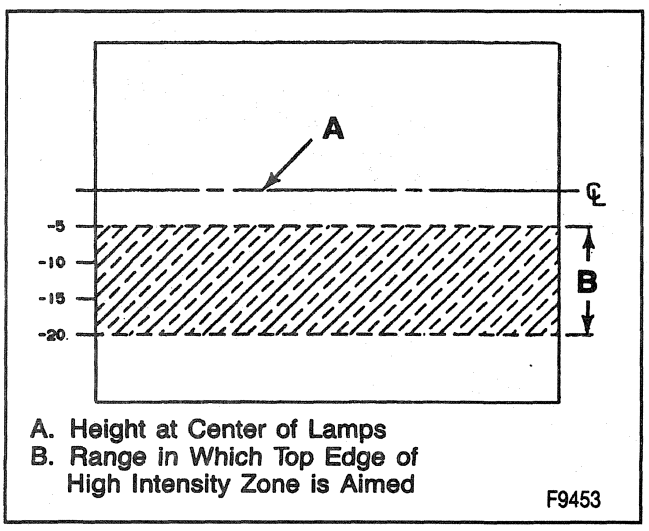
The fog lamps can also be adjusted using the screen method described in "Composite Headlamp Adjustment" earlier in this section. The vehicle should be parked 7.62 m (25 ft.) in front of the screen. Using tape, make a horizontal line on the screen at the same height as the centerline of the lamps. Then turn on the fog lamps. The top edge of the high intensity zone should be 101.6 mm (4 inches) below the horizontal centerline of the fog lamps.

FOG LAMP BULB REPLACEMENT

Remove or Disconnect

- Make sure the headlamp switch and fog lamp switch are off.

1. Two screws and the lens from the front of the lamp assembly.



A. Height at Center of Lamps
B. Range in Which Top Edge of High Intensity Zone is Aimed

Figure 12—Fog Lamp Aiming Zone

CAUTION: Halogen bulbs contain a 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 it. Leave the switch off until change is complete.**
- **Always wear eye protection when changing a halogen bulb.**
- **Handle the bulb only by its base. Avoid touching the glass.**
- **Do not drop or scratch the bulb. Keep moisture away.**
- **Place the used bulb in the new bulb's carton and dispose of it properly.**

2. Bulb by twisting it to the left.

Install or Connect

1. Bulb into the lamp assembly and twist it to the right.
2. Lens and two screws.

FRONT PARKING LAMP REPLACEMENT

Remove or Disconnect (Figures 13 and 14)

- Make sure the headlamp switch is off.

1. Screws.
2. Parking lamp assembly.
3. Electrical connector.
4. Bulbs from the assembly.

Install or Connect (Figures 13 and 14)

1. Bulbs to the parking lamp assembly.
2. Lamp assembly.
   - Insert tab into grille (sealed beam only).
3. Parking lamp electrical connector.
4. Screws.

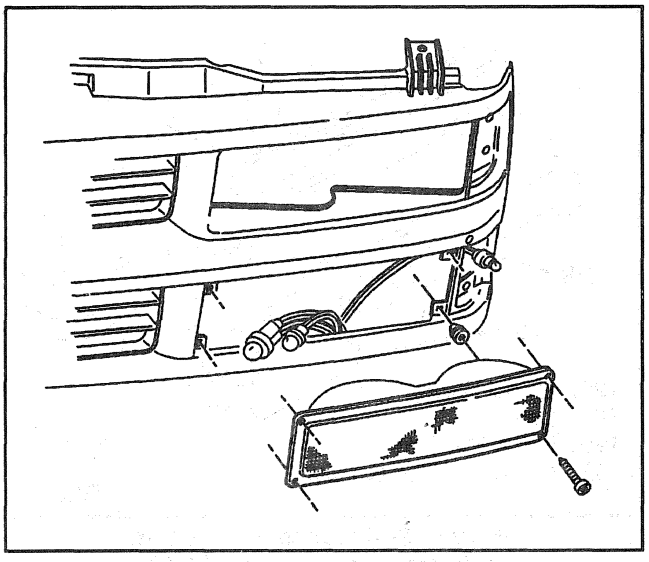


Figure 13—Parking Lamp Components (Composite)

FRONT SIDE MARKER AND REFLECTOR REPLACEMENT

Remove or Disconnect (Figures 15 and 16)

- Make sure the headlamp switch is off.

1. Grille. Refer to "Grille Replacement" in SECTION 2B.
2. Nuts.
3. Side marker and/or reflector lens.
4. Bulb from the electrical connector.

Install or Connect (Figures 15 and 16)

1. Bulb to the electrical connector.
2. Side marker and/or reflector lens.
3. Nuts to the side marker.
4. Grille.

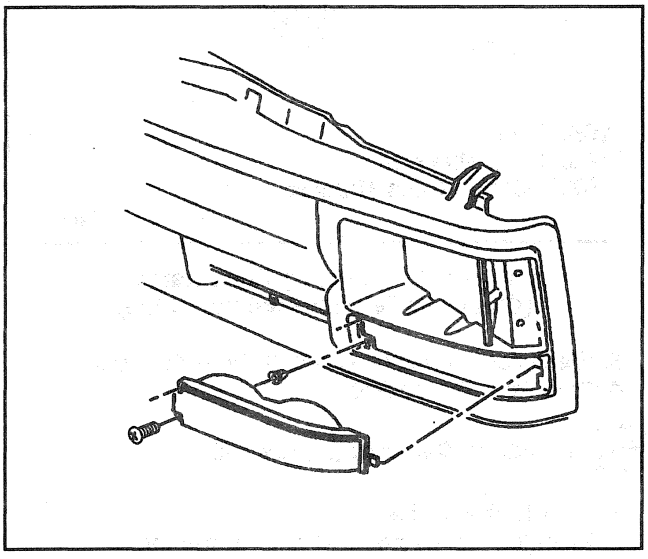


Figure 14—Parking Lamp Components (Sealed Beam)

LICENSE LAMP REPLACEMENT

Remove or Disconnect (Figures 17 through 21)

- Make sure the headlamp switch is off.

1. Lens from the lamp assembly or lamp from the back of the lens assembly.
2. Bulb.

Install or Connect (Figures 17 through 21)

1. Bulb.
2. Lens to the lamp assembly or bulb and wiring to the back of the lens assembly.

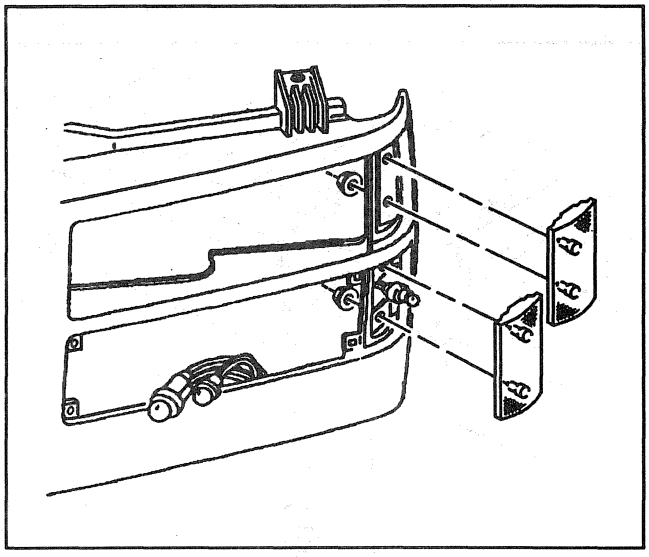


Figure 15—Side Marker and Reflector Components (Composite)

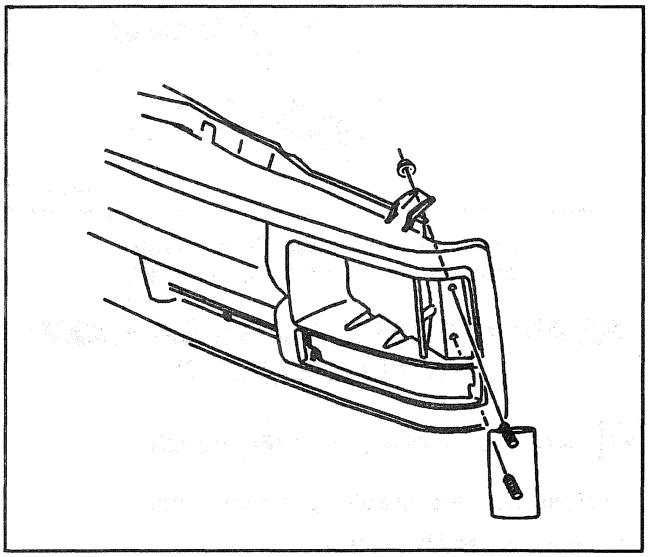


Figure 16—Reflector Components (Sealed Beam)

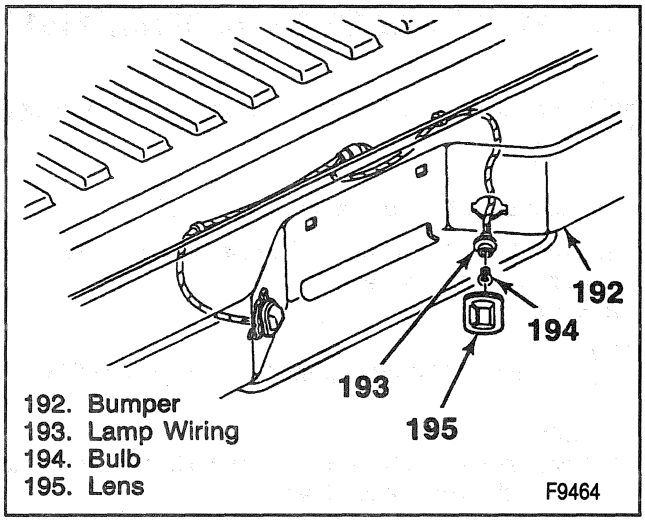


Figure 17—License Plate Lamp
(Models with a Step Bumper)

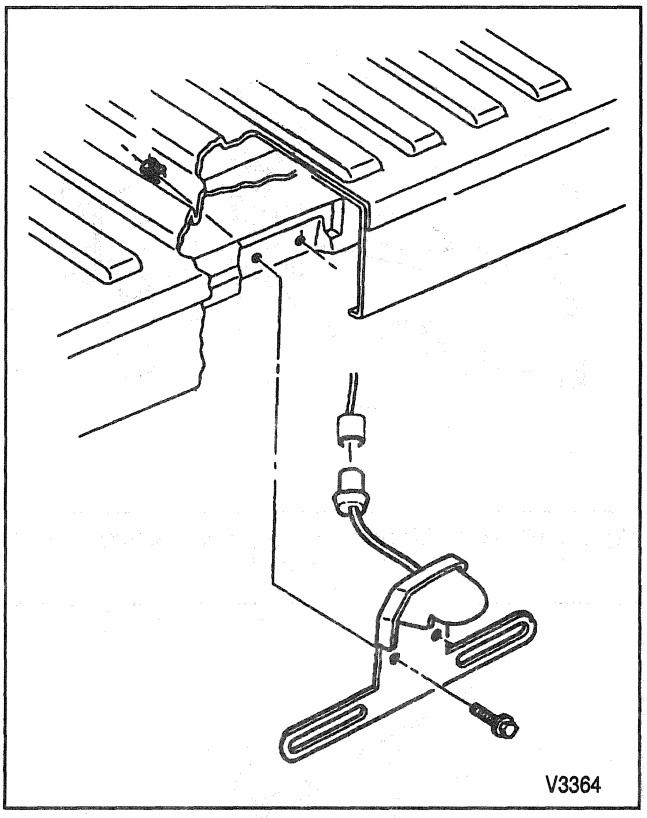


Figure 18—License Plate Lamp
(Models without a Step Bumper)

REAR FENDER MARKER LAMP REPLACEMENT

Remove or Disconnect (Figure 22)

- Make sure the headlamp switch is off.

1. Lamp assembly screws.
2. Lamp assembly from the fender.

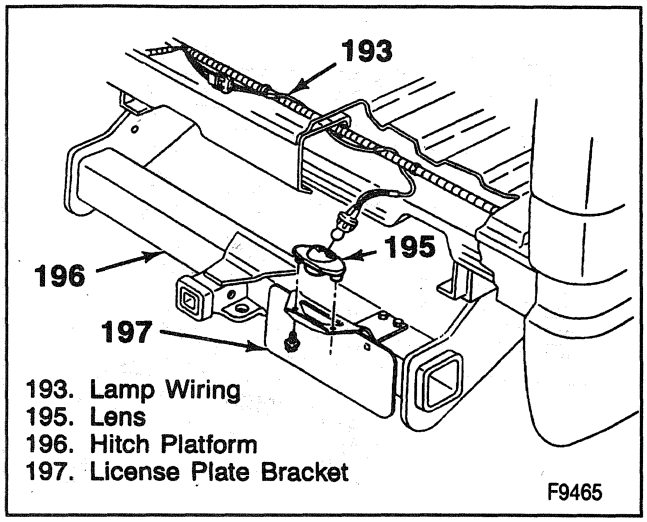


Figure 19—License Plate Lamp
(Pickup with Platform Hitch)

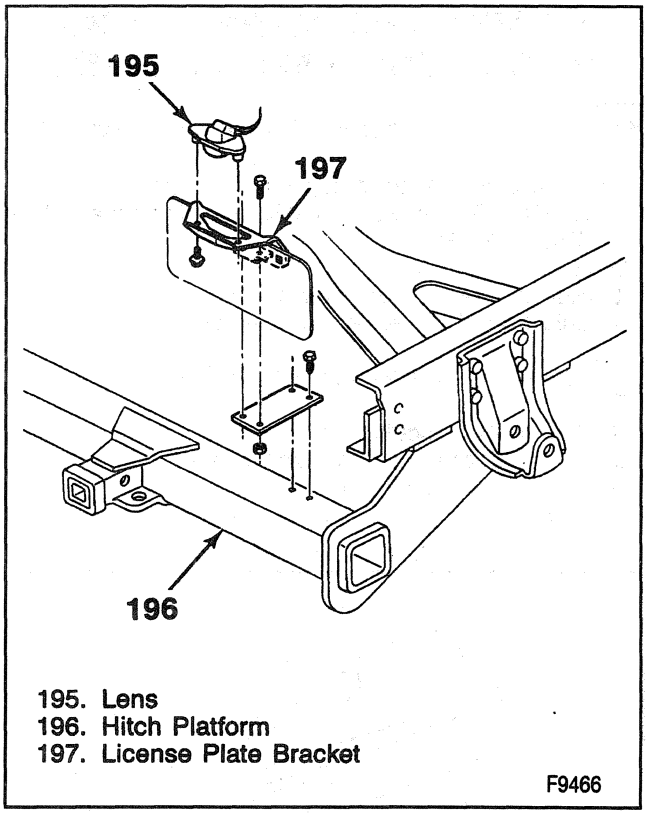


Figure 20—License Plate Lamp
(Cab/Chassis with Platform Hitch)

3. Electrical connector and bulb from the lamp.
4. Bulb from the socket.

Install or Connect (Figure 22)

1. Bulb to the socket.
2. Electrical connector and bulb to the lamp.
3. Lamp assembly to the fender.
4. Lamp assembly screws.

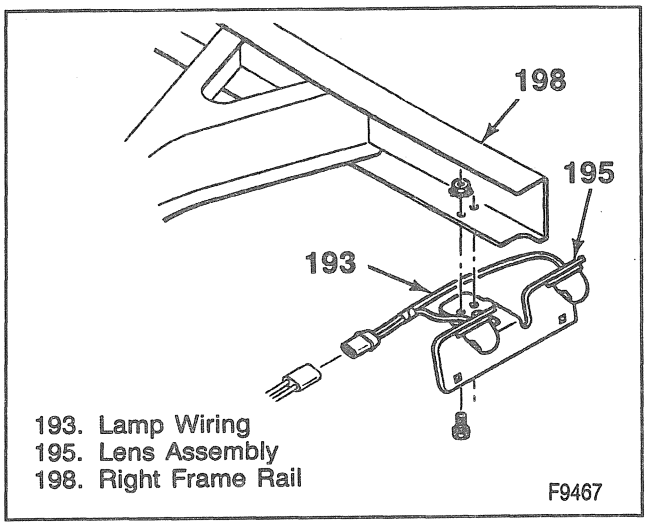


Figure 21—License Plate Lamp (Pickup without a Bumper)

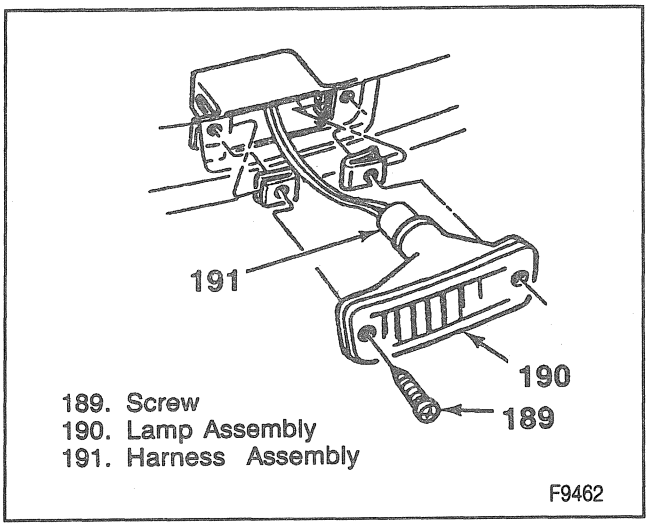


Figure 22—Rear Fender Marker Lamps with Dual Rear Wheels

ROOF MARKER LAMP REPLACEMENT

Remove or Disconnect (Figure 23)

1. Lens screws.
2. Lens.
3. Insulator.
4. Bulb.

Install or Connect (Figure 23)

1. Bulb.
2. Insulator.
3. Lens.
4. Lens screws.

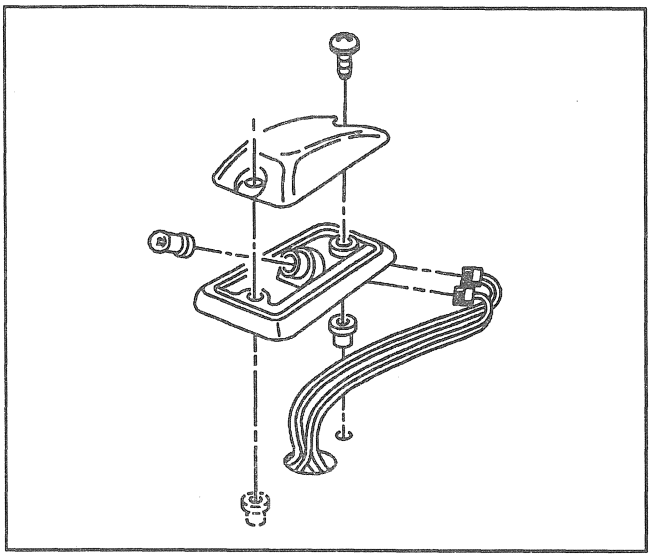


Figure 23—Roof Marker Lamp

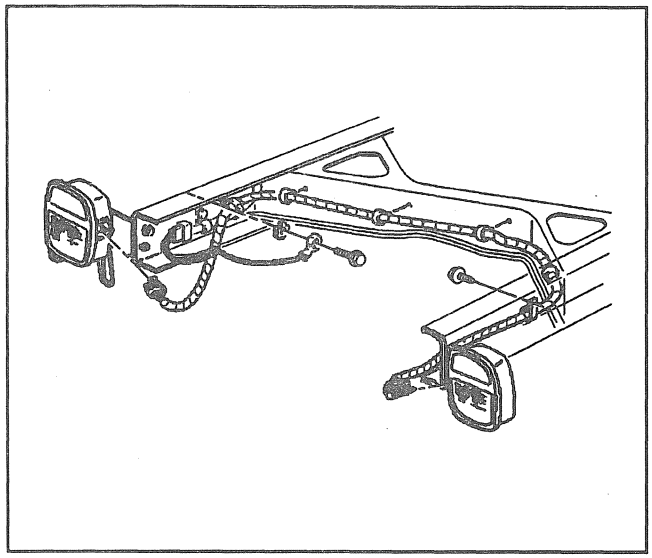


Figure 24—Cab/Chassis Taillamps

TAILLAMP REPLACEMENT

Cab/Chassis

Remove or Disconnect (Figure 24)

1. Lamp electrical connector from lamp assembly.
2. Nuts from the back of the bracket.
3. Lamp assembly from the bracket.
4. Four lens screws, lens and gasket.
5. Bulb.

Install or Connect (Figure 24)

1. Lamp assembly to the bracket.
2. Nuts.
3. Electrical connector to the lamp assembly.
4. Bulb.
5. Gasket, lens and four screws.

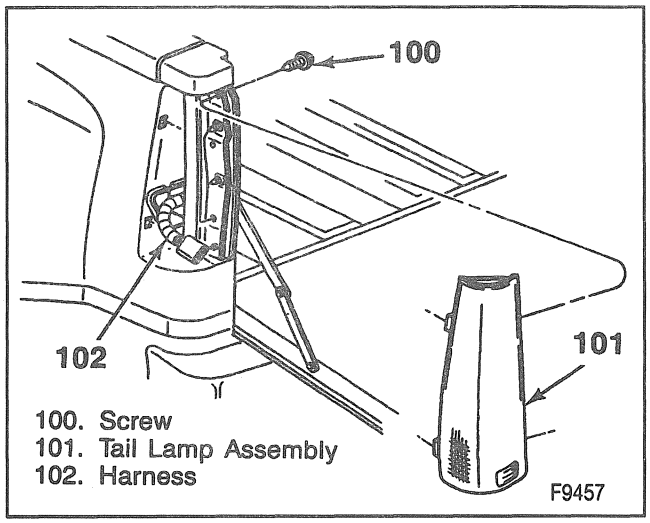


Figure 25—Taillamp Assembly

Pickup, Suburban, and Utility Models

Remove or Disconnect (Figure 25)

- Make sure the headlamp switch is off.
- Lower the endgate.

1. Two screws retaining the taillamp assembly to the body.
2. Rotate taillamp assembly from the vehicle.
3. Electrical connector from the assembly.
4. Bulbs from the lamp base.
   - The top bulb is a parking light.
   - The center bulb is a parking, brake, and turn indicator light.
   - The lower bulb is a backup light.
   - Remove a bulb by pulling it straight out by the tabs on the base of the bulb.

Install or Connect (Figure 25)

1. Bulbs to the lamp assembly.
   - Push each bulb straight in.
2. Lamp base to the lens assembly with two screws.
3. Electrical connector.
4. Taillamp assembly to the vehicle with two screws.

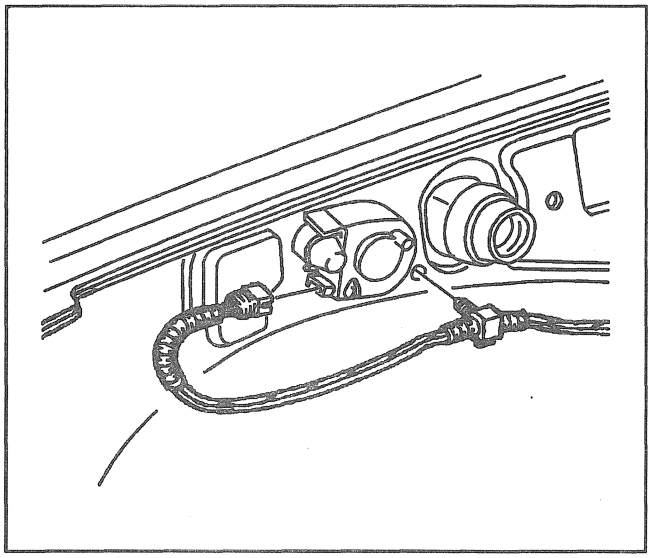


Figure 26—Underhood Reel Lamp

UNDERHOOD REEL LAMP HARNESS REPLACEMENT

Remove or Disconnect (Figure 26)

1. Negative battery cable. Refer to SECTION 6D1.
2. Junction block cover.
3. Reel lamp connector from the junction block and relay.
4. Reel lamp harness from the reel lamp.
5. Harness clips from the inner wheel well.
6. Harness from the vehicle.

Install or Connect (Figure 26)

1. Harness to the vehicle.
2. Harness clips to the inner wheel well.
3. Reel lamp harness to the reel lamp.
4. Reel lamp harness to the junction block and relay.
   - Connect the harness with the relay inboard mounting screw.
5. Junction block cover.
6. Negative battery cable.

UNDERHOOD REEL LAMP REPLACEMENT

Remove or Disconnect (Figure 26)

1. Negative battery cable. Refer to SECTION 6D1.
2. Electrical connector from the lamp assembly.
3. Lamp screws.
4. Lamp assembly from the bracket.
5. Lens from the base of the assembly by pressing down on the lens and turning it until the tab on the lens clears the slot on the base. Then lift off the lens.
6. Bulb from the base.

Install or Connect (Figure 26)

1. Bulb into the base assembly.
2. Lens onto the base.
   - Slide the tab on the lens into the slot on the base.
1. Lamp to the vehicle.
2. Lamp screws.
3. Electrical connector to the lamp assembly.
4. Negative battery cable.

UNDERHOOD STATIONARY LAMP REPLACEMENT

Remove or Disconnect (Figure 27)

1. Negative battery cable. Refer to SECTION 6D1.
2. In-line electrical connector.
3. Screws.

4. Underhood stationary lamp from the hood.

Install or Connect (Figure 27)

1. Underhood stationary lamp to the hood.
2. Screws.
3. In-line electrical connector.
4. Negative battery cable.

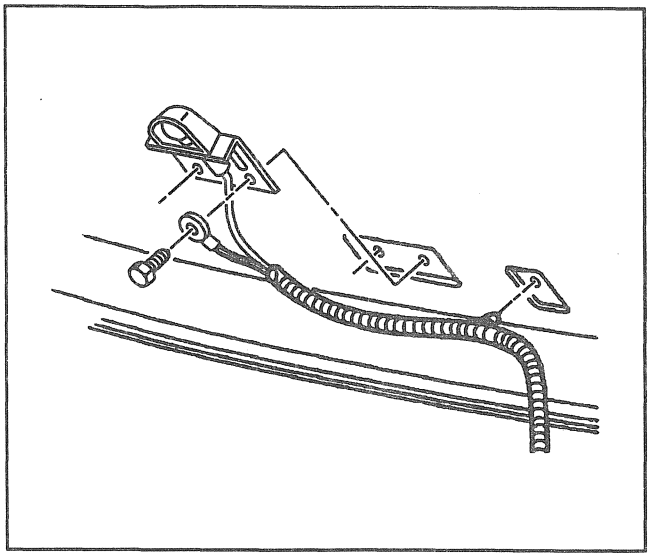


Figure 27—Underhood Stationary Lamp

ON-VEHICLE SERVICE OF INTERIOR LIGHTING AND SWITCHES

ASHTRAY LAMP REPLACEMENT

Remove or Disconnect (Figure 28)

- Make sure the headlamp switch is off.

1. Knee bolster. Refer to SECTION 8C.
2. Instrument panel storage compartment.
   - Squeeze sides together and pull out.
3. Ashtray assembly by unsnapping retainers.
4. Lamp assembly and shield from the top of the ashtray bracket.
5. Shield from the lamp assembly.
6. Bulb from the base by pulling it straight out.

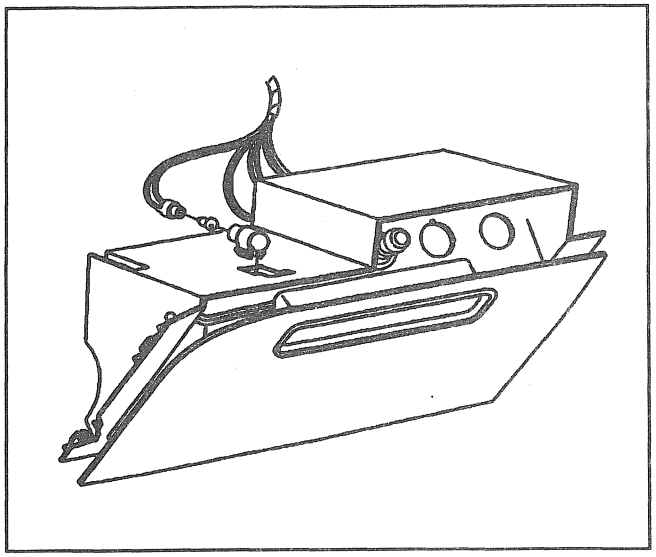


Figure 28—Ashtray Lamp Replacement

Install or Connect (Figure 28)

1. Bulb into the base by pushing it straight in.
2. Shield to the lamp assembly.
3. Lamp assembly and shield to the top of the ashtray bracket.
4. Ashtray assembly to the instrument panel.
5. Instrument panel storage compartment.
6. Knee bolster.

ACCESSORY/DOME LAMP AND HATCH RELEASE SWITCH REPLACEMENT

Remove or Disconnect (Figures 29 and 30)

1. Negative battery cable. Refer to SECTION 6D1.
2. Instrument cluster bezel. Refer to SECTION 8C.
3. Electrical connectors.
4. Switch from the bezel.
   - Squeeze the tangs together at the sides of the switch to remove it.

Install or Connect (Figures 29 and 30)

1. Switch into the bezel by squeezing the tangs at the side of the switch and pressing it in to the front of the bezel.
2. Electrical connectors.
3. Bezel to the instrument panel.
4. Negative battery cable.

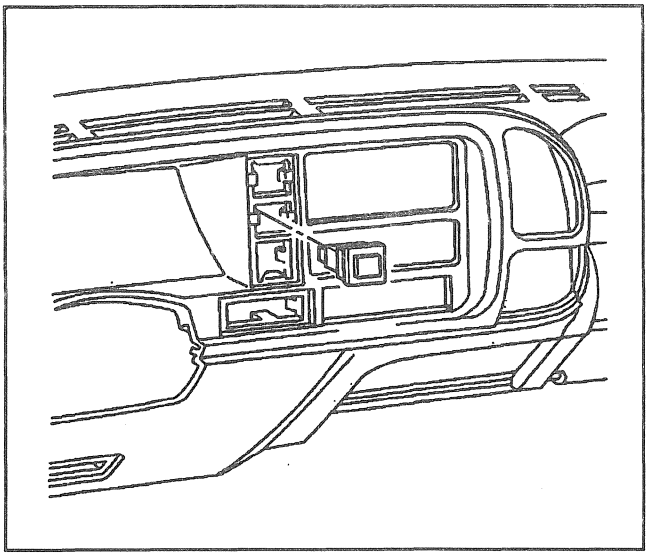


Figure 29—Cargo/Dome Lamp Switch

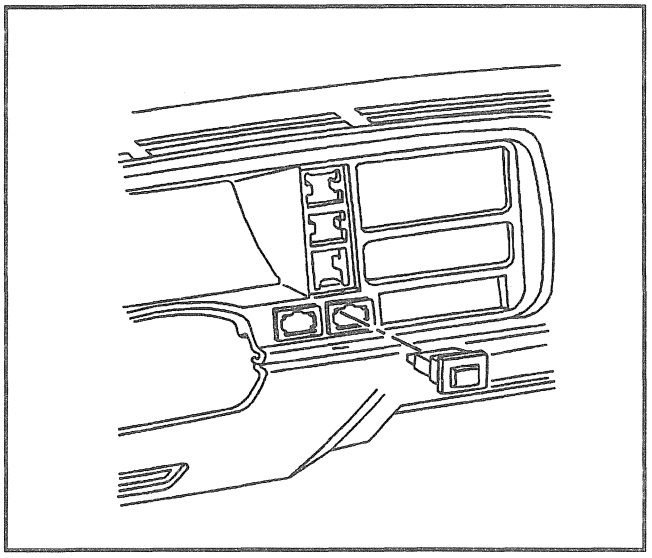


Figure 30—Fog Lamp Switch

DAYTIME RUNNING LIGHTS (DRL) MODULE AND RELAY REPLACEMENT

DRL Module

The DRL module consists of a circuit board in a black aluminum case with fins. The module breaks out of the instrument panel harness behind the left side of the instrument panel.

Remove or Disconnect

- Make sure the ignition switch and headlamp switch are off.

1. Knee bolster. Refer to SECTION 10A4.
2. DRL module from bracket.
3. Electrical connector.
4. Module from the vehicle.

Install or Connect

1. Module to the vehicle.
2. Electrical connector.
3. Knee bolster.

DRL Relay

Remove or Disconnect (Figure 31)

1. Negative battery cable. Refer to SECTION 6D1.
2. Relay from the convenience center.

Remove or Disconnect (Figure 31)

1. Relay to the convenience center.
2. Negative battery cable.

DOME LAMP REPLACEMENT

Remove or Disconnect (Figures 32 and 33)

1. Negative battery cable. Refer to SECTION 6D1.
2. Lens.
3. Bulb.
4. Housing screws.
5. Housing assembly or lamp assembly.
6. Electrical connector.
7. Bezel.

Install or Connect (Figures 32 and 33)

1. Bezel.
2. Electrical connector.
3. Housing assembly or lamp assembly.
4. Housing screws.
5. Bulb.
6. Lens.
7. Negative battery cable.

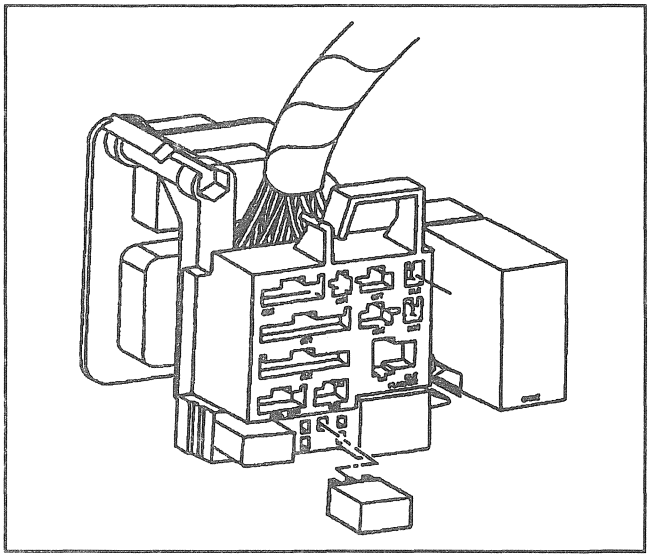
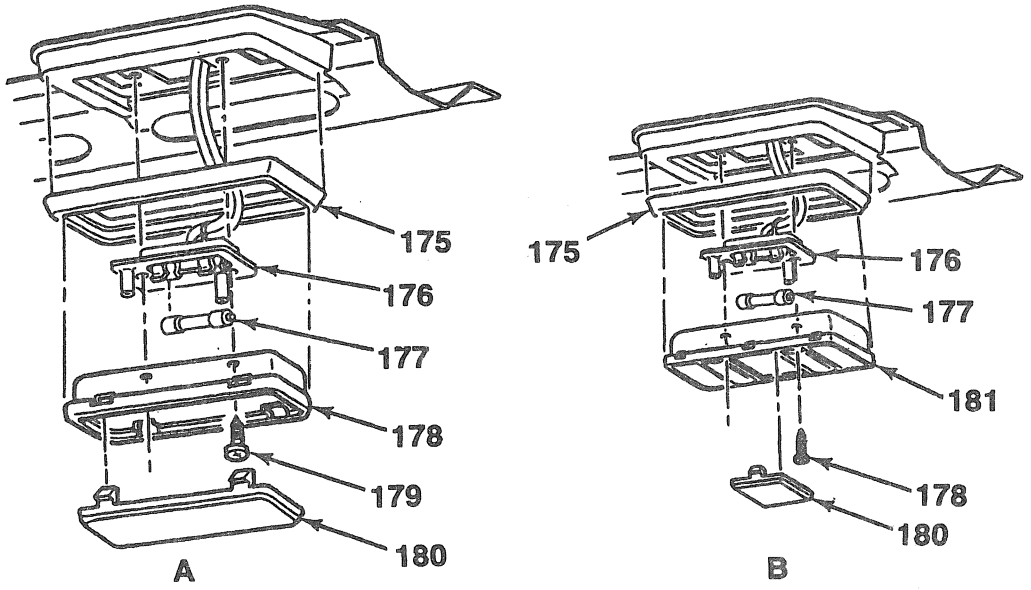


Figure 31—DRL Relay



A. Dome Lamp
B. Dual Reading Dome Lamp
175. Bezel
176. Harness Assembly
177. Bulb
178. Housing
179. Screw
180. Lens
181. Lamp Assembly

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Figure 32—Dome Lamp Replacement

DOOR JAMB SWITCH REPLACEMENT

Remove or Disconnect (Figure 34)

1. Negative battery cable. Refer to SECTION 6D1.
   - Reach up under the instrument panel, squeeze the switch tangs together, and push the switch through the side of the instrument panel.

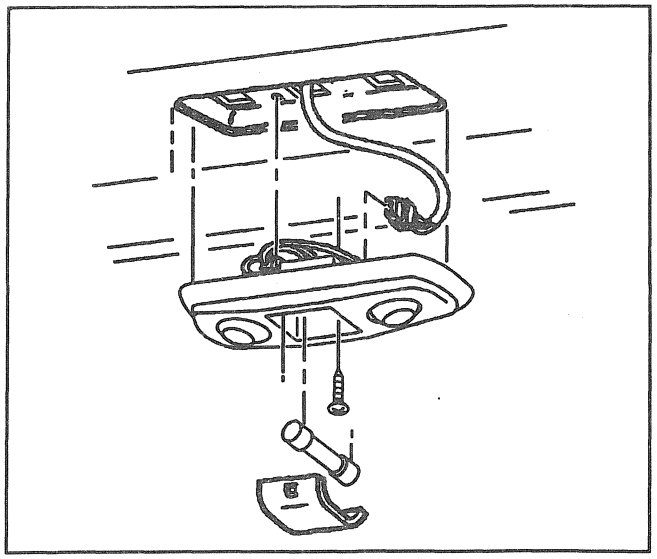

Figure 33—Dome Lamp Replacement

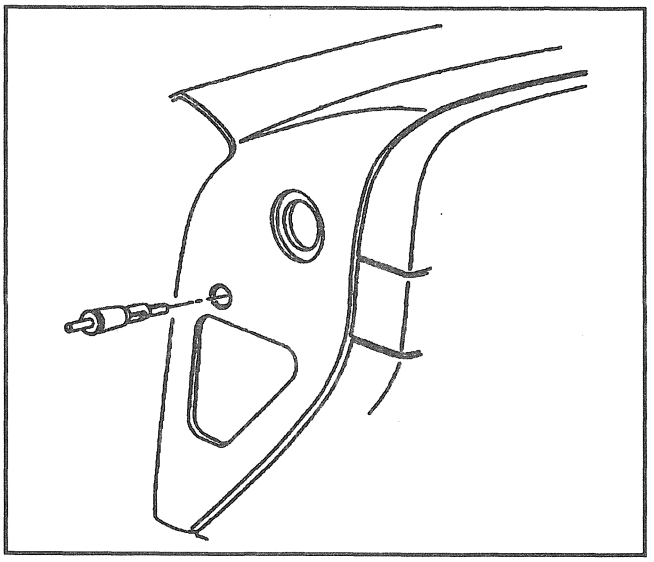

Figure 34—Door Jamb Switch, Left Side of Instrument Panel

2. Door jamb switch electrical connector.
3. Door jamb switch.

Install or Connect (Figure 34)

1. Door jamb switch to the electrical connector.
   - Squeeze the switch tangs together, and push the switch into the side of the instrument panel.
2. Negative battery cable.

LIFTGATE JAMB SWITCH REPLACEMENT

Remove or Disconnect (Figure 35)

1. Negative battery cable. Refer to SECTION 6D1.
2. Switch from vehicle by unthreading.
3. Electrical connector.

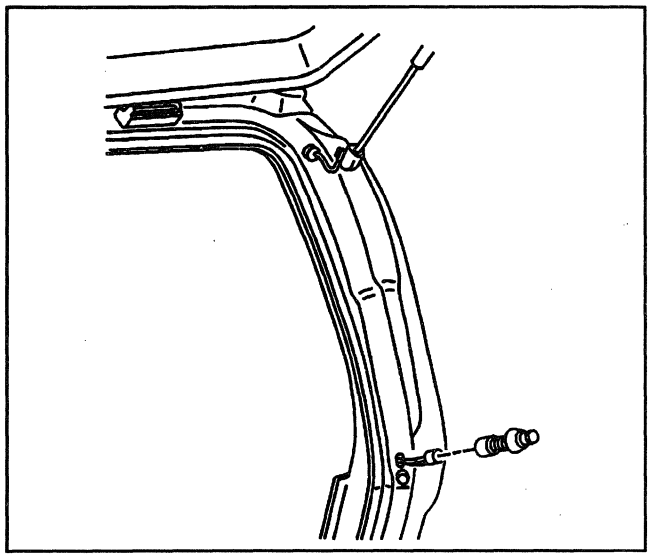

Figure 35—Liftgate Jamb Switch

Install or Connect (Figure 35)

1. Electrical connector.
2. Switch to vehicle.
3. Negative battery cable.

FOUR-WHEEL DRIVE INDICATOR LAMP REPLACEMENT

Remove or Disconnect (Figure 36)

- Make sure the headlamp switch is off.

1. Shift lever knob by unscrewing it.
2. Four bezel screws.
3. Transfer case bezel.
4. Bulbs from the sockets by pulling them straight out.

Install or Connect (Figure 36)

1. Bulbs into the sockets by pushing them straight in.
2. Bulbs and sockets into the back of the bezel.
3. Bezel to the floor with four screws.
4. Shift lever knob.

HEADLAMP SWITCH REPLACEMENT

Remove or Disconnect (Figure 37)

1. Negative battery cable. Refer to SECTION 6D1.
2. Instrument Cluster Bezel. Refer to SECTION 8C.

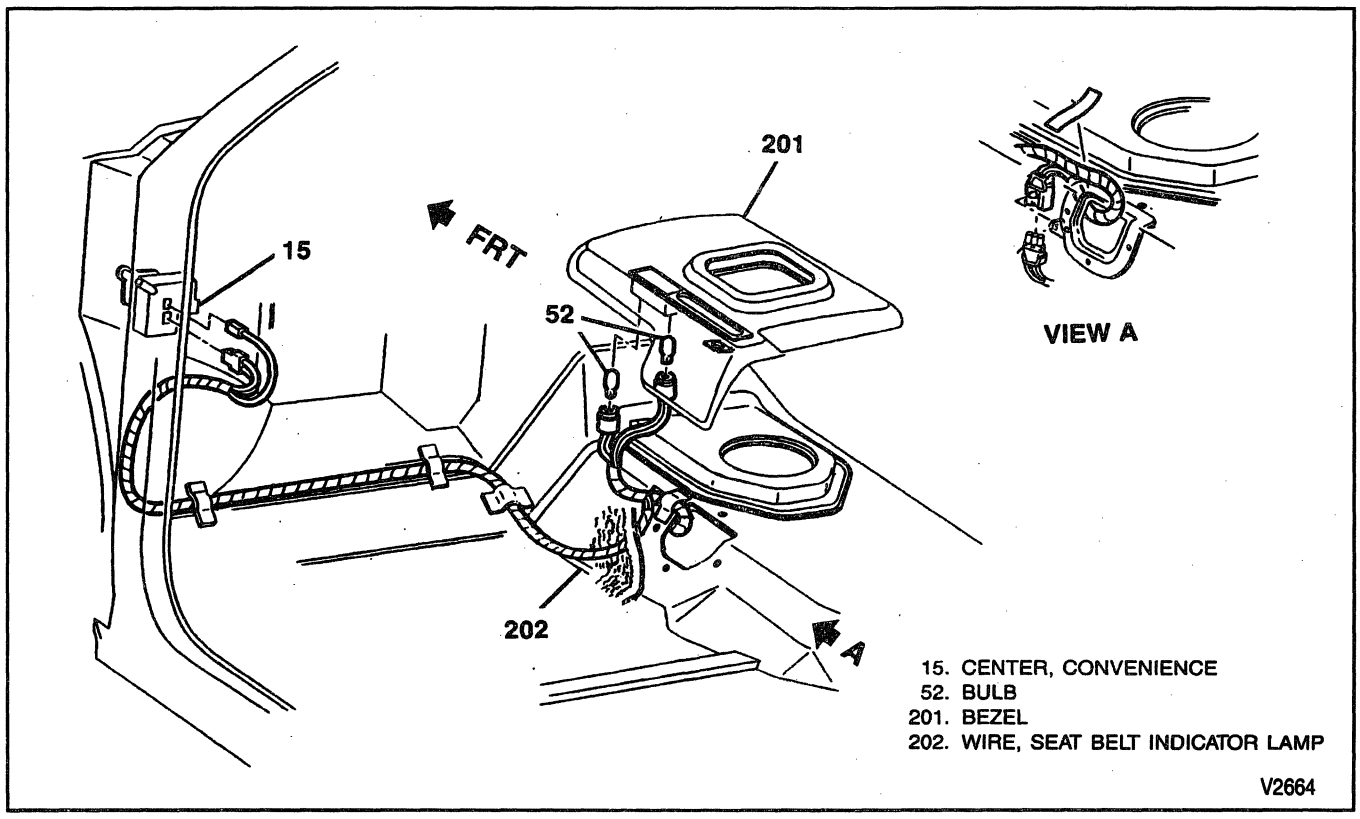

Figure 36—Four-Wheel Drive Indicator Lamps

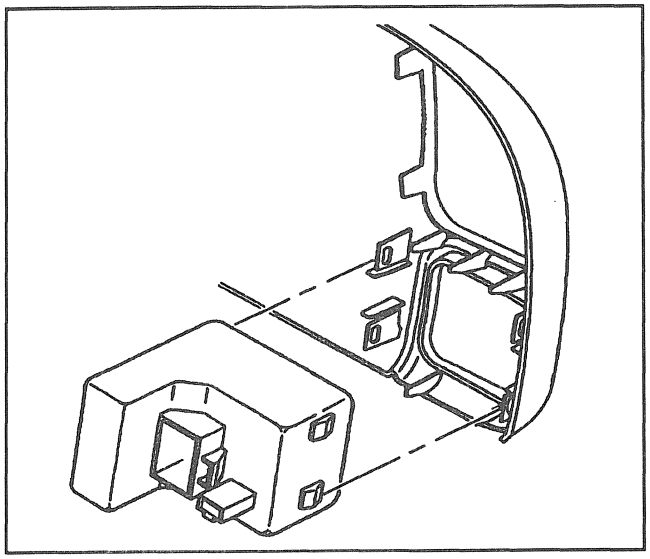

Figure 37—Headlamp Switch

3. Electrical connectors.
4. Switch by unsnapping.

Install or Connect (Figure 37)

1. Headlamp switch and/or panel dimmer switch to bezel.
2. Electrical connectors.
3. Bezel to the instrument panel.
4. Negative battery cable.

INSTRUMENT PANEL COMPARTMENT LAMP and SWITCH REPLACEMENT

Remove or Disconnect (Figure 38)

- Make sure the headlamp switch is off.

1. Instrument panel compartment.
2. Depress switch plunger, and pull switch assembly downward from the retainer.
3. Electrical connector.
4. Shield from switch assembly.
5. Bulb from switch assembly.

Install or Connect (Figure 38)

1. Bulb into the socket.
2. Shield to switch assembly.
3. Electrical connector.
4. Depress switch plunger and slide the assembly upward into the retainer.
5. Instrument panel compartment.

OVERHEAD CONSOLE LAMP REPLACEMENT

Remove or Disconnect (Figure 39)

1. Negative battery cable. Refer to SECTION 6D1.

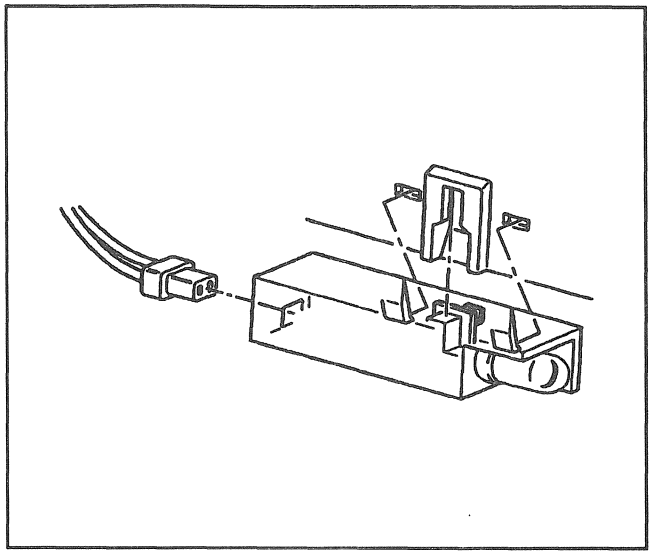

Figure 38—Instrument Panel Compartment Lamp

2. Lamp assembly.
   A. Push upward against the reading lamp assembly and turn it to the left.
   B. Lower the assembly from the console.
3. Bulb and base from the back of the assembly.
4. Bulb from the base by pulling it straight out.

Install or Connect (Figure 39)

1. Bulb into the base by pushing it straight in.
2. Bulb and base into the lens and socket assembly.
3. Lamp assembly into the console by pushing it in and turning it to the right.
4. Negative battery cable.

SUNSHADE VANITY MIRROR LAMP REPLACEMENT

The vanity mirror assembly is an integral part of the sunshade. If it is damaged, the sunshade assembly must be replaced. Only the bulbs can be replaced separately.

Remove or Disconnect (Figure 40)

- Lift the cover on the vanity mirror.

1. Lamp lens by prying it out.
2. Lamp bulb by gently prying it out.

Install or Connect (Figure 40)

1. Lamp bulb by pressing it in.
2. Lamp lens.

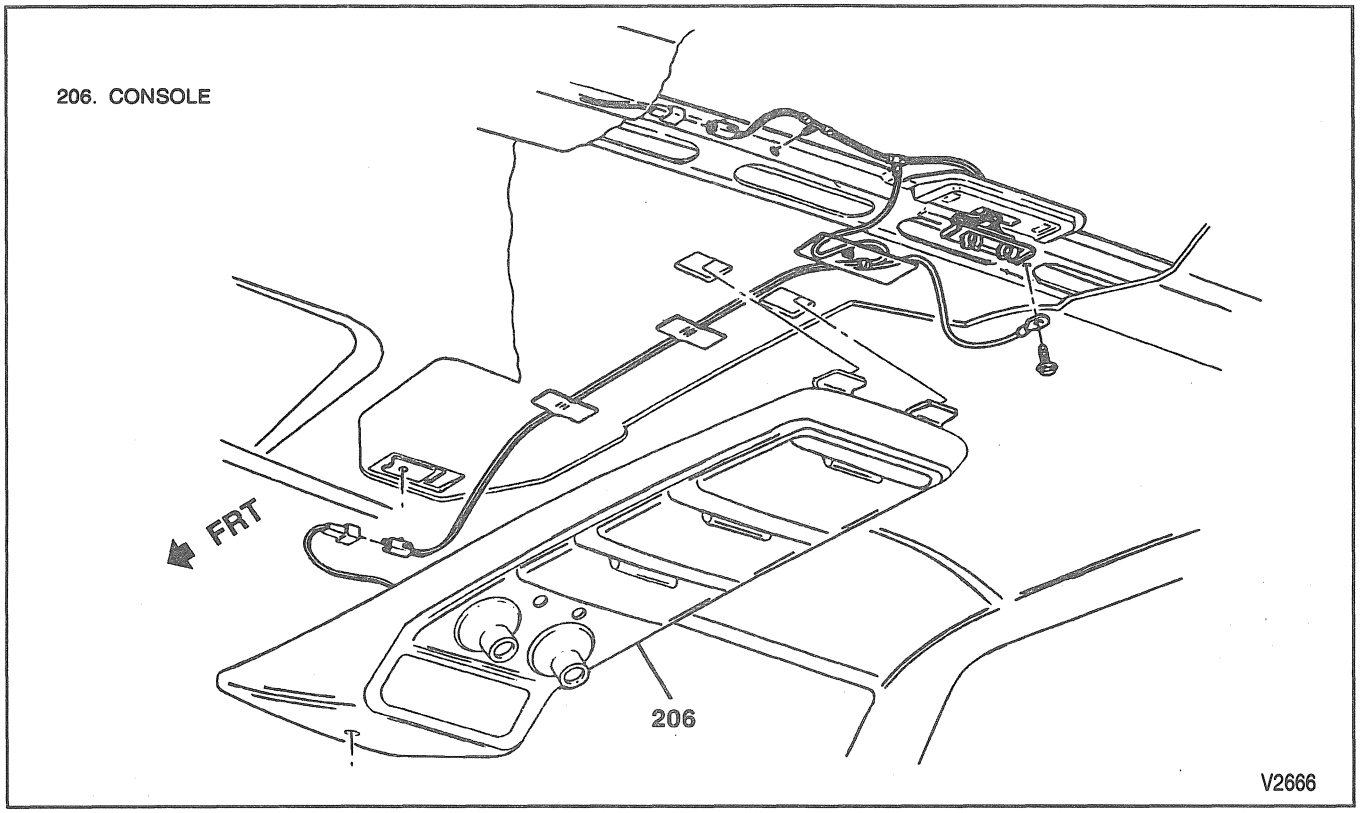

Figure 39—Overhead Console

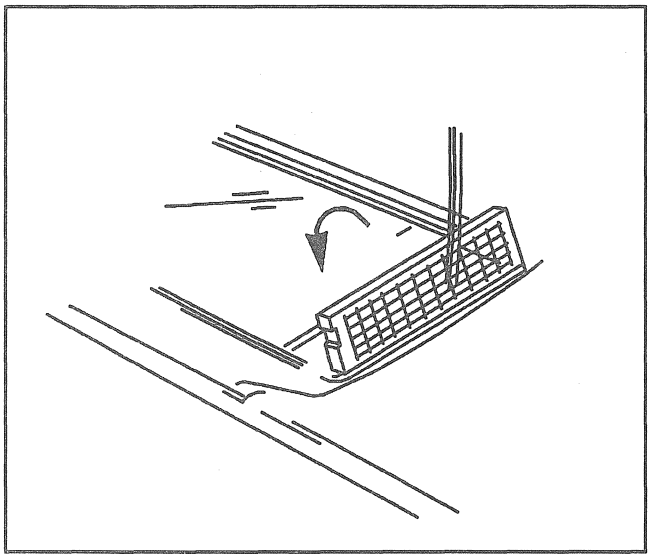

Figure 40—Sunshade with Illuminated Vanity Mirror

Bulb Specifications

Lamp or Bulb	Trade No.	Power Rating at 12.8V, Watts	Quantity			
			Pickup	Crew Cab	Utility	Suburban
Exterior Lights:						
Headlamps: 2 Headlamp System	6052	55/65	2	2	2	2
Halogen (Opt.)	H6054	35/65	2	2	2	2
Headlamps: 4 Headlamp System	9005	65	2	2	2	2
(Composite)	9006	55	2	2	2	2
		Candle Power				
Fog Lamp	H3	115	2	—	—	—
Front Marker Lamp	194	2	2	2	2	2
Front Park and Turn Lamp	2357NA	30/2	4	4	4	4
Rear Parking Lamp	3057	32-2	2	2	2	2
Rear Stop and Turn Lamp	3057	32-2	2	2	2	2
Backup Lamp	3156	32	2	2	2	2
Backup Lamp (Cab/Chassis Only)	1156	32	2	2	—	—
Rear Park, Stop, and Turn Lamp (Cab/Chassis Only)	1157	32-3	2	2	—	—
Fender Clearance Lamp	194	2	4	4	—	—
Roof Marker Lamp	194	2	5	5	—	5
CHMSL Bulb	921	32	1	1	—	—
License Plate Lamp	194	2	2	2	2	2
Underhood Lamp	93	15	1	1	1	1
Reel Lamp	232	10	1	1	1	1
Interior Lights:						
Dome Lamps	211-2	12	1	2	2	2
Reading Lamps	211-2	12	2	4	4	4
Roof Console Lamps	168	3	—	2	2	2
Courtesy Lamp	1003	15	2	2	2	2
Heater or A/C Control Lamp	194	2	1	1	1	1
Four Wheel Drive Indicator	161	1	1	1	1	1
Four Wheel Drive Shift Lever	194	1	1	1	1	1
Instrument Panel Compartment Lamp	194	2	1	1	1	1
Ashtray Lamp	194	2	1	1	1	1
Sunshade Vanity Mirror	74	0.7	—	4	4	4
Instrument Panel Lights						
Transmission Indicator (PRNDL)	161	1	1	1	1	1
Daytime Running Lights Indicator†	74	.7	1	1	1	1
Charging System Indicator Lamp	74	.7	1	1	1	1
Instrument Cluster Gage	194	.2	4	4	4	4
Illuminating Lamps W. Tach	194	.2	6	6	6	6
Headlamp Beam Indicator	74	.7	1	1	1	1
Directional Signal Indicator	74	.7	2	2	2	2
Brake Warning Indicator	74	.7	1	1	1	1
Safety Belt Warning	74	.7	1	1	1	1
Check Gages Indicator	74	.7	1	1	1	1
Malfunction Indicator ("Service Engine Soon")	74	.7	1	1	1	1
Malfunction Indicator ("Service Throttle Soon")	74	.7	1	1	1	1
Upshift Indicator	74	.7	1	1	1	—
ABS Warning Indicator	74	.7	—	—	1	1
Wait Lamp*	74	.7	1	1	—	—
Low Coolant Lamp*	74	.7	1	1	—	—
Service Fuel Filter Lamp*	74	.7	1	1	—	—

*Diesel only †Canadian Vehicles only

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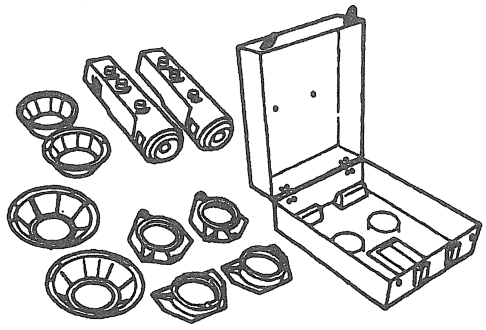
SPECIAL TOOLS

1



J 25300-B

1. Headlight Aimer

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SECTION 8C

INSTRUMENT PANEL AND GAUGES

CAUTION: On vehicles equipped with Supplemental Inflatable Restraint (SIR), refer to CAUTIONS in Section 9J under "ON-VEHICLE SERVICE" and the SIR Component and Wiring Location view in Section 9J before performing service on or around SIR components or wiring. Failure to follow CAUTIONS could result in possible air bag deployment, personal injury, or otherwise unneeded SIR system repairs.

NOTICE: *Always use the correct fastener in the correct location. When you replace a fastener, use ONLY the exact part number for that application. General Motors will call out those fasteners that require a replacement after removal. General Motors will also call out the fasteners that require thread lockers or thread sealant. UNLESS OTHERWISE SPECIFIED, do not use supplemental coatings (paints, greases, or other corrosion inhibitors) on threaded fasteners or fastener joint interfaces. Generally, such coatings adversely affect the fastener torque and joint clamping force, and may damage the fastener. When you install fasteners, use the correct tightening sequence and specifications. Following these instructions can help you avoid damage to parts and systems.*

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GENERAL DESCRIPTION

ELECTROSTATIC DISCHARGE (ESD) NOTICE

Many solid state electrical components can be damaged by Electrostatic Discharge (ESD). Some will display a label but many will not (Figure 1).

NOTICE: ***In order to avoid possibly damaging any components, observe the following:***

1. Body movement produces an electrostatic charge. To discharge personal static electricity, touch a ground point (metal) on the vehicle. This should be done any time you:
   - Slide across the car seat.
   - Sit down or get up.
   - Do any walking.
2. Do not touch exposed terminals on components with your finger or any tools. Remember, the connector that you are checking might be tied into a circuit that could be damaged by Electrostatic Discharge.
3. When using a screwdriver or similar tool to disconnect a connector, never let the tool come in contact with or come between the exposed terminals.
4. Never jump, ground, or use test equipment probes on any components or connectors unless specified in diagnosis. When using test equipment, always connect the ground lead first.
5. Do not remove the solid state component from its protective packaging until you are ready to install the part.
6. Always touch the solid state components package to a ground before opening. Solid state components can also be damaged if:
   - They are bumped or dropped.
   - They are laid on any metal work benches or components that operate electrically, such as a TV, radio, or oscilloscope.

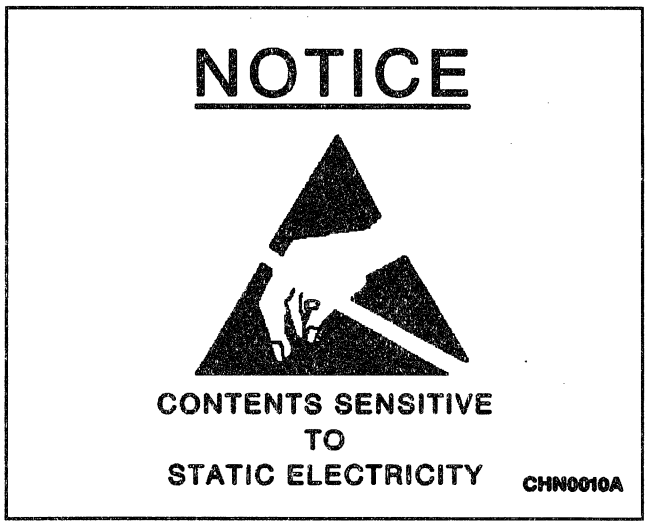


Figure 1—Electro-Static Discharge Label

INSTRUMENT PANEL

The instrument panel is designed to permit the removal of all control switches from the driver's side. The standard instrument cluster is equipped with gauges (Figures 2 and 3).

INSTRUMENT CLUSTER

The instrument cluster contains a high-torque type electric speedometer. The electro-mechanical gauges are individually plugged into socket-type metal connectors in the cluster case.

INSTRUMENT PANEL HARNESS

This harness is located along the upper back edge of the instrument panel. It starts from the convenience center, which is located at the left side of the instrument panel, and goes up the left side of the instrument panel, then across to the right side of the cab (Figures 4 through 7).

As the harness is routed across the instrument panel, various circuits branch off to the switches, indicators, and cluster. The harness is held in place with bendable clips.

Other harnesses are carried along the same supports. These harnesses consist of wiring for the power door locks, power windows, radio, heater, and air conditioning (Figures 4 through 7).

HEATER AND AIR CONDITIONING HARNESS

The harness begins at the convenience center and branches up to the heater and air conditioning control unit (Figure 4). It then branches to the blower motor and relays. Refer to SECTION 1A and SECTION 1B for further information.

SEAT BELT ALARM

This system activates a warning lamp for about 75 seconds and a buzzer for about 8 seconds when the ignition switch is turned to the "RUN" position and the driver's seat belt is not buckled. The warning lamp will be constant for the first 20 seconds, then flash for the remaining 55 seconds. The buzzer only turns on, and will stay on when the drivers seat belt is not fastened during the 8 second period. The warning lamp and buzzer sequence of operation is as follows:

1. DRIVER'S SEAT BELT UNFASTENED - Turn the ignition switch to the "RUN" position. The warning lamp illuminates constantly for 20 seconds, then flashes for the remaining 55 seconds. The buzzer turns on and stays on for 8 seconds, then turns off. If the driver's seat belt buckle is fastened before the 8 seconds is over, the buzzer will turn off and the lamp will remain on for the balance of the time delay.

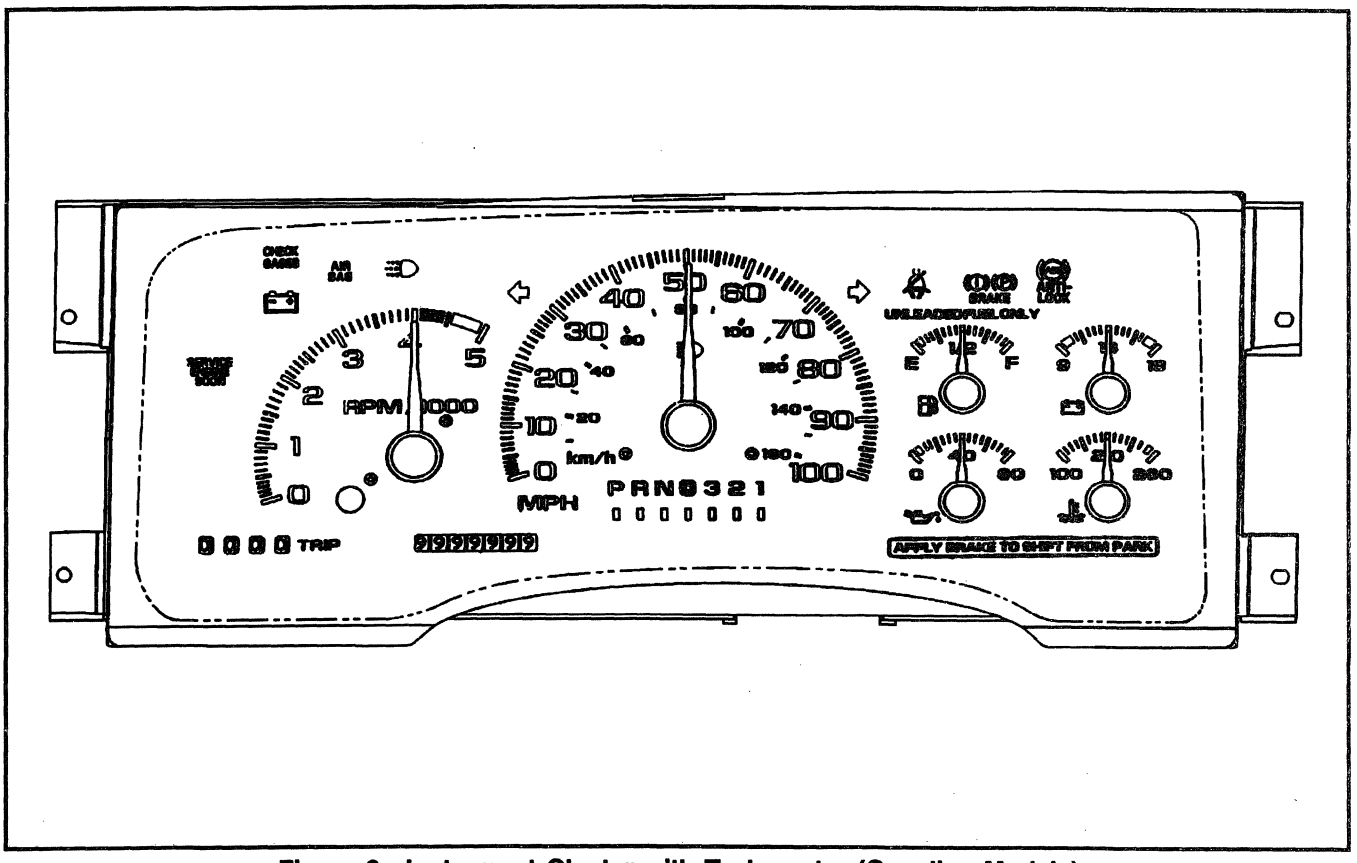


Figure 2—Instrument Cluster with Tachometer (Gasoline Models)

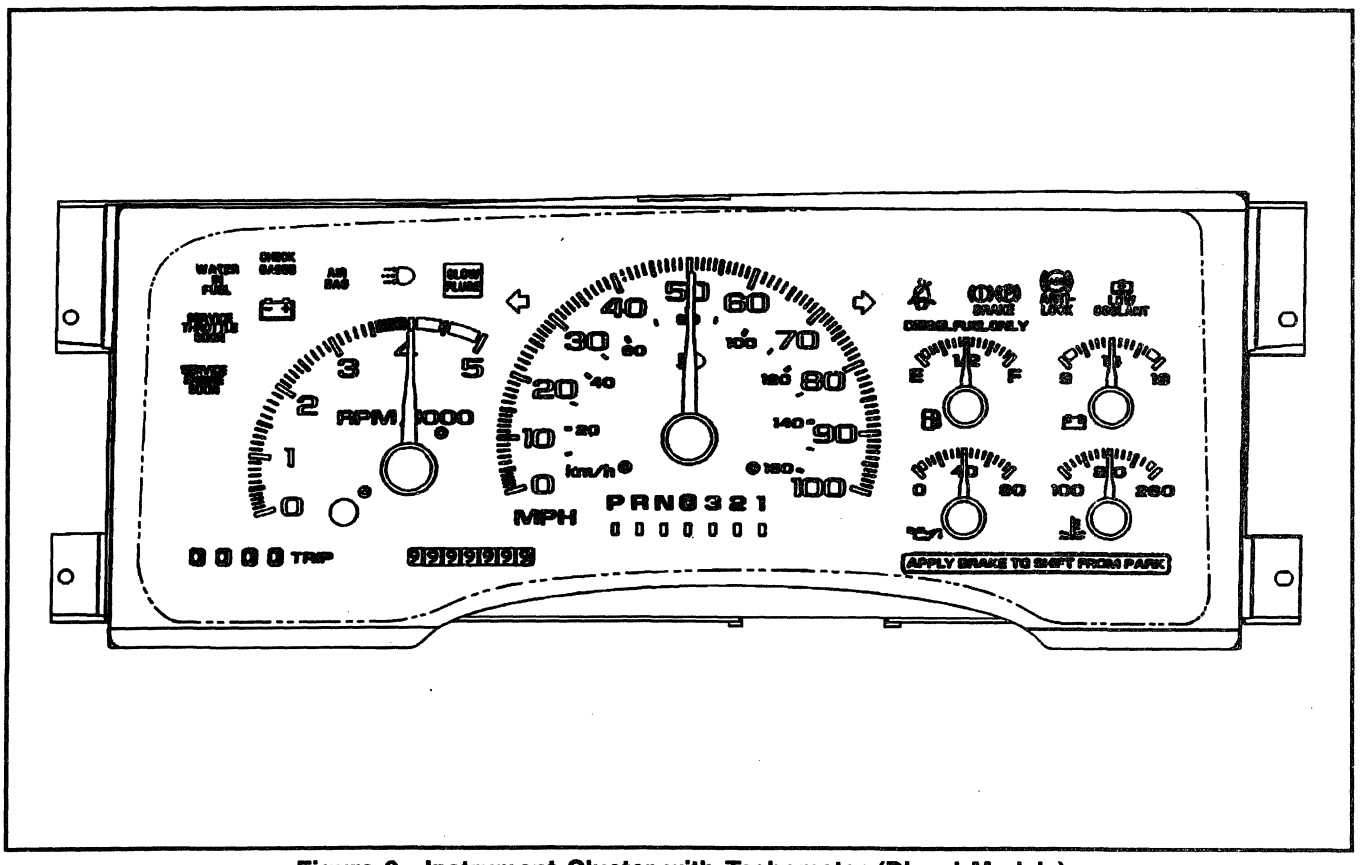
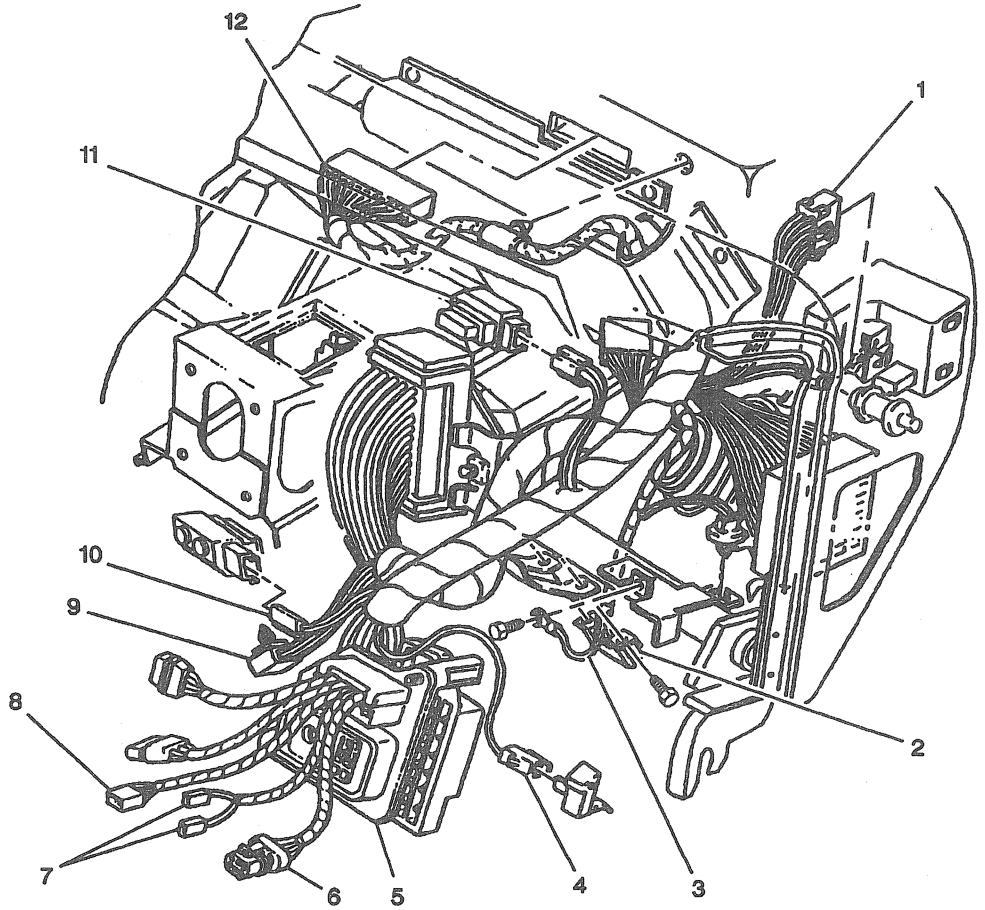


Figure 3—Instrument Cluster with Tachometer (Diesel Models)



1. CONNECTOR, HEADLAMP SWITCH
2. CONNECTOR, DATA LINK
3. GROUND
4. CONNECTOR, PARKING LAMP SWITCH
5. CONVENIENCE CENTER
6. CONNECTOR, FORWARD LAMP HARNESS
7. CONNECTOR, RELAY HARNESS
8. CONNECTOR, S.I.R. HARNESS
9. CONNECTOR, S.I.R.
10. CONNECTOR, STARTER SWITCH
11. SWITCH, CRUISE CONTROL
12. CONNECTOR, INSTRUMENT CLUSTER

Figure 4—Instrument Panel Harness (Left Side)

2. DRIVER'S SEAT BELT FASTENED - Turn the ignition switch to the "RUN" position. The warning lamp will turn on and the buzzer stays off. At the end of 75 seconds the warning lamp turns off. If the driver's seat belt buckle is unfastened prior to 8 seconds, the buzzer will turn on for the balance of the 8 second delay.

FUSE BLOCK AND CONVENIENCE CENTER

The instrument panel fuse block is located behind a pull cover on the left end of the instrument panel.

This fuse block contains fuses and circuit breakers for individual circuits within the vehicle (Figure 9).

The underhood fuse/relay center (Figure 10) contains both mini and maxi fuses, as well as some relays for the vehicle. Refer to SECTION 8A for information on individual circuit routing.

The convenience center is located just below the instrument panel on the driver's side. It contains individual relays such as the seat belt and ignition key alarm, and flasher (Figure 11).

ENGINE CONTROL SWITCH (IGNITION SWITCH)

The ignition switch is located on the steering column's right side, just below the steering wheel. The electrical switching portion of the assembly is separate from the key and lock cylinder. However, both are synchronized and work in conjunction with each other through the actuator rod assembly.

For a complete description of the key, lock cylinder, and actuator rod assembly, refer to SECTION 3F4 or 3F5.

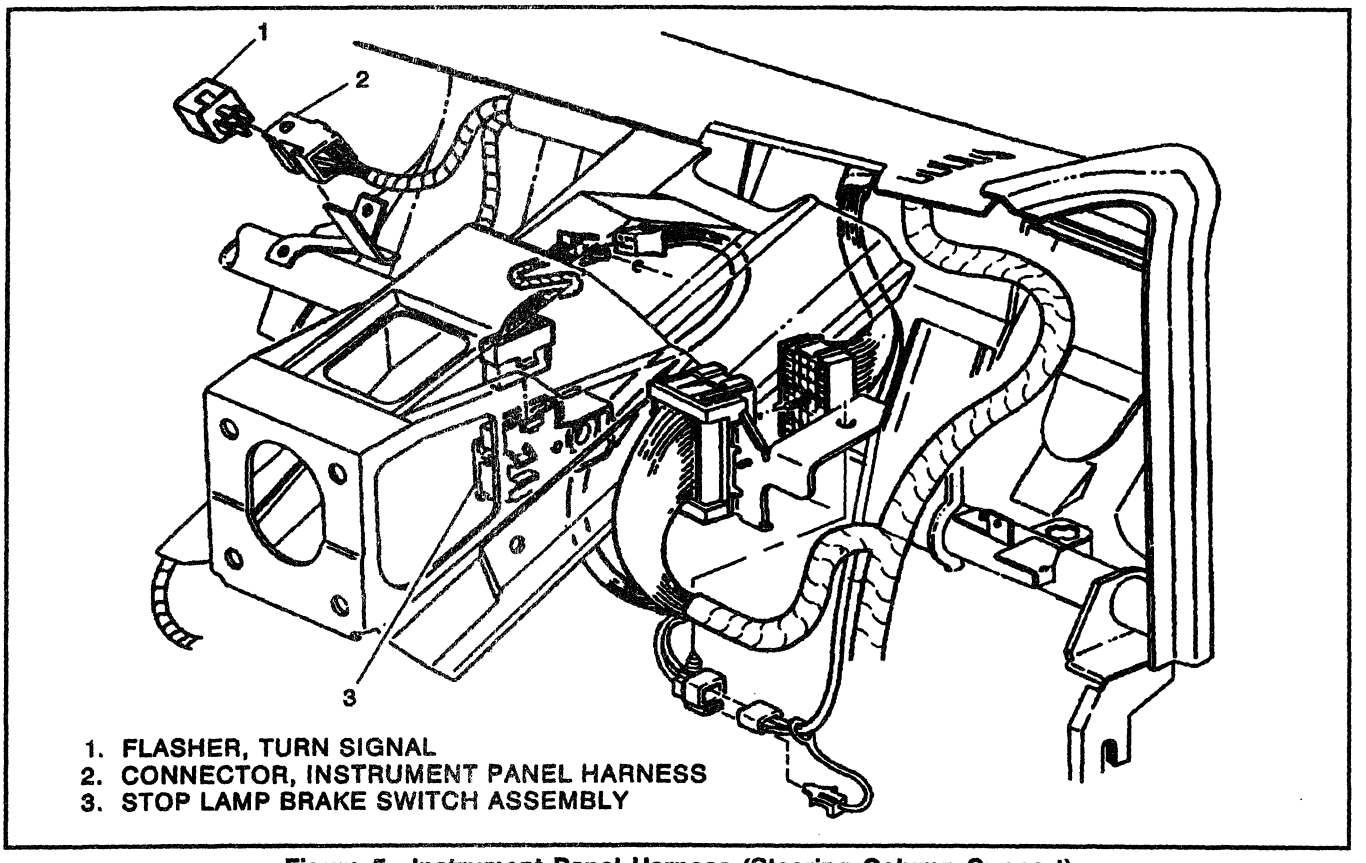


Figure 5—Instrument Panel Harness (Steering Column Support)

ELECTRIC SPEEDOMETER

The electric speedometer drive replaces the mechanical drive for all C/K applications. Integrated circuits control the air core speedometer and stepper motor odometer. The speedometer and odometer receive a signal from the vehicle speed sensor calibrator module that is generated by the vehicle speed sensor. For diagnostic information, refer to SECTION 8A-81.

VEHICLE SPEED SENSOR

The vehicle speed sensor (VSS) is a permanent magnet signal generator located on the transmission or transfer case output shaft housing. The vehicle speed sensor sends an analog signal proportional to the propeller shaft speed. This signal goes to the vehicle speed sensor calibrator module. For diagnostic information, refer to SECTION 8A-33.

VEHICLE SPEED SENSOR CALIBRATOR MODULE

The vehicle speed sensor (VSS) calibrator module is a solid-state device that is used to change the signal from the speed sensor to a digital signal. The VSS calibrator module will change the signal from the speed sensor to a signal containing 4000 pulses per mile (PPM) for the instrument cluster. The vehicle speed sensor calibrator module is matched to the final drive and tire size of each vehicle. It must be replaced with the proper module to match the final drive and tire size of that vehicle. If the final drive or tire size is changed for any reason, the module must also be changed to continue to produce an accurate speedometer/odometer reading. The incorrect module will also affect the anti-lock brakes, vehicle control module (VCM), and the cruise control module. For diagnostic information, refer to SECTION 8A-33.

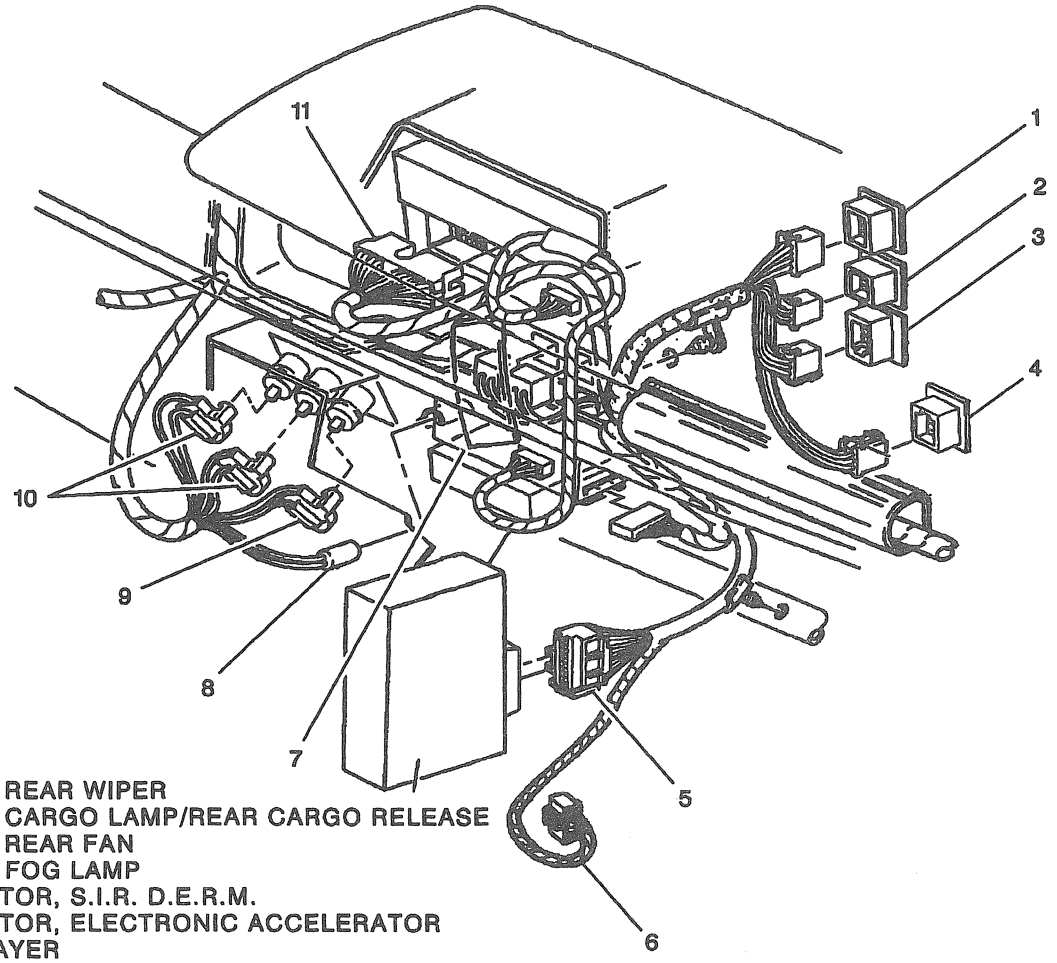
FUEL GAUGE

The fuel gauge is an electrical instrument that measures an electrical current from a variable resistor in the fuel tank. The variable resistance is controlled by a float. When the fuel tank is full, the resistance is high. The fuel gauge pointer is moved to its maximum position, which is FULL on the gauge face. For diagnostic information, refer to SECTION 8A-81.

Fuel Gauge Sender

The fuel gauge sender is attached to the top of the fuel tank. The sender is retained with a cam lock ring. A seal is used between the tank and sender.

The sender will have two or three pipes attached to hoses. One pipe is for the fuel feed line. The second is connected to the vapor canister. The third pipe is used as a fuel return line to the fuel tank. On some senders, a short "pigtail" connector lead is used, while on others, the connector attaches directly to the sender. For diagnostic information, refer to SECTION 8A-81.



1. SWITCH, REAR WIPER
2. SWITCH, CARGO LAMP/REAR CARGO RELEASE
3. SWITCH, REAR FAN
4. SWITCH, FOG LAMP
5. CONNECTOR, S.I.R. D.E.R.M.
6. CONNECTOR, ELECTRONIC ACCELERATOR
7. TAPE PLAYER
8. CONNECTOR, ASHTRAY LAMP
9. CONNECTOR, CIGARETTE LIGHTER
10. CONNECTOR, AUXILIARY POWER
11. CONNECTOR, RADIO

Figure 6—Instrument Panel Harness (Center)

"CHECK GAUGES" LAMP

This indicator lamp is standard on all vehicles. This lamp comes on when the engine coolant temperature is too high or the engine oil pressure is too low. If this lamp should come on, check the gauges and refer to "Coolant Temperature Gauge Diagnosis" and "Oil Pressure Gauge Diagnosis" in SECTION 8A-81.

COOLANT TEMPERATURE GAUGE

The coolant temperature gauge is an electrical gauge which measures current from a water temperature sender in the cylinder head. The sender is located in the middle of the cylinder head on the driver's side for the 4.3, 5.0, 5.7, and the 7.4 liter engines. The 6.5 liter diesel has the coolant temperature sender at the front of the cylinder head. Refer to Figures 15 through 18. For diagnostic information, refer to SECTION 8A-81.

"LOW COOLANT" LAMP

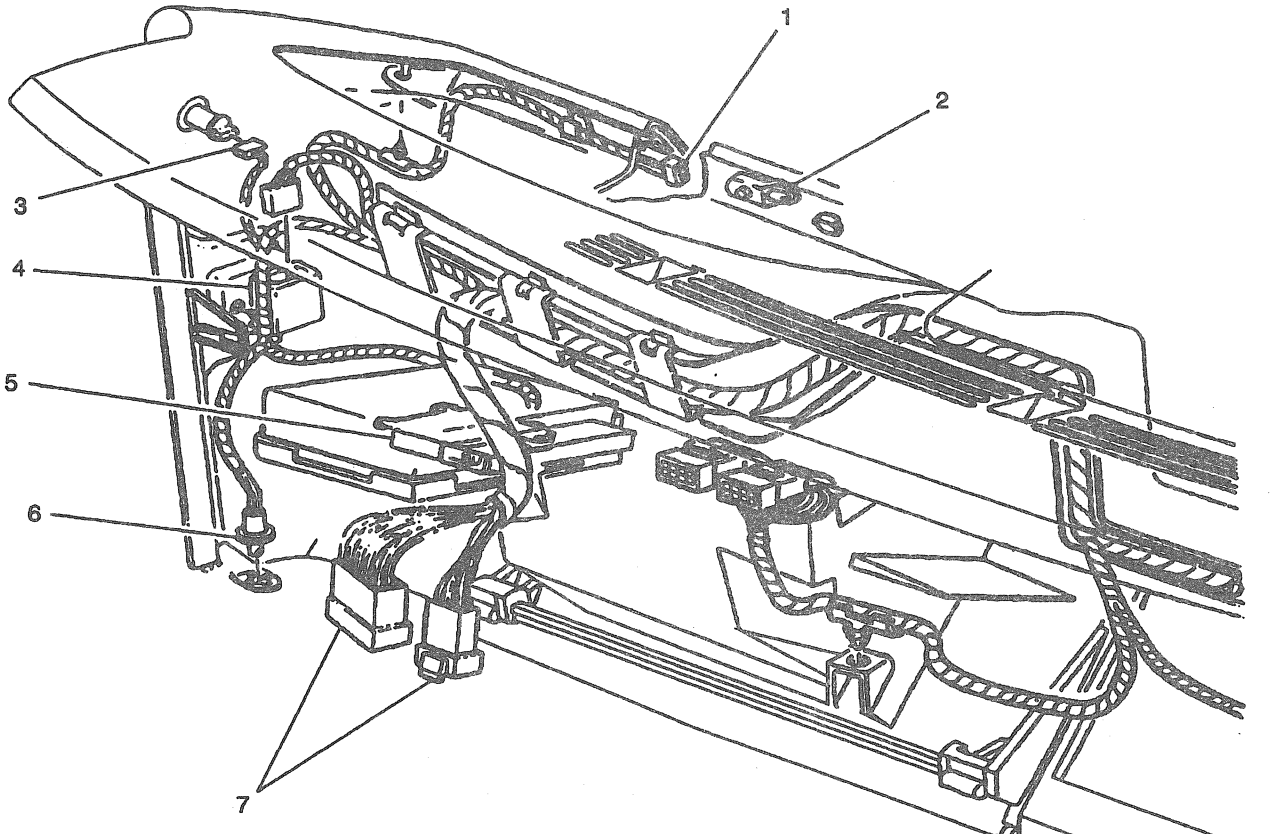
This indicator lamp comes on when a low coolant condition exists. The warning lamp is controlled by a low coolant module. Refer to SECTION 8A for diagnostic information.

OIL PRESSURE GAUGE

The oil pressure gauge is an electrical gauge which measures current from an oil pressure sender in the engine block. The oil pressure sender is located at the rear of the engine block on the drivers side for the 4.3, 5.0, 5.7, and the 6.5 liter diesel. It is located at the front of the engine block on the 7.4 liter engine. Refer to Figures 15 through 18. For diagnostic information, refer to SECTION 8A-81.

VOLTMETER

The voltmeter measures the voltage level of the electrical system. The voltmeter uses an internal shunt. For diagnostic information, refer to SECTION 8A-81.



1. CONNECTOR, INSTRUMENT PANEL COMPARTMENT LAMP
2. INSTRUMENT PANEL COMPARTMENT LAMP
3. CONNECTOR, DOOR SWITCH
4. LOW COOLANT MODULE (L49,L56 & L65)
5. MODULE, VEHICLE SPEED SENSOR CALIBRATOR
6. COURTESY LAMP
7. CONNECTOR, ENGINE HARNESS

Figure 7—Instrument Panel Harness (Right Side)

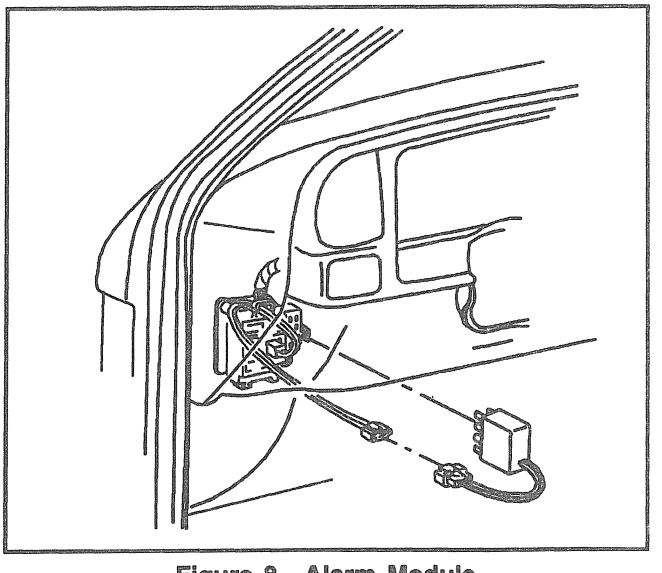


Figure 8—Alarm Module

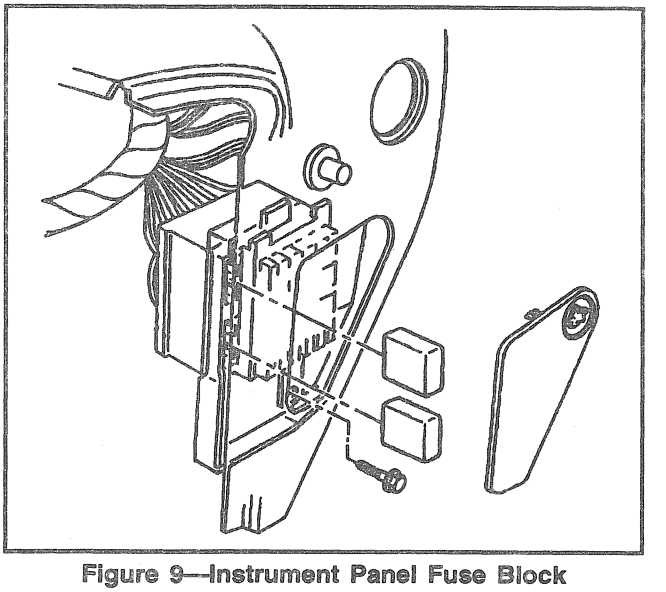


Figure 9—Instrument Panel Fuse Block

CHARGING SYSTEM WARNING SYSTEM

The charging system warning system consists of an indicator lamp with one side of the bulb connected to the generator and the other side to the ignition. Refer to SECTION 6D3.

MALFUNCTION INDICATOR LAMP (MIL)

The malfunction indicator lamp (MIL), appearing as the "Service Engine Soon" warning on the instrument cluster, is part of the computerized engine control system. Refer to the Driveablility, Emissions, and Electrical Diagnosis Manual.

BRAKE WARNING SYSTEM

The brake warning system consists of a differential switch which is mounted on the brake combination valve, and the indicator lamp which is mounted in the instrument cluster. Refer to SECTION 5 for more information.

ELECTRONIC PRNDL

Vehicles with automatic transmissions have an electronic PRNDL. The system utilizes signals from the Neutral Safety Back Up (NSBU) switch on the side of the transmission. Signals from this switch determine which LED's in the electronic PRNDL will light. Since the system is entirely electronic, there is no "adjustment". For diagnostic information, refer to SECTION 8A-81.

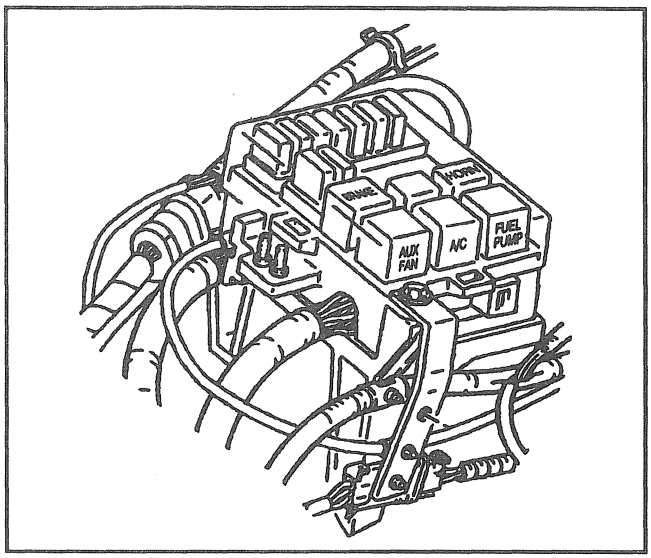


Figure 10—Underhood Fuse/Relay Center

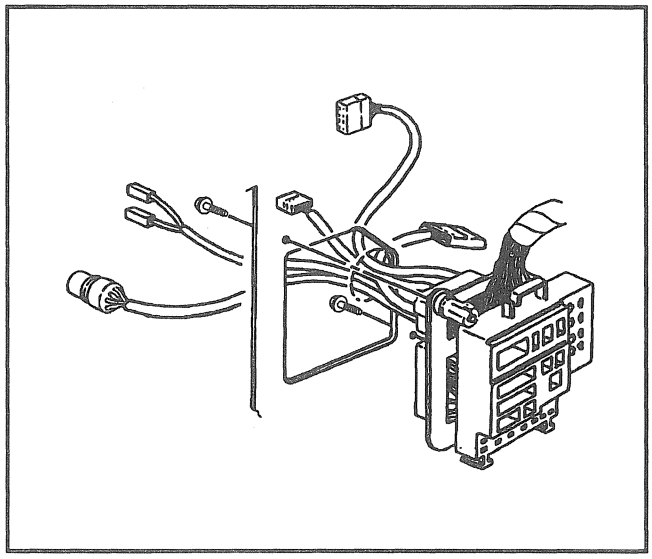


Figure 11—Convenience Center

ON-VEHICLE SERVICE

ELECTROSTATIC DISCHARGE (ESD) NOTICE

Many solid state electrical components can be damaged by electrostatic discharge (ESD). Some will display a label but many will not (Figure 1).

NOTICE: ***In order to avoid possibly damaging any components, observe the following:***

1. ***Body movement produces an electrostatic charge. To discharge personal static electricity, touch a ground point (metal) on the vehicle. This should be done any time you:***
   - ***Slide across a seat.***
   - ***Sit down or get up.***
   - ***Do any walking.***
2. ***Do not touch exposed terminals on components with your finger or any tools. Remember, the connector that you are checking might be tied into a circuit that could be damaged by Electrostatic Discharge.***

INSTRUMENT CLUSTER AND INDICATOR LAMP REPLACEMENT

Remove or Disconnect (Figures 12 and 13)

1. Negative battery cable. Refer to SECTION 6D1.
2. Instrument cluster bezel. The bezel is retained by four clips across the top edge and hinges at the bottom.
3. Electrical connections for headlamp switch, dimmer control and accessory switches.
4. Four screws retaining instrument cluster.
5. Instrument cluster from vehicle.
   - Keep fingers and other foreign objects away from the flexible circuit connections.
6. Bulb and base assembly by turning 1/2 turn to the left. Refer to SECTION 8B for bulb identification.

Install or Connect (Figures 12 and 13)

1. Bulbs to the cluster by inserting the socket and bulb assembly into the cluster and twisting to the right.
2. Press instrument cluster into instrument panel.
3. Instrument cluster hold-down screws.
   - Electrical connections for headlamps, dimmer control and accessory switches.
4. Instrument cluster bezel.
5. Negative battery cable. Refer to SECTION 6D1.

TRANSMISSION INDICATOR (PRNDL) REPLACEMENT

The electronic PRNDL is serviced as part of the instrument cluster assembly. Refer to "Instrument Cluster and Indicator Lamp Replacement" in this section.

INSTRUMENT PANEL FUSE BLOCK REPLACEMENT

Tool Required:
J 33095 Terminal Remover

Remove or Disconnect

1. Negative battery cable. Refer to SECTION 6D1.
2. Fuse block cover. The cover is on the left end of the instrument panel.
3. Fuse block.
   A. Screw at bottom of fuse block.
   B. Push fuse block in at the bottom. It will pivot clear of two mounting tabs at the top of the fuse block. Push the fuse block back and away from the instrument panel.
   C. Mark the fuse block and the wire locations for reassembly.

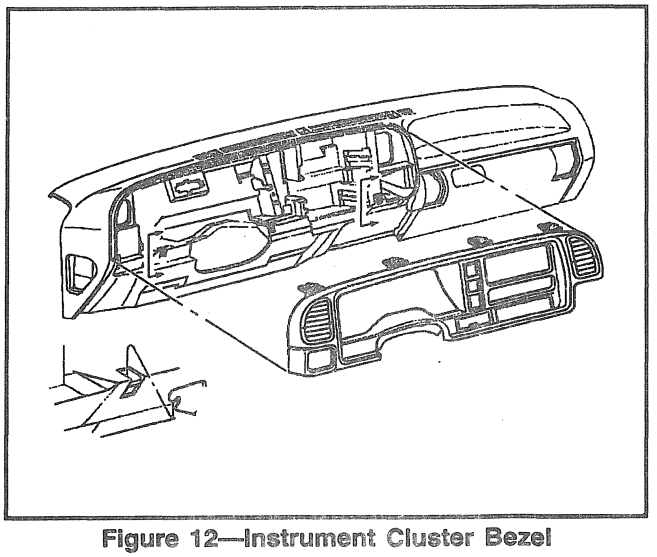


Figure 12—Instrument Cluster Bezel

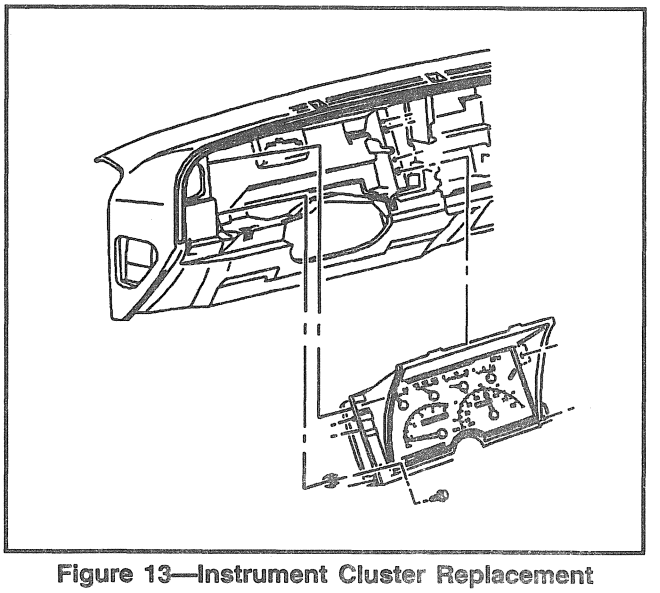


Figure 13—Instrument Cluster Replacement

4. Wires from the fuse block using J 33095 or a suitable terminal remover.
5. Fuse block from the vehicle.
6. Fuses from the block.

Install or Connect

1. Fuses to the block.
2. Fuse block to the vehicle.
3. Wires to the fuse block in their original locations.
4. Fuse block to the instrument panel.
   A. Place the two tabs at the top of the fuse block onto the tabs of the instrument panel.
   B. Push the bottom of the fuse block into place from behind the block. Align the screw hole and insert the retaining screw.
5. Fuse block cover to the instrument panel.
6. Negative battery cable. Refer to SECTION 6D1.

CONVENIENCE CENTER REPLACEMENT

Remove or Disconnect (Figure 11)

1. Negative battery cable. Refer to SECTION 6D1.
2. Wiring connectors at the front of the convenience center.
   • Label the wires for reassembly.
3. Convenience center from the bulkhead connector.
   • Disengauge the tabs at the upper left and lower right posts. The tabs clip into the bulkhead connector, and separate the bulkhead connector from the convenience center.
4. Wiring connectors from the rear of the convenience center.
   • Label the connectors for reassembly.
5. Convenience center from the vehicle.

Install or Connect (Figure 11)

1. Convenience center to the vehicle.
2. Wiring connectors to the rear of the convenience center in their original locations.
3. Convenience center to the bulkhead connector.
   • Engauge the post tabs of the convenience center to the bulkhead connector.
4. Wiring connectors to the front of the convenience center in their original locations.
5. Negative battery cable. Refer to SECTION 6D1.

INSTRUMENT PANEL ASSEMBLY REPLACEMENT

Remove or Disconnect (Figures 14 through 25)

1. Negative battery cable(s). Refer to SECTION 6D1.
2. Disable SIR system. Refer to SECTION 9J.
3. Three relay center bolts from inside wheel opening and set aside.

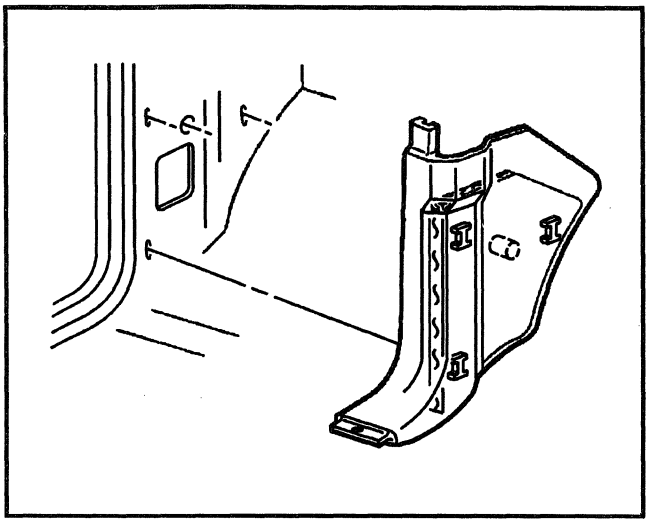


Figure 14—Hinge Pillar Trim Panel

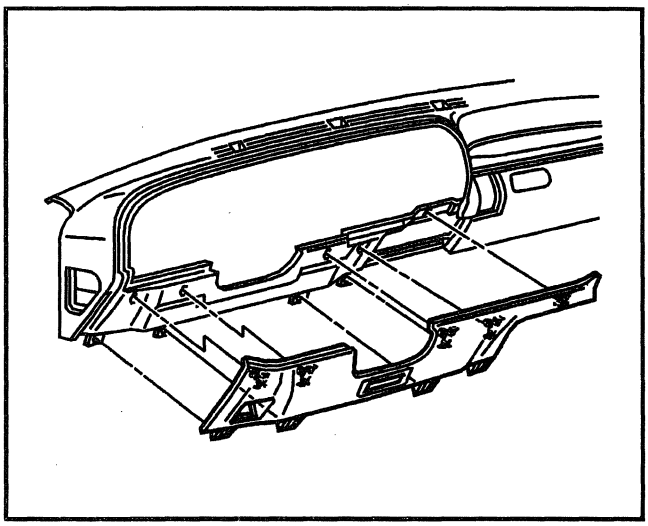


Figure 15—Knee Bolster

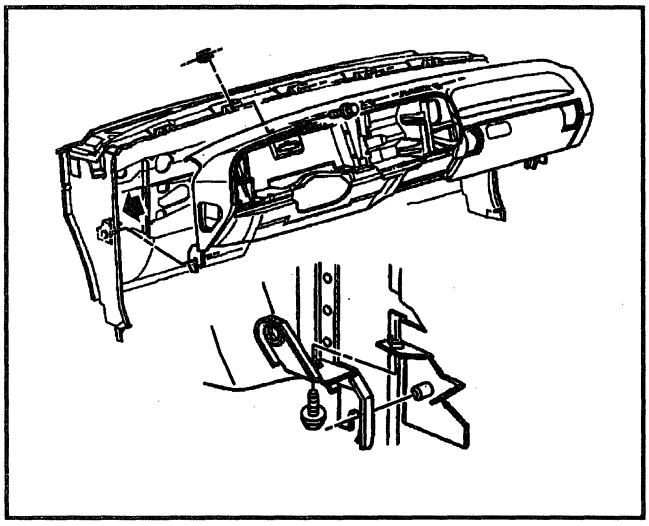


Figure 16—I/P Pivot Bolts

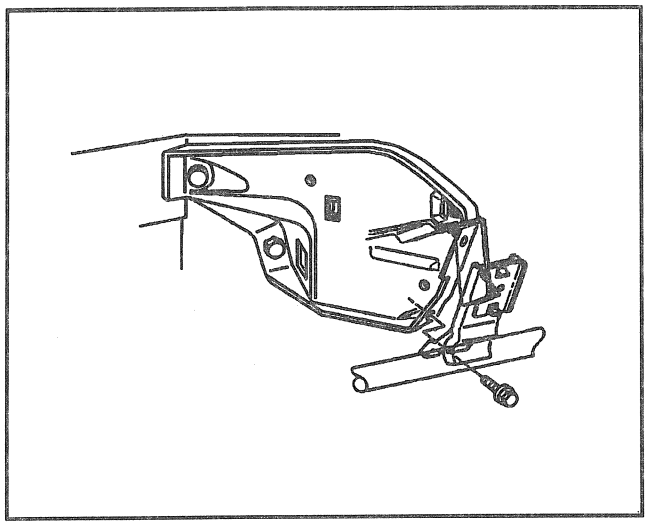


Figure 17—Center Support Screw

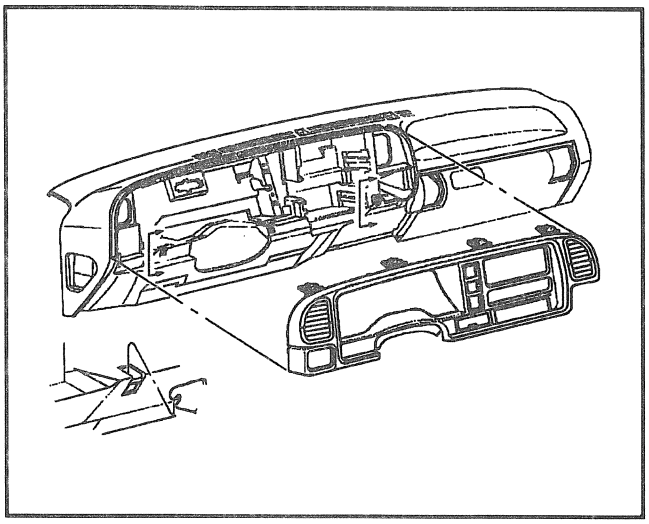


Figure 20—Instrument Cluster Trim

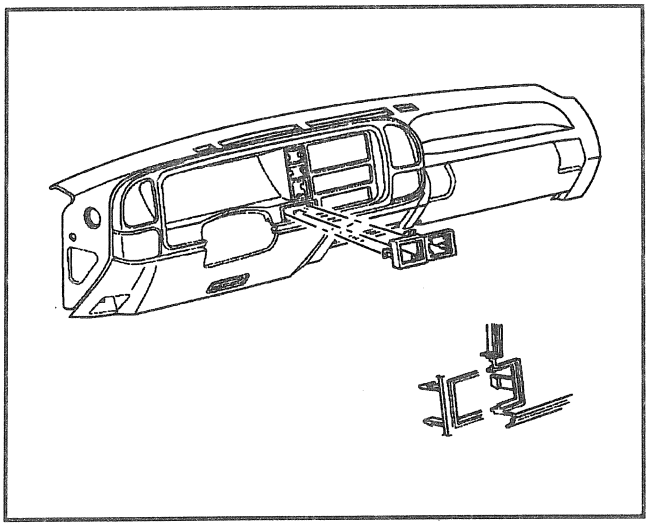


Figure 18—Accessory Lamp Switch Replacement

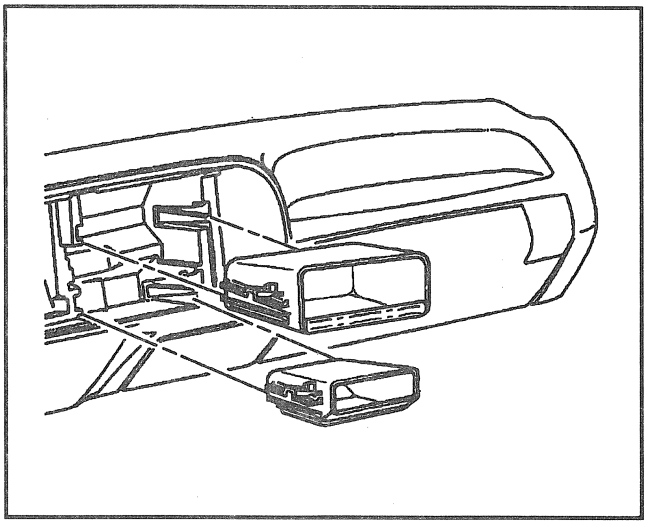


Figure 21—I/P Auxiliary Storage Compartments

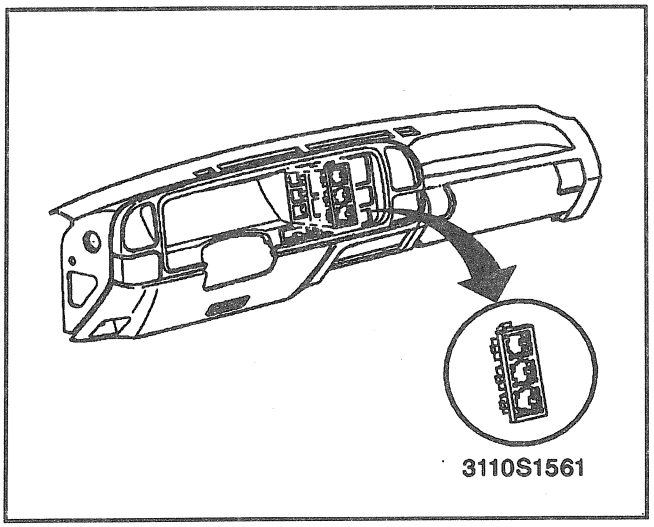


Figure 19—Accessory Lamp Switch Replacement (cont.)

4. Bulkhead connector.
   - Two screws retaining Convenience Center to cowl.
   - Cruise control harness (if equipped).
   - Forward lamp harness.
   - Rear lamp harness.
   - SIR system harness.
   - Relay center.
5. Antenna lead-in.
6. Steering shaft bolt.
7. Left and right hinge pillar trim panels (Figure 14).
8. Brake release handle from the cable.
   - Clip releases handle from cable.
9. Four lower bolster screws (Figure 15).
   A. Unsnap bolster.
   B. Twist brake release cable to disengage.
   C. Lap cooler hose.
10. Reaction plate assembly.
11. Tie bar.

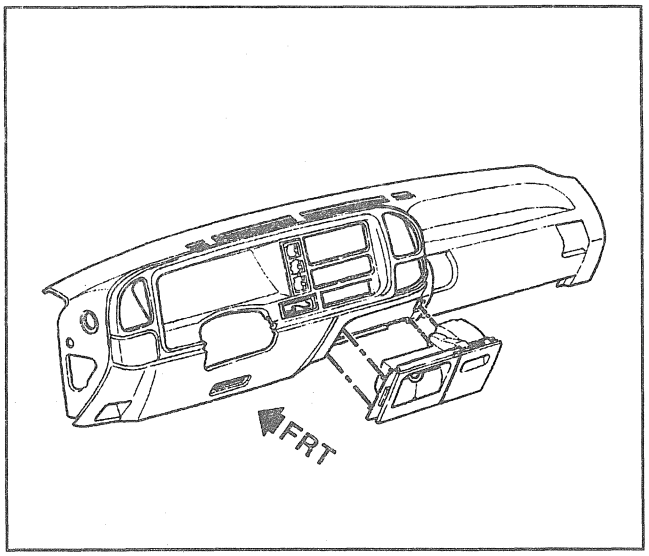


Figure 22—Ashtray

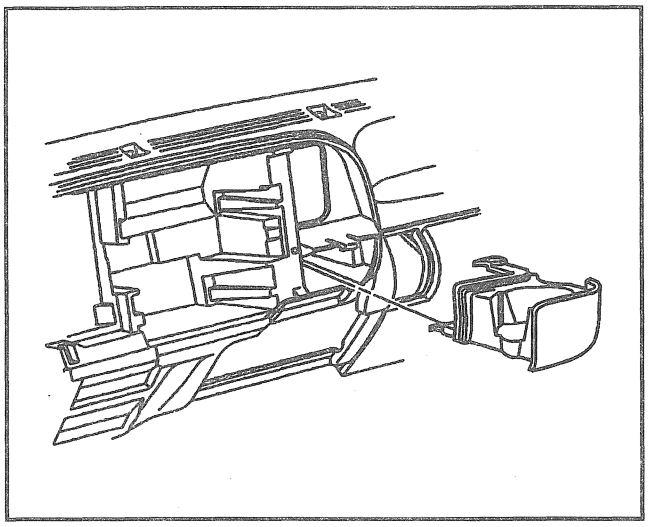


Figure 23—Cupholder

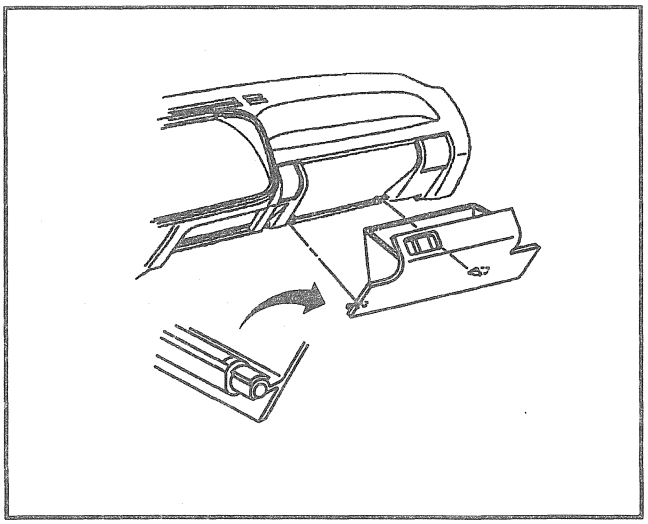


Figure 24—I/P Storage Compartment

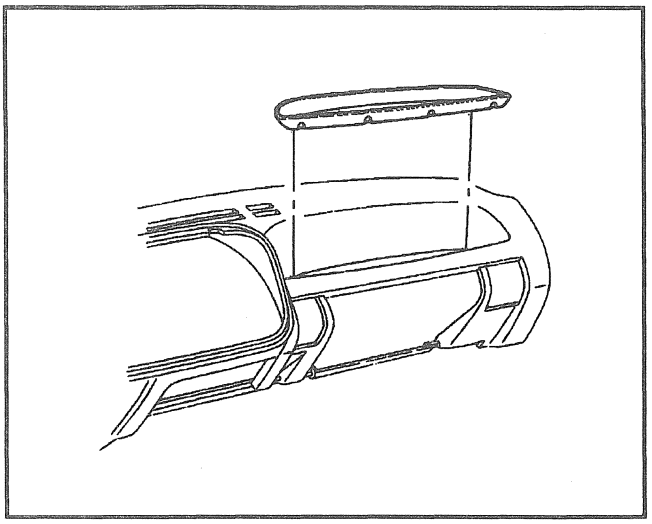


Figure 25—I/P Liner Assembly

12. 8-way column connector.
13. 48-way connector retainer to access two lower column nuts.
14. Shift cable (automatic transmission).
15. Steering column from the vehicle.
16. Shift levers.
    A. Transfer case knob by pulling straight up.
        • Four wheel drive models must be in 4-LO range.
    B. Manual transmission (if equipped).
17. Left and right lower I/P pivot bolts (Figure 16).
18. Center support screw (Figure 17).
19. Three upper I/P support screws.
20. I/P from the cowl.
21. Park brake release cable.
22. Electrical connectors (as necessary).
    - DERM
    - HVAC
    - 22-way engine harness
    - Stoplamp switch
    - VSS calibrator module
    - Clutch or Brake release switches
    - Electronic accelerator (Diesel)
    - HVAC control cables (if equipped).
23. I/P from the vehicle.

At this point, I/P removal is complete. Continue with the next step if replacing or refinishing the I/P.

1. Accessory lamp switch(es) as necessary (Figures 18 and 19).
2. Headlamp switch.
3. Instrument cluster trim (Figure 20).
4. HVAC control assembly.
    A. Electrical connectors.
    B. Cables (if equipped).
5. Instrument cluster screws.
6. Instrument cluster.
7. I/P auxiliary storage compartments (if equipped) (Figure 21).
8. Ashtray (Figure 22).
    - Electrical connectors.
9. I/P cupholder (Figure 23).
    - Retainer inserts from underneath.
    - Twist to the left to release.

10. Two air distributor duct screws.
11. Antenna lead-in.
    • Squeeze clips from front of I/P to release duct.
12. Air distributor duct from the I/P.
13. Rosebud retainers on right side of I/P for harness.
14. Instrument panel compartment lamp.
    • Slide to release.
15. I/P storage compartment (Figure 24).
    • Squeeze compartment to release.
16. I/P liner assembly (Figure 25).
17. Low coolant module (diesel only).
18. Harness from the I/P.
19. DLC.
    • One screw and slide out.
20. Rosebud retaining harness to accessory switches.
21. Fuse panel and courtesy lamps switch.
22. Unclip turn signal flasher.
23. Ground screw.
24. Harness from the I/P.
25. Jumper harness to remote playback device (if equipped).
26. Antenna lead-in.
27. Courtesy lamp switches.
28. Side defog outlet.
29. Park brake cable clip.

Install or Connect (Figures 14 through 25)

1. Antenna lead-in.
2. Jumper harness to remote playback device (if equipped).
3. Harness to the I/P.
4. Right side harness rosebud retainer.
5. Fuse panel and two screws.
6. Courtesy lamp switch and electrical connector.
7. I/P cluster connector.
    • Insert through I/P and pull back to seat.
8. Clip harness to the I/P.
9. Accessory outlet wiring.
10. Harness to accessory switches.
    • Feed through holes.
11. Ashtray.
12. Instrument cluster with four screws.
13. HVAC control assembly.
    • Electrical connectors.
    • Cables (if equipped). Refer to SECTION 1A.
14. Radio electrical connectors and lead-in (if equipped).
    • Radio snap fits to the I/P.
15. I/P auxiliary storage compartments (if equipped).
16. I/P cupholder.
    • Twist retainer to the right.
17. Air distribution duct.
    A. Two snap-fit clips.
    B. Two screws.
18. DLC.
19. I/P cluster trim.
20. Side window defogger outlets.
21. I/P to the vehicle.
    • Rest I/P on lower pivot studs.
22. Convenience center to the cowl.
23. Lap cooler duct.
24. DERM to the center I/P support.
25. Nut to steering column support.
26. Park brake cable.
27. I/P pivot nuts.
28. Upper I/P support screws.
29. Steering column to the vehicle with four nuts.
30. 48-way connector and screw built onto steering column.
31. Tie bar with four nuts.
32. Shift cable (automatic transmission).
33. Accelerator electrical connector (diesel).
34. Knee bolster close out panel with two screws.
35. Reaction plate with four screws.
36. Shift knobs.
    • Manual transmission.
    • Transfer case.
37. Lap cooler hose.
38. Park brake cable.
39. Knee bolster trim snaps into place.
    • Four screws from the bottom.
40. Park brake handle clips into place.
41. Antenna lead-in at the fender.
42. Bulkhead connector.
    A. Two retainer screws.
    B. One center screw.
43. Electrical connectors in the engine compartment.
    • Cruise control (if equipped).
    • Rear lamps harness.
    • Forward lamps harness.
    • SIR.
    • Relay center.
44. I/P storage compartment.
    A. Two pivot points.
    B. Compartment snaps into place.
45. Steering shaft and bolt.
46. Enable SIR system. Refer to SECTION 9J.
47. Negative battery cable.

VEHICLE SPEED SENSOR REPLACEMENT

Refer to SECTION 7 of this manual.

VEHICLE SPEED SENSOR CALIBRATOR MODULE REPLACEMENT

Remove or Disconnect (Figure 26)

1. Negative battery cable. Refer to SECTION 6D1.
2. Glove box.
3. Electrical connectors from VCM and module.
4. VCM from retaining tabs.
5. Four screws retaining the module to the VCM.
6. Module from the vehicle.

Install or Connect (Figure 26)

1. Module to VCM with four mounting screws.
2. VCM to retaining tabs.
3. Electrical connectors to VCM and module.
4. Glove box.
5. Negative battery cable. Refer to SECTION 6D1.

COOLANT TEMPERATURE SENDER REPLACEMENT

Remove or Disconnect (Figures 27 through 30)

1. Negative battery cable. Refer to SECTION 6D1.
2. Coolant.
3. Sender connector.
4. Sender.

Install or Connect (Figures 27 through 30)

1. Sender.
2. Sender connector.
3. Coolant.
4. Negative battery cable. Refer to SECTION 6D1.

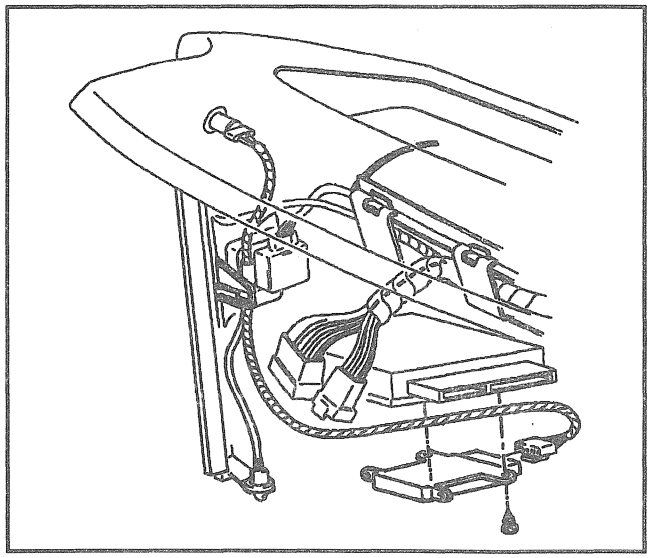


Figure 26—Vehicle Speed Sensor Calibrator Module Replacement

OIL PRESSURE SENDER REPLACEMENT

Tool Required:
J 35749 Socket

Remove or Disconnect (Figures 27 through 30)

1. Negative battery cable. Refer to SECTION 6D1.
2. Sender 1 using J 35749. connector.
3. Sender 2 using J 35749.

Install or Connect (Figures 27 through 30)

1. Sender using J 35749 tool.
2. Sender connector.
3. Negative battery cable.

"LOW COOLANT" MODULE REPLACEMENT

Remove or Disconnect (Figure 31)

1. Negative battery cable. Refer to SECTION 6D1.
2. Glove box.
3. Electrical connector.
4. Module from instrument panel by pulling straight out.

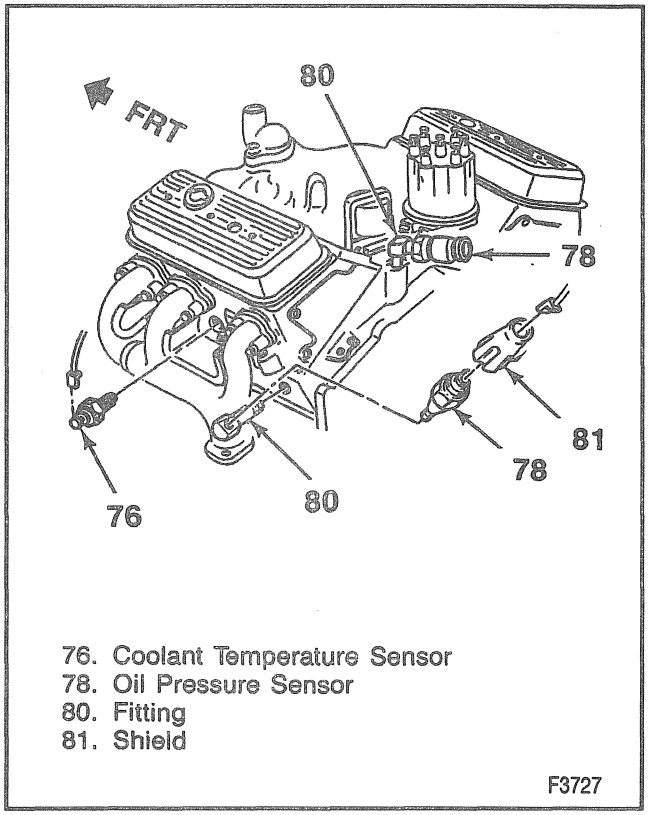
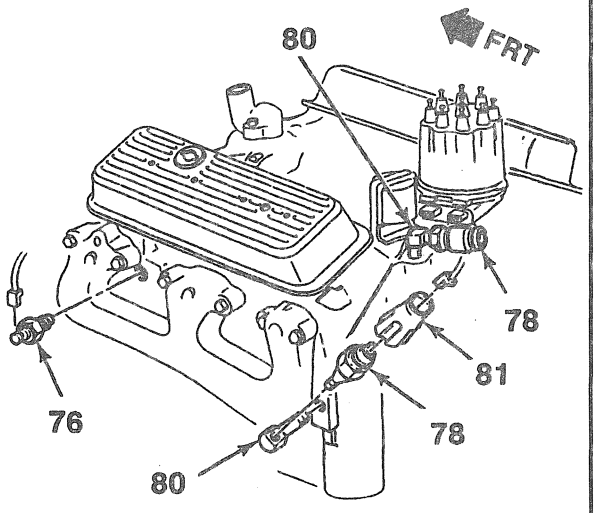


Figure 27—Coolant Temperature and Oil Pressure Senders (4.3 L Engines)



76. Coolant Temperature Sensor
78. Oil Pressure Sensor
80. Fitting
81. Shield

F3729

Figure 28—Coolant Temperature and Oil Pressure Senders (5.0 and 5.7 L Engines)

Install or Connect (Figure 31)

1. Module to instrument panel.
2. Electrical connector.
3. Glove box.
4. Negative battery cable.

ENGINE CONTROL SWITCH (IGNITION SWITCH) REPLACEMENT

Refer to SECTIONS 3F1 and 3F2 in this manual.

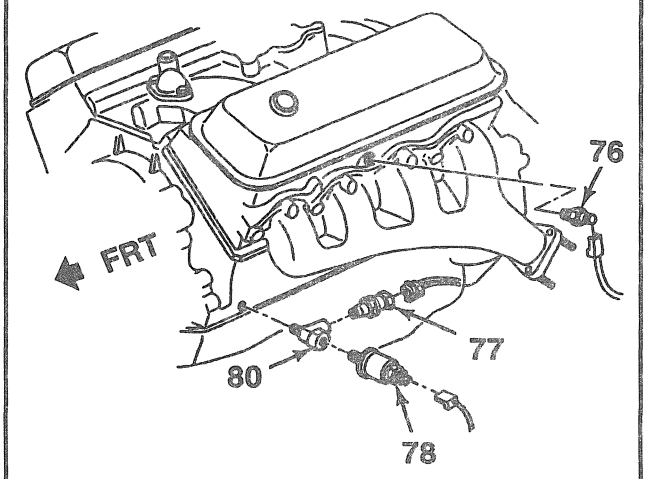
ACCESSORY SWITCH REPLACEMENT

Remove or Disconnect (Figures 24 and 32)

1. Negative battery cable. Refer to SECTION 6D1.
2. Instrument cluster bezel. Refer to Figure 24 and "Instrument Cluster Replacement" in this section.
3. Electrical connection.
4. Switch from bezel.

Install or Connect (Figures 24 and 32)

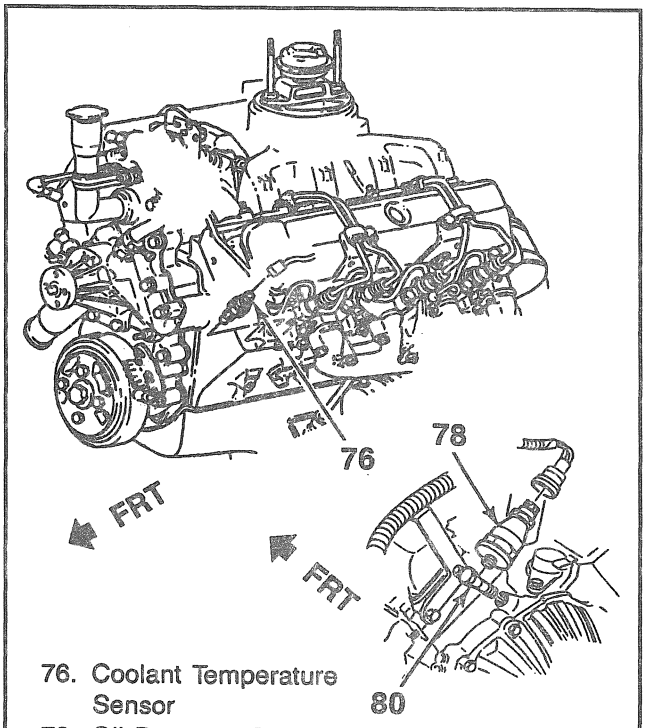
1. Switch to bezel.
2. Electrical connection.
3. Instrument cluster bezel. Refer to Figure 24.
4. Negative battery cable. Refer to SECTION 6D1.



76. Coolant Temperature Sensor
77. Oil Pressure/Fuel Switch
78. Oil Pressure Sensor
79. Oil Pressure Switch

F3728

Figure 29—Coolant Temperature and Oil Pressure Senders (7.4L Engines)



76. Coolant Temperature Sensor
78. Oil Pressure Sensor
80. Fitting

F3655

Figure 30—Coolant Temperature and Oil Pressure Senders (6.5L Engines)

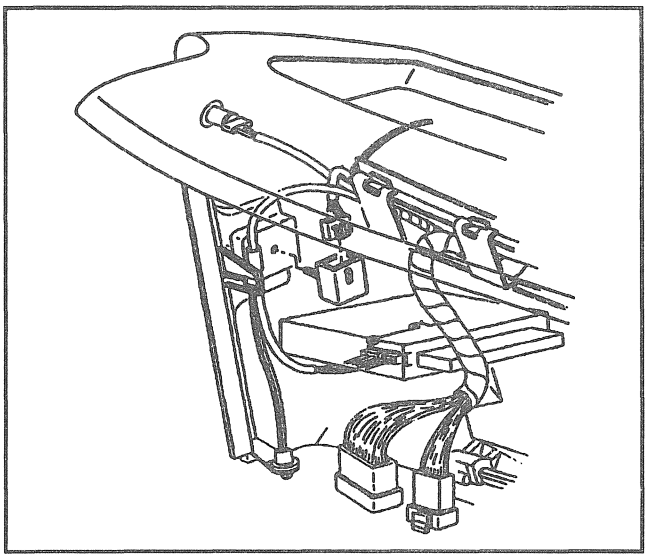


Figure 31—Low Coolant Lamp Module

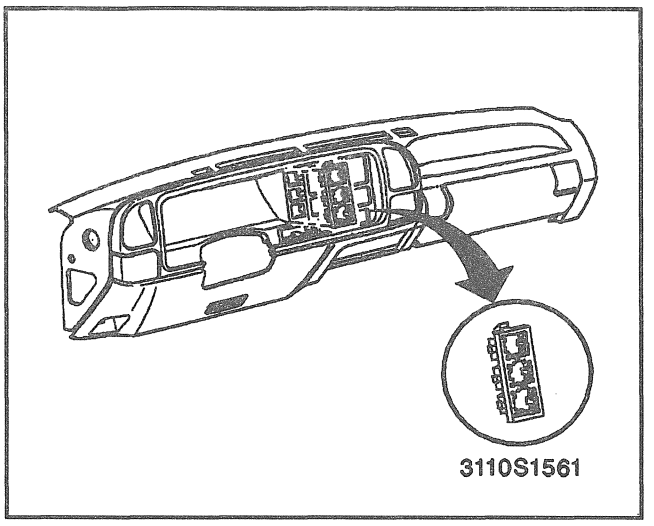
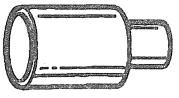
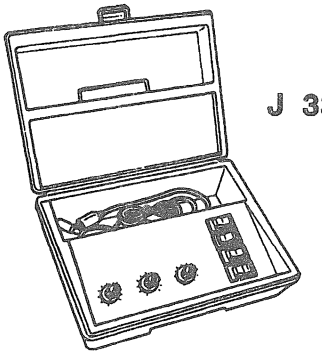


Figure 32—Accessory Switch Replacement

SPECIAL TOOLS

1.  J 35749

2.  J 33431-B

1. Oil Pressure Sending Unit Socket
2. Signal Generator and Instrument Panel Tester

V2089

SECTION 8D

CHASSIS ELECTRICAL

CAUTION: On vehicles equipped with Supplemental Inflatable Restraint (SIR), refer to CAUTIONS in Section 9J under "ON-VEHICLE SERVICE" and the SIR Component and Wiring Location view in Section 9J before performing service on or around SIR components or wiring. Failure to follow CAUTIONS could result in possible air bag deployment, personal injury, or otherwise unneeded SIR system repairs.

NOTICE: ***Always use the correct fastener in the correct location. When you replace a fastener, use ONLY the exact part number for that application. General Motors will call out those fasteners that require a replacement after removal. General Motors will also call out the fasteners that require thread lockers or thread sealant. UNLESS OTHERWISE SPECIFIED, do not use supplemental coatings (paints, greases, or other corrosion inhibitors) on threaded fasteners or fastener joint interfaces. Generally, such coatings adversely affect the fastener torque and joint clamping force, and may damage the fastener. When you install fasteners, use the correct tightening sequence and specifications. Following these instructions can help you avoid damage to parts and systems.***

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On-Vehicle Service	8D-3
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GENERAL DESCRIPTION

HORN SYSTEM

The horn system starts at the fuse block with the horn/dome fuse. The circuit goes from the fuse block to the horn relay in the underhood convenience center. At the horn relay, the circuit splits; one branch goes through the relay coil to the horn switch in the steering column, and the other goes through the relay contacts to the horn.

When the horn switch is closed, it provides a ground path for the horn relay coil. Current flows into the relay coil, closing the contacts, allowing the horn to sound. For diagnosis of the horn system, refer to SECTION 8A in the C/K Driveability, Emissions, and Electrical Diagnosis manual.

CAMPER AND TRAILER WIRING

Two trailer harnesses are available; heavy-duty trailer towing (UY7) and camper (UY1).

Option UY7 trailer harness is for heavy-duty towing applications. A 30-amp fused battery feed wire and auxiliary circuit routes from the cowl-mounted junction block, along the body side rail, to the rear bumper crossmember. The harness for the brake/parking lamps is spliced from the rear lamp harness. The harness is located at the rear bumper crossmember and is bound with a plastic strap (Figures 2 and 3). The wiring harness is wrapped with tape to prevent short circuits.

The function of the seven wires are:

1. Red—30-amp fused battery feed.
2. Dark Blue—An auxiliary circuit.
3. Brown—Tail and license lamps.
4. Light Green—Backup lamps.
5. Dark Green—Right turn signal and stoplamp.
6. Yellow—Left turn signal and stoplamp.
7. White—Ground.

This option does not include a connector at the end of the harness. It must be wired after production by a qualified technician.

Attach the trailer harness wiring to the trailer. Then strap it to the vehicle frame rail in such a way that enough slack is left in the harness to prevent bending,

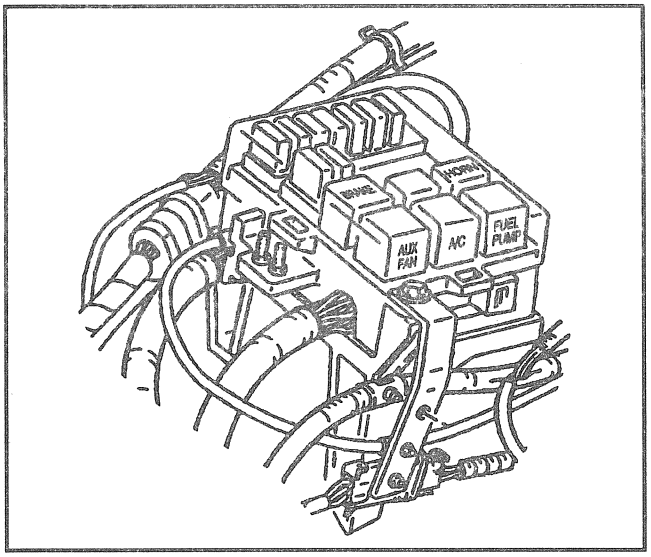


Figure 1—Horn Relay

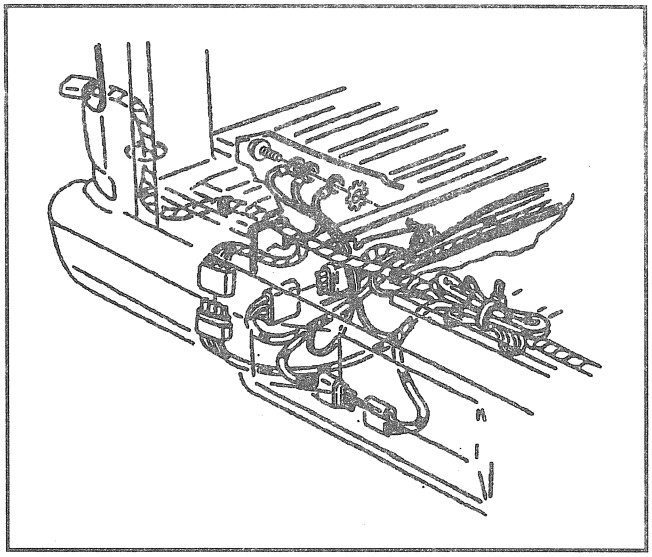


Figure 2—Trailer Harness Routing (Pickup)

binding, or breakage of the wiring. Do not allow the harness to drag on the ground. Tape or strap the trailer portion of the harness (if used) to the tongue of the trailer. This will prevent the harness from dragging on the ground.

When the harness is not being used, wrap it together and bind it with a tie strap to keep it from being damaged. Store the harness behind the rear bumper on the fuel tank strap with a band or tie strap.

The second wiring harness option is the UY1 camper wiring harness, and is also spliced from the rear lamp harness.

This harness is for the brake/parking lamps and an auxiliary power feed. The harness is located in the front stake pocket during production and is wrapped and bound with a plastic strap. This option uses a single harness and a connector using five wires.

The function of the wires are:

1. Dark Blue—A 30-amp fused auxiliary power circuit. The other end of this wire is taped to the wiring near the junction block on the cowl.
2. Dark Green—Right turn signal and stoplamp.
3. Yellow—Left turn signal and stoplamp.
4. Brown—Tail lamps.
5. White—Ground.

Route the trailer harness wiring between the frame and bumper, or camper and body, in such a way that enough slack is left in the harness to prevent bending, binding, or breakage of the wiring. Do not allow the harness to drag. Tape or strap the trailer portion of the harness (if used) to the vehicle. This will prevent the harness from dragging.

When the wiring is not being used, wrap the harness together and bind it with a tie strap to keep it from being damaged.

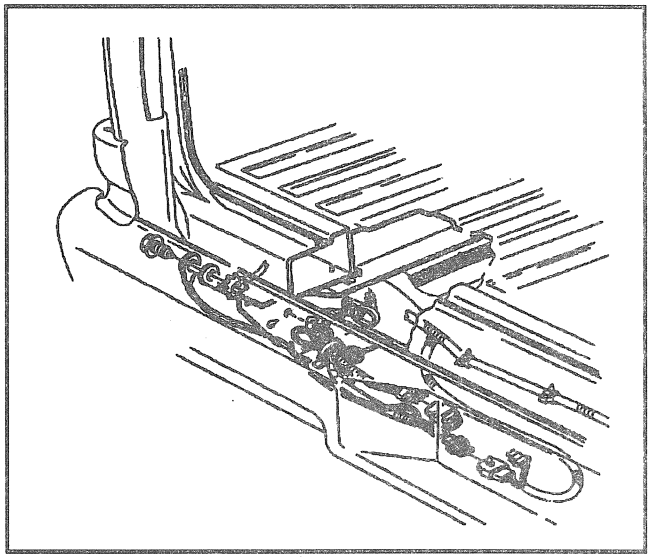


Figure 3—Trailer Harness Routing (Suburban and Utility)

SNOW PLOW TURN SIGNAL RELAY LOCATION

Some vehicles are equipped with option VYU. This means the vehicle has been prepared for an optional snow plow. A vehicle with this option has two relays mounted on the radiator support. These relays are for optional equipment that may be installed when using a snow plow.

ON-VEHICLE SERVICE

HORN REPLACEMENT

Remove or Disconnect (Figure 4)

1. Negative battery cable. Refer to SECTION 6D1.
2. Grille to radiator support filler panel for access (left horn only).
3. Electrical connector.
4. Horn attaching bolt.
5. Horn from the vehicle.

Install or Connect (Figure 4)

1. Horn to the vehicle.
2. Bolt.

Tighten

- Horn bolt to 25 N·m (18 lb. ft.).

3. Electrical connector.
4. Grille to radiator support filler panel (if removed).
5. Negative battery cable.

SNOW PLOW TURN SIGNAL RELAY REPLACEMENT

Remove or Disconnect (Figure 5)

1. Negative battery cable. Refer to SECTION 6D1.
2. Electrical connector from the relay.
3. Bolt.
4. Relay.

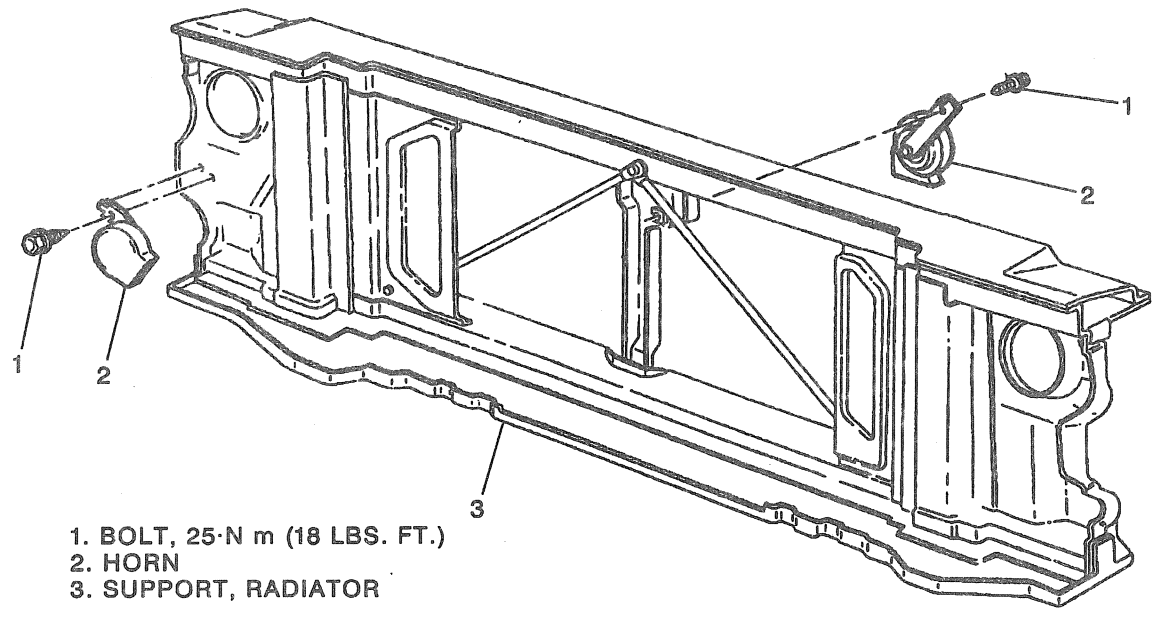
Install or Connect (Figure 5)

1. Relay.
2. Bolt.

Tighten

- Snow plow turn signal relay bolt to 6 N·m (53 lb. in.).

3. Electrical connector to the relay.
4. Negative battery cable.



1. BOLT, 25·N m (18 LBS. FT.)
2. HORN
3. SUPPORT, RADIATOR

3108r5268

Figure 4—Horn Replacement

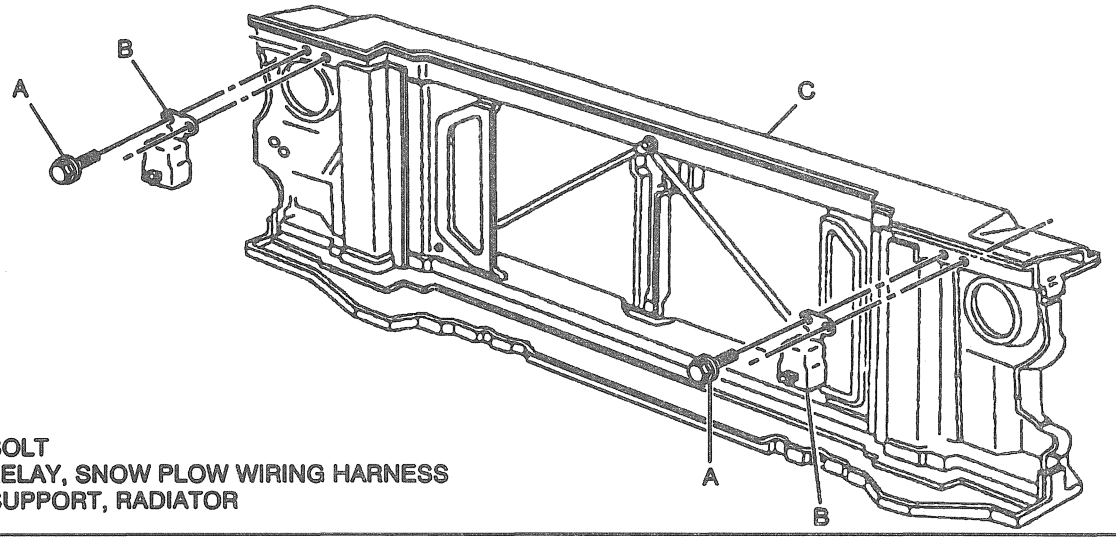


Figure 5—Snow Plow Turn Signal Relay Replacement

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Item	N·m	Lbs. Ft.	Lbs. In.
Horn Attaching Bolt	25	18	—
Snow Plow Relay Mounting Bolt	6	—	53

T2859

SECTION 8E1

WINDSHIELD WIPER/WASHER SYSTEM (PULSE)

CAUTION: On vehicles equipped with Supplemental Inflatable Restraint (SIR), refer to CAUTIONS in Section 9J under "ON-VEHICLE SERVICE" and the SIR Component and Wiring Location view in Section 9J before performing service on or around SIR components or wiring. Failure to follow CAUTIONS could result in possible air bag deployment, personal injury, or otherwise unneeded SIR system repairs.

NOTICE: Always use the correct fastener in the correct location. Use the correct fastener part number to replace a fastener. If the correct fastener part number is not available, a fastener of equal size and strength may be used. Do not use a fastener that is stronger when the correct fastener part number is not available in the following applications:

- ***Some bolts are designed to permanently stretch, and if a stronger fastener is used, the part will not be tightened correctly. These permanently stretching bolts will be called out. The correct part number fasteners must be used to replace this type of fastener because there is no available equivalent.***
- ***Other bolts are designed to break if over tightened to prevent part damage. If a stronger fastener is used part damage may occur.***

Fasteners that need to be replaced when removed will be called out. Fasteners that require thread lockers or thread sealant will be called out. The correct tightening specification and sequence must be used when installing fasteners. Part or system damage may occur if the above instructions are not followed.

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Wiper Arm Chatter	8E1-4
Checking Wiper Arm Pressure	8E1-4
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Wiper Motor Assembly Diagnosis	8E1-4
Pulse Wiper System Check	8E1-16
On-Vehicle Service	8E1-16
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Wiper Blade Assembly and Insert Replacement	8E1-16
Circuit Board and Terminal Assembly Replacement	8E1-17
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GENERAL DESCRIPTION

WIPER/WASHER SYSTEM

The windshield wiper/washer system consists of a permanent magnet, positive-park wiper motor assembly (figure 1), a transmission assembly, wiper arm and blade assemblies, a washer pump mounted on the side of a washer solvent container, and a turn signal-type wiper/washer switch assembly with detents. The die-cast aluminum housing of the wiper motor provides cooling for interior parts. The wiper motor is equipped with RFI (radio frequency interference) suppression.

The wiper motor drives a crank arm that attaches to individual transmission links for both the right and left sides. The transmission links are mounted in front of the windshield inside the fresh air plenum. The transmission transfers rotary motion from the wiper motor into reciprocating motion at the transmission drive shafts.

The wiper motor is sealed. No service parts are available. Replace the motor if service is required.

The delay module is also sealed and attached directly to the wiper motor. It is replaced as a unit during service.

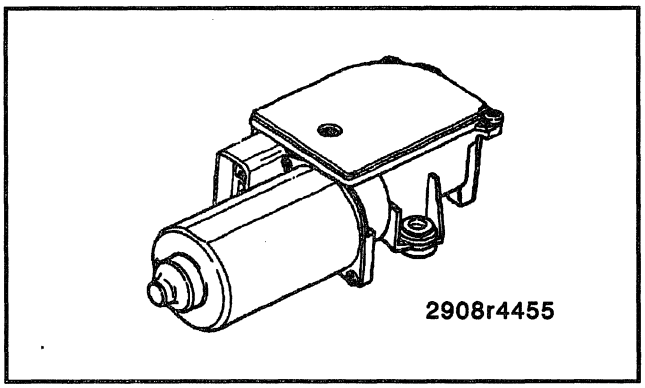


Figure 1—Wiper Motor Assembly

WIPER/WASHER OPERATION

The electronic circuit board controls all the timing and washer commands (figure 2). When a wash button is pushed for more than 1 second, washer solvent is sprayed on the windshield as long as the button is held. This is accompanied by wiper activity that continues for about 6 seconds after the button is released.

Rotating the wiper switch to the "LO" or "HI" speed position closes the respective brush circuit and the wiper motor runs at that speed.

Rotating the wiper switch to the "DELAY" mode operates the wiper motor intermittently. The delay can be varied by rotating the switch back and forth.

For immediate wiping activity, rotate the wiper switch to the "MIST" position. Wiping will continue as long as the switch is held.

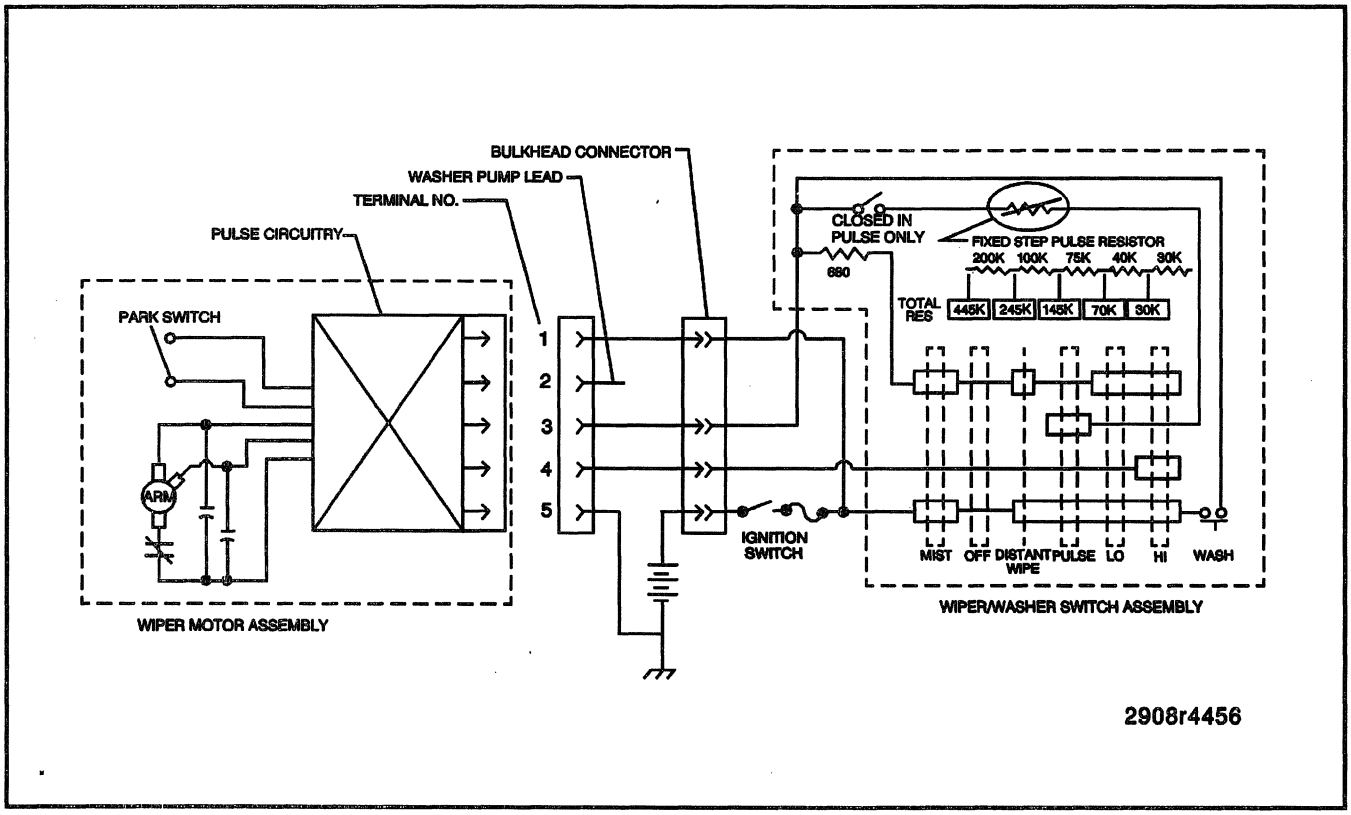


Figure 2—Wiper/Washer Motor Circuit Diagrams

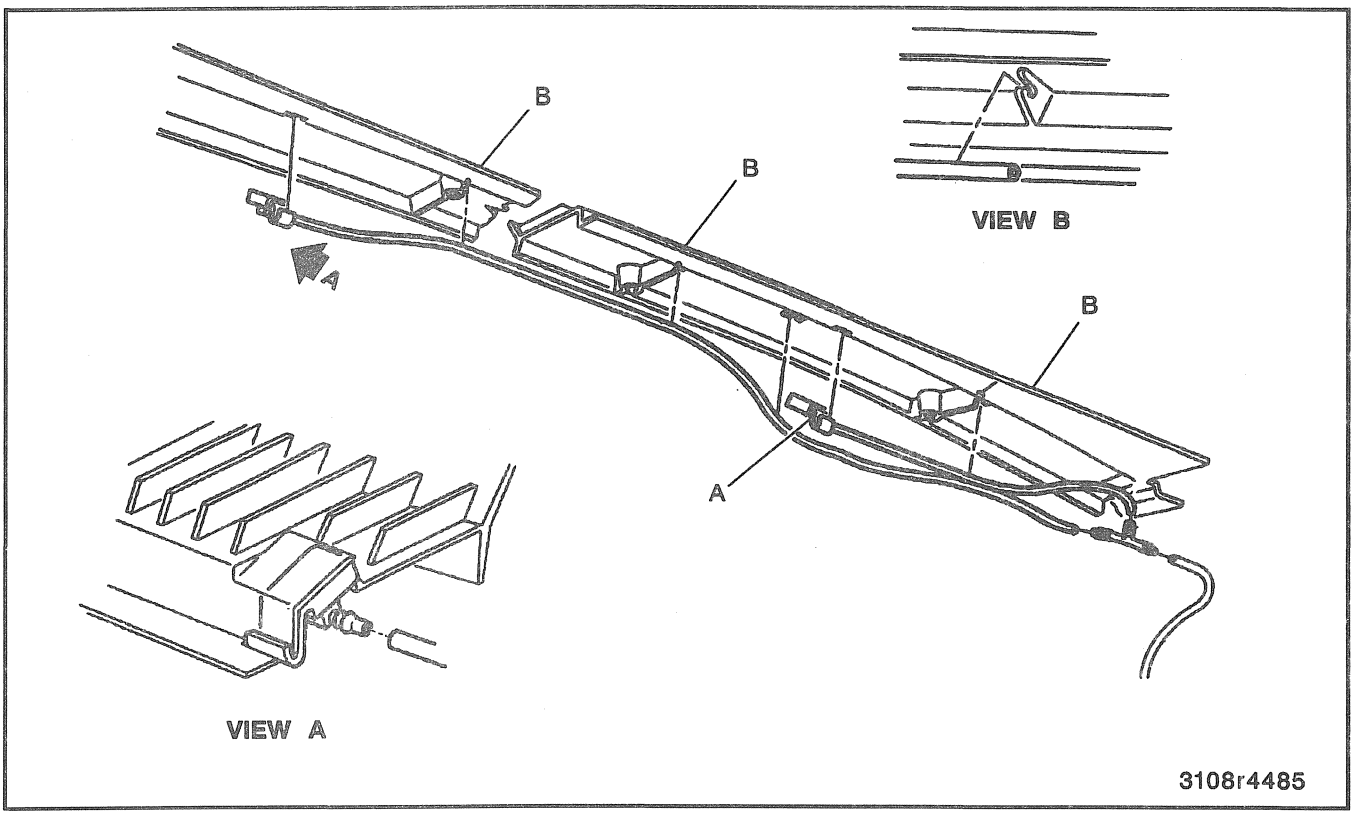
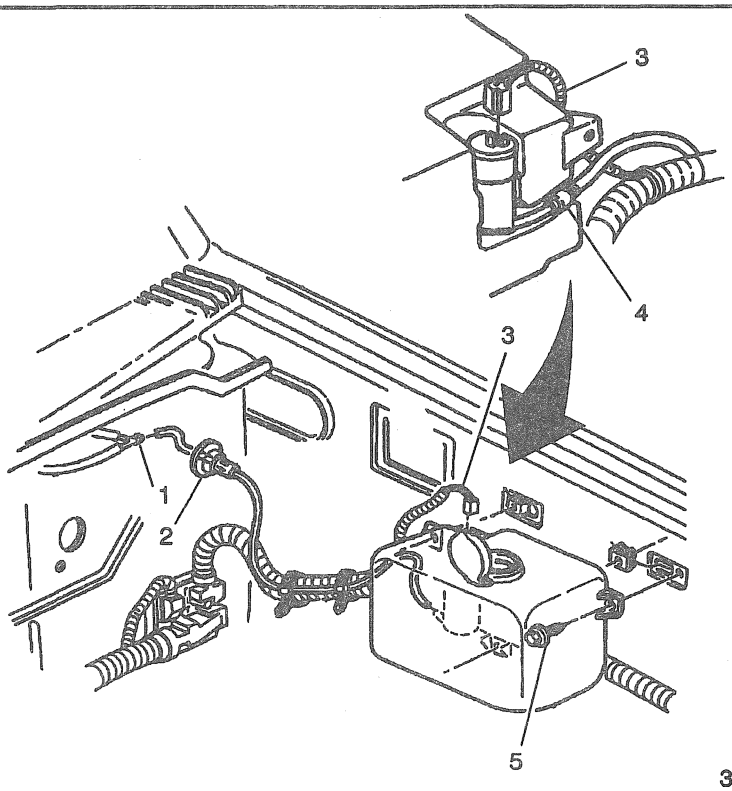


Figure 3—Washer Hose Routing (Cowl)

WASHER HOSE ROUTING

Washer hose routing begins at two nozzles mounted to the cowl vent grille (figure 3). The hose is clipped in various places to the cowl vent grille, then exits the cowl area through a grommet on the engine side of the cowl (figure 4). The hose is strapped to the forward lamp harness and runs a parallel path along the left inner fender to the washer solvent container and finally, to the washer pump motor. A one-way check valve between the hose and pump motor assembly allows fluid flow in one direction only.



1. CONNECTOR
2. GROMMET
3. HARNESS, WASHER MOTOR
4. VALVE, CHECK
5. SCREW, 7 N·m (62 LBS. IN.)

Figure 4—Washer Hose Routing (Container)

DIAGNOSIS OF THE WIPER/WASHER SYSTEM

WIPER ARM CHATTER

If the wipers chatter or shudder when wiping the windshield, the windshield and/or inserts may need cleaning. Use a non-abrasive cleaner such as Bon Ami® to clean the windshield. Continue cleaning until water sheets off the windshield. Use undiluted windshield wiper/washer solvent and a clean, lint-free cloth to clean wiper inserts.

CAUTION: Avoid prolonged skin contact with washer solvent to avoid damage to your skin. Overexposure may cause central nervous system effects.

When marking the windshield for inside rearview mirror replacement or any other purpose, use only a water-soluble marker to make marks on the windshield. Other types of markers may damage the wiper inserts. The chemicals that are used to remove other types of markers may damage the paint, glass, inserts, or leave a residue on the glass that could lead to chatter.

Wiper arms must not be subjected to temperatures above 70°C (160°F). Remove wiper arms before any painting operations that include the use of an oven to cure the paint.

CHECKING WIPER ARM PRESSURE

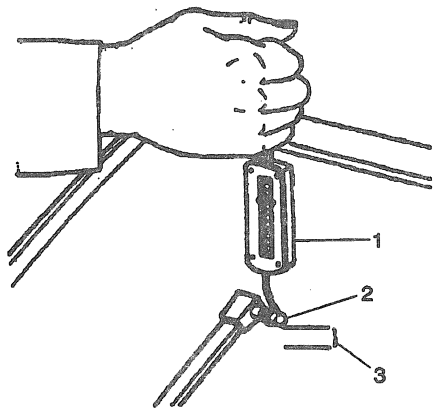
If the wipers miss or shudder when wiping the windshield, and the windshield and wiper inserts have been cleaned, the wiper arm pressure should be checked. Refer to figure 5. If the wiper arms are not within the specifications given in figure 5, they should be replaced. Refer to "Wiper Arm Assembly Replacement."

BLADE INSERT SET CHECK

Remove the wiper blade assemblies from the wiper arms. Look down the length of the blade insert (figure 6). The rubber insert that contacts the glass must be on the centerline of the blade assembly ± 15 degrees. Replace the insert if necessary.

WIPER MOTOR ASSEMBLY DIAGNOSIS

Always perform the "Pulse Wiper System Check" first as a guide to normal operation. Then refer to figures 7 through 16 for wiper motor assembly diagnosis. The Driveability, Emissions, and Electrical Diagnosis manual for these vehicles contains diagnostic procedures for vehicle wiring.



1. SCALE, TENSION
2. WIPER BLADE ATTACHING PIN
3. LIFT ARM APPROXIMATELY 1/2 INCH ABOVE GLASS

NOTE: BLADE SHOULD BE IN THE MIDDLE OF THE STROKE
TIP PRESSURE = 7.8 TO 9.5 NEWTONS (28 TO 34 OUNCES)

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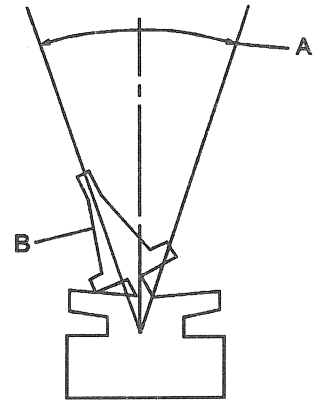
Figure 5—Checking Wiper Arm Pressure



A. BLADE INSERT SHOULD NOT BE BENT MORE THAN 15° IN EITHER DIRECTION FROM CENTER LINE.
B. INSERT BLADE

Figure 6—Blade Insert Set Check

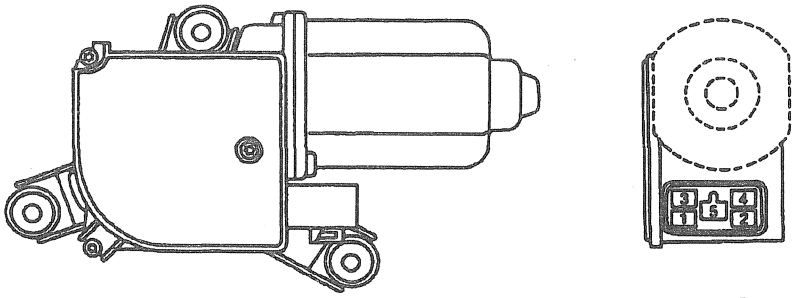
DIAGNOSTIC PROCEDURES

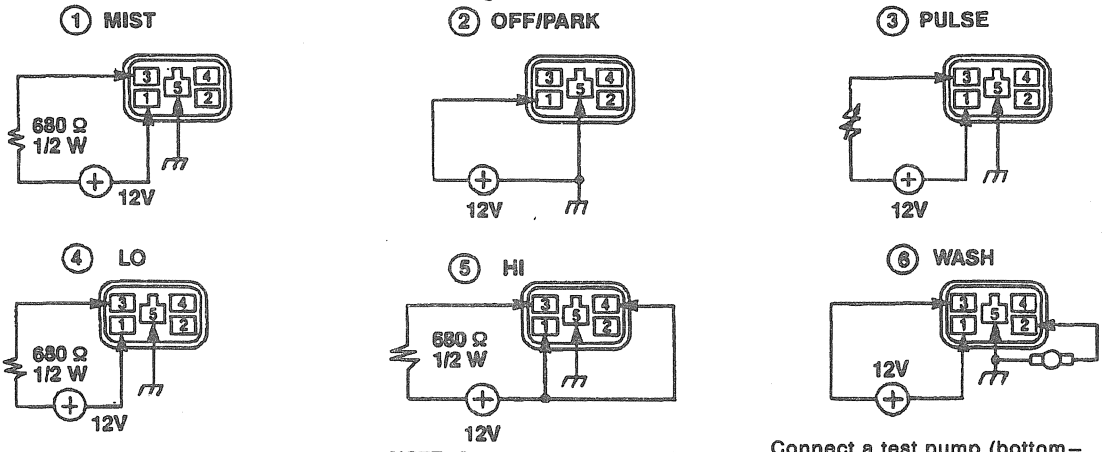
NOTE: The following procedures assume that the technician has checked the following:

1. Continuity of all harness wires
2. Wiper motor-to-cowl mounting screws tight
3. Fuses
4. Washer hoses clear

WIPER MOTOR

CHECK FOR MOTOR OPERATION BEFORE REMOVING FROM VEHICLE. DISCONNECT ALL WIRING FROM WIPER AND PERFORM THE FOLLOWING CHECKS IN THIS ORDER:





NOTE: Connect terminal #3 before connecting terminal #4. Otherwise damage to P.C. board may occur.

Connect a test pump (bottom–bottle–mount type) of proven quality. **Do not use pump off vehicle.** Test washer pump should pulse 9 to 11 times in 15 seconds. Do not hold WASH button longer than this without a 2 minute pause.

1. If wiper motor functions in all above modes, go to Wiper-Washer Switch Tests.
2. If the motor does not function in any of the above checks, see Diagnosis Chart.

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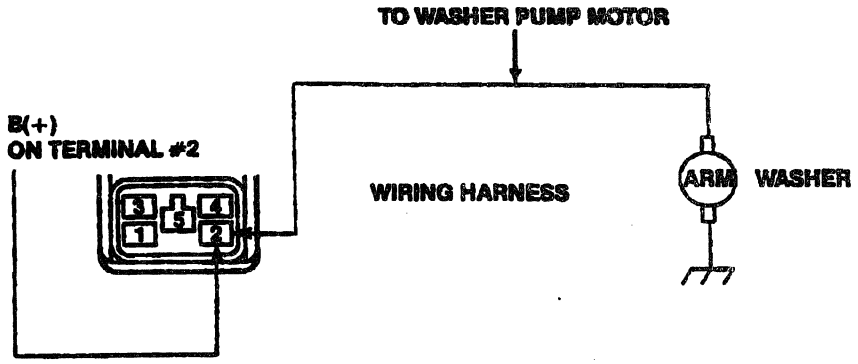
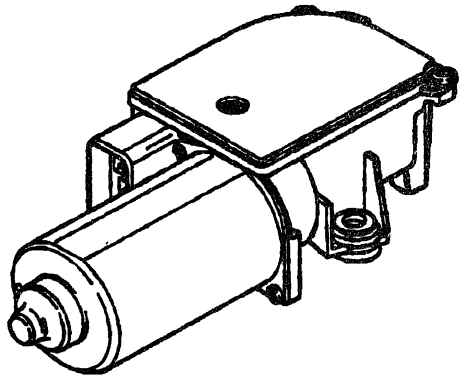
Figure 7—Wiper Motor On-Vehicle Check

DIAGNOSTIC PROCEDURES (CONT'D)

WASHER PUMP

CHECK FOR WASHER PUMP OPERATION BEFORE REMOVING FROM VEHICLE. REMOVE CONNECTOR AND APPLY B(+) TO #2 WIRING HARNESS TERMINAL AS SHOWN.





1. If motor does not run or pump solvent, replace washer pump.
2. If motor runs and pumps solvent, problem is in circuit board, motor park switch or wiper switch. Refer to Wiper-Washer Switch Tests.

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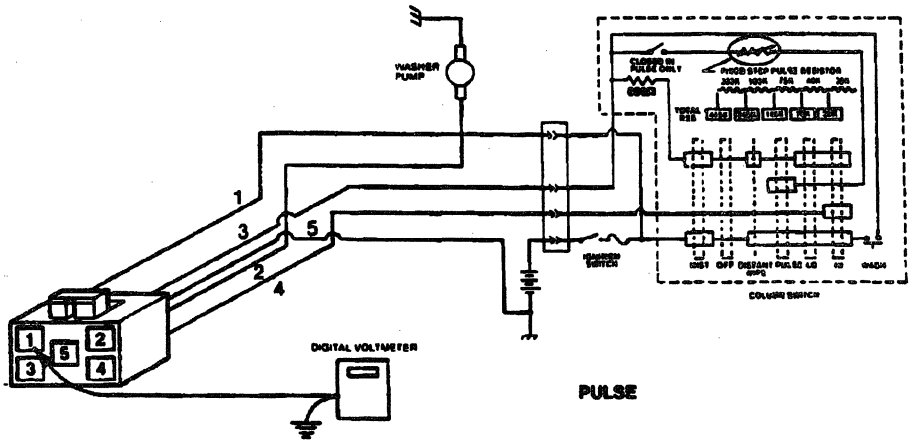
Figure 8—Washer Pump On-Vehicle Check

WIPER-WASHER SWITCH TESTS

Disconnect wiring harnesses from wiper motor and perform the following switch tests using a digital voltmeter and ignition switch on:



TERMINAL / SWITCH MODE		MIST	OFF	PULSE	LO	HI	WASH
PULSE	1	B+	B+	B+	B+	B+	B+
	2	—	—	—	—	—	C
	3	B+	—	B+	B+	C	C
	4	—	—	—	—	C	—
	5	—	—	—	—	—	—

NOTE: All voltage readings taken with respect to vehicle ground.

C = Continuity between terminals

To use Wiper-Washer Switch Check chart, probe terminals 1 thru 5 with digital voltmeter and wiper switch in various positions.

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Figure 9—Wiper/Washer Switch Tests

SYMPTOM	PROCEDURE NO.
1. Pump inoperative—wiper motor operates	1
2. Washer pumps continuously	2
3. Wiper motor inoperative (all modes)	3
4. "Lo" speed only—inoperative in "Hi"	4
5. "Hi" speed only—inoperative in "Lo"	5
6. One speed only—runs the same in both speeds	6
7. Wiper shuts off but blades don't park	7
8. Wiper will not shut off	8
9. Intermittent inoperative	9
10. Wiper motor runs but blades don't move	10
11. Wiper parks above park position	11

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Figure 10—Symptom Diagnosis Chart

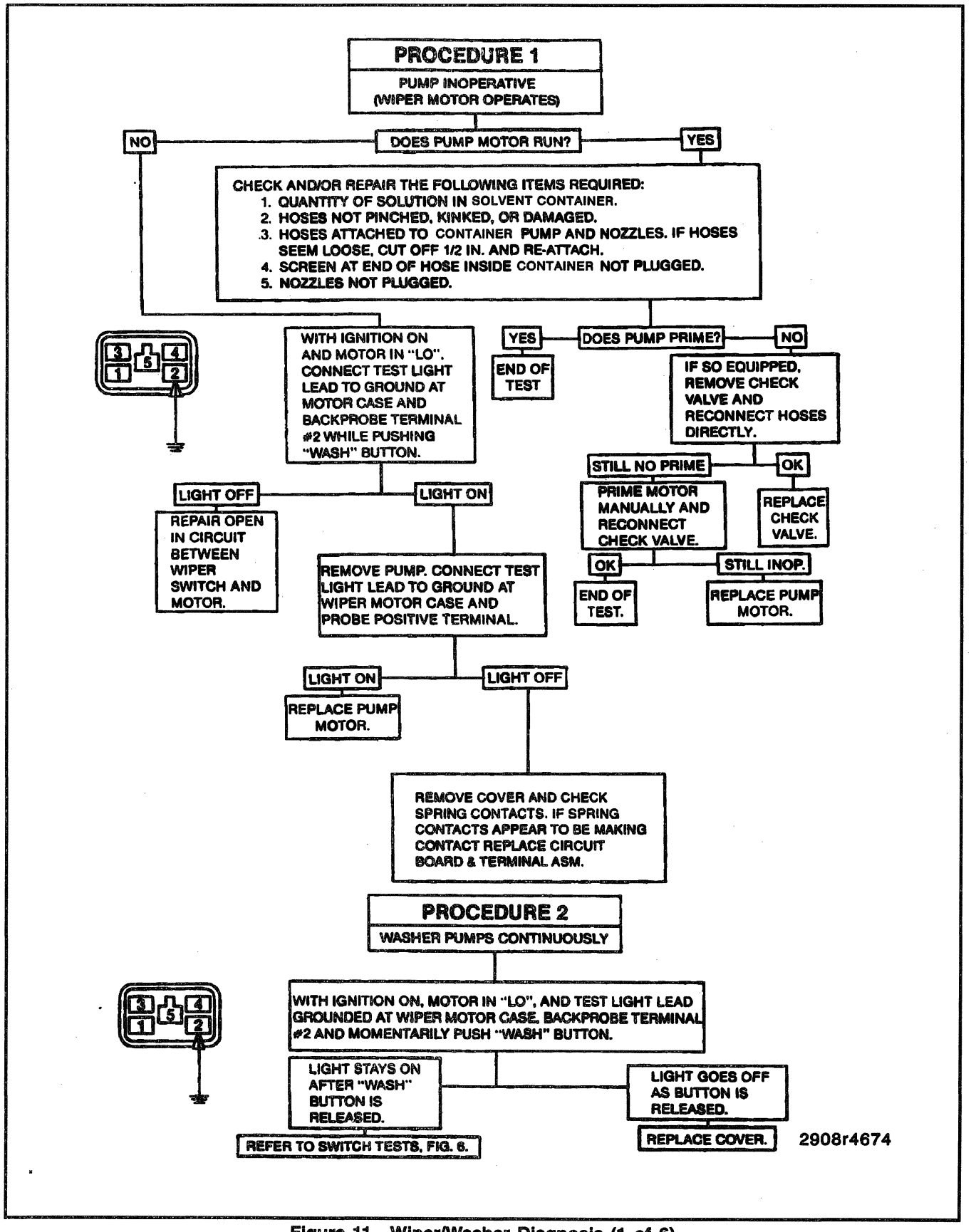

Figure 11—Wiper/Washer Diagnosis (1 of 6)

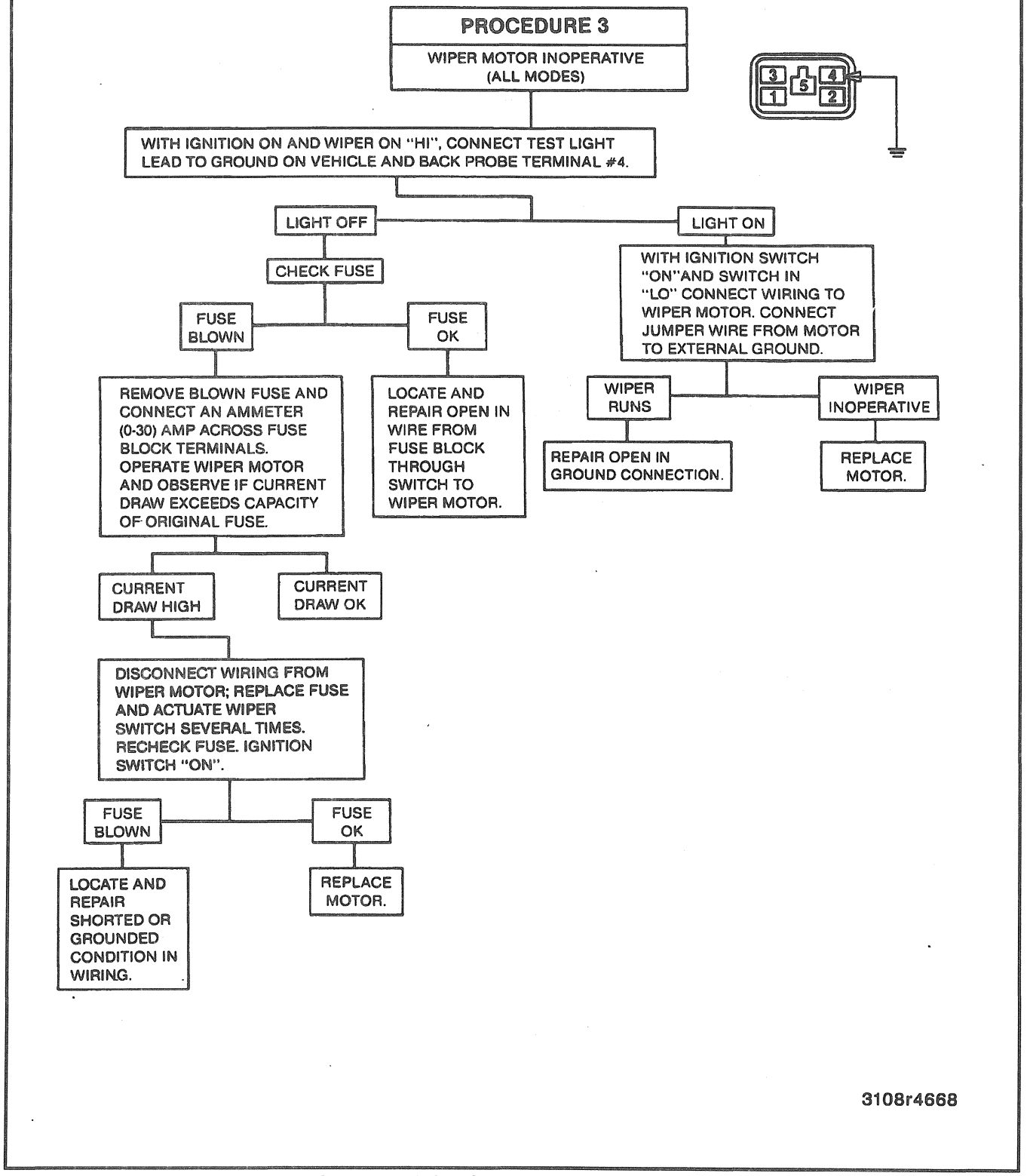

Figure 12—Wiper/Washer Diagnosis (2 of 6)

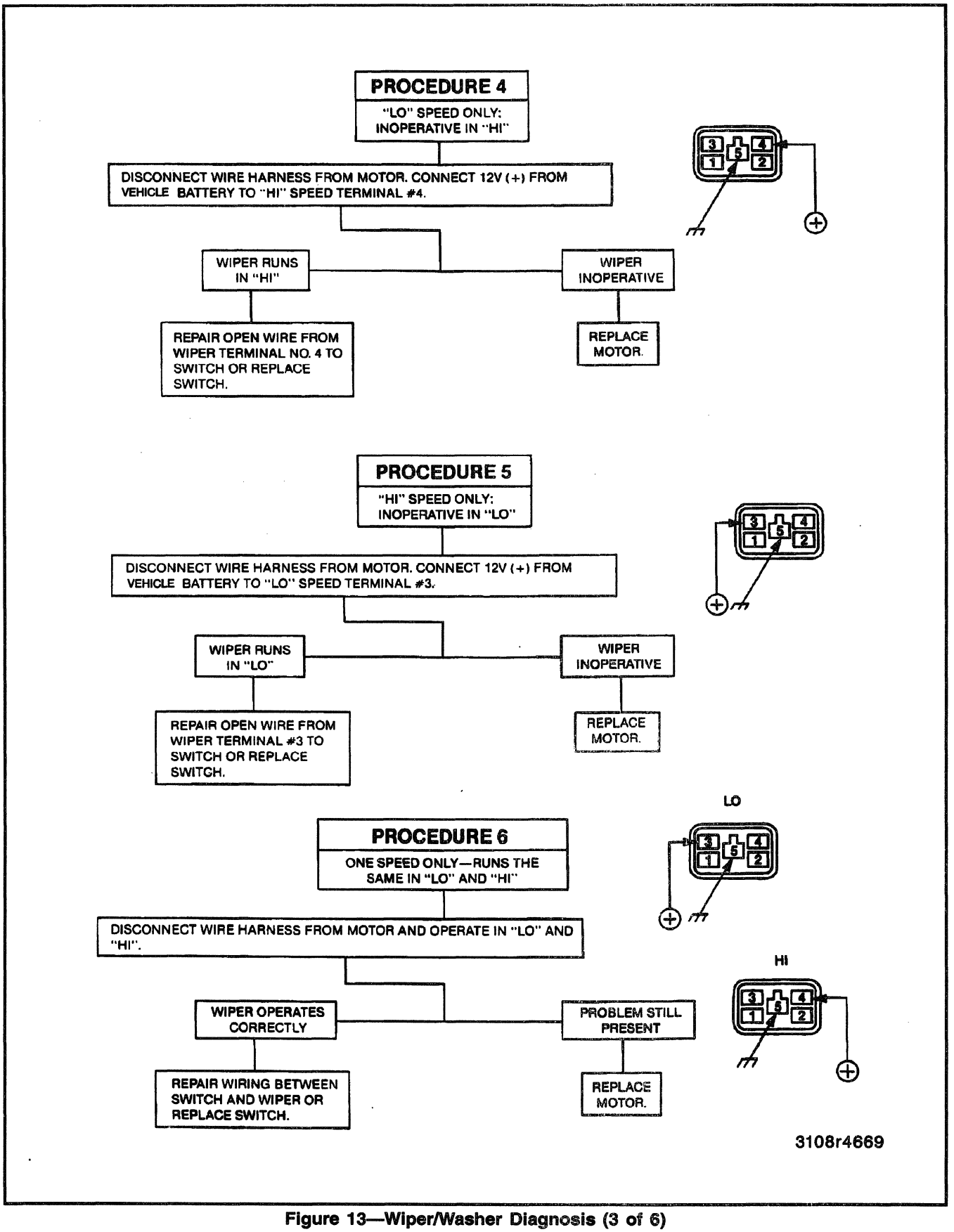

Figure 13—Wiper/Washer Diagnosis (3 of 6)

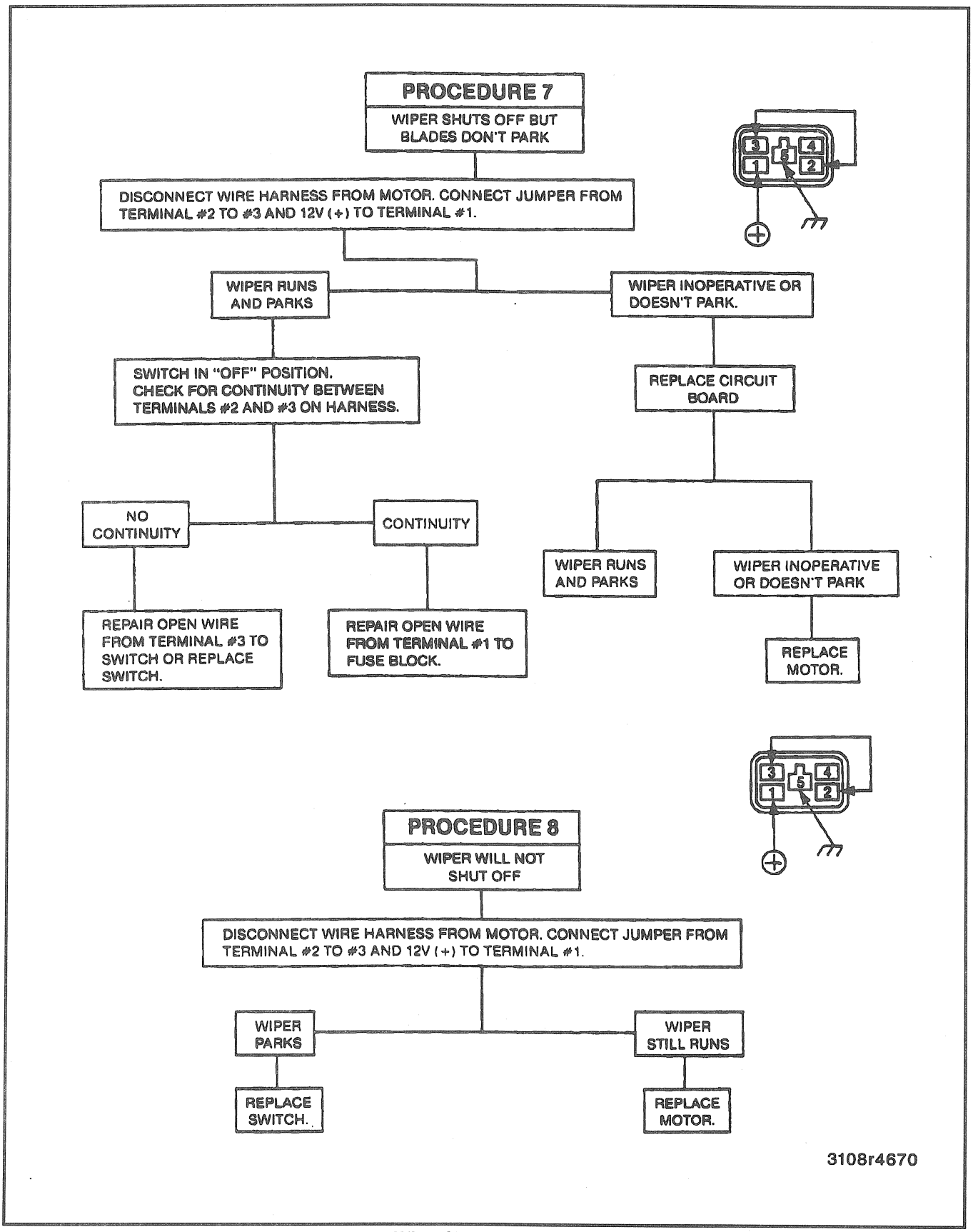

Figure 14—Wiper/Washer Diagnosis (4 of 6)

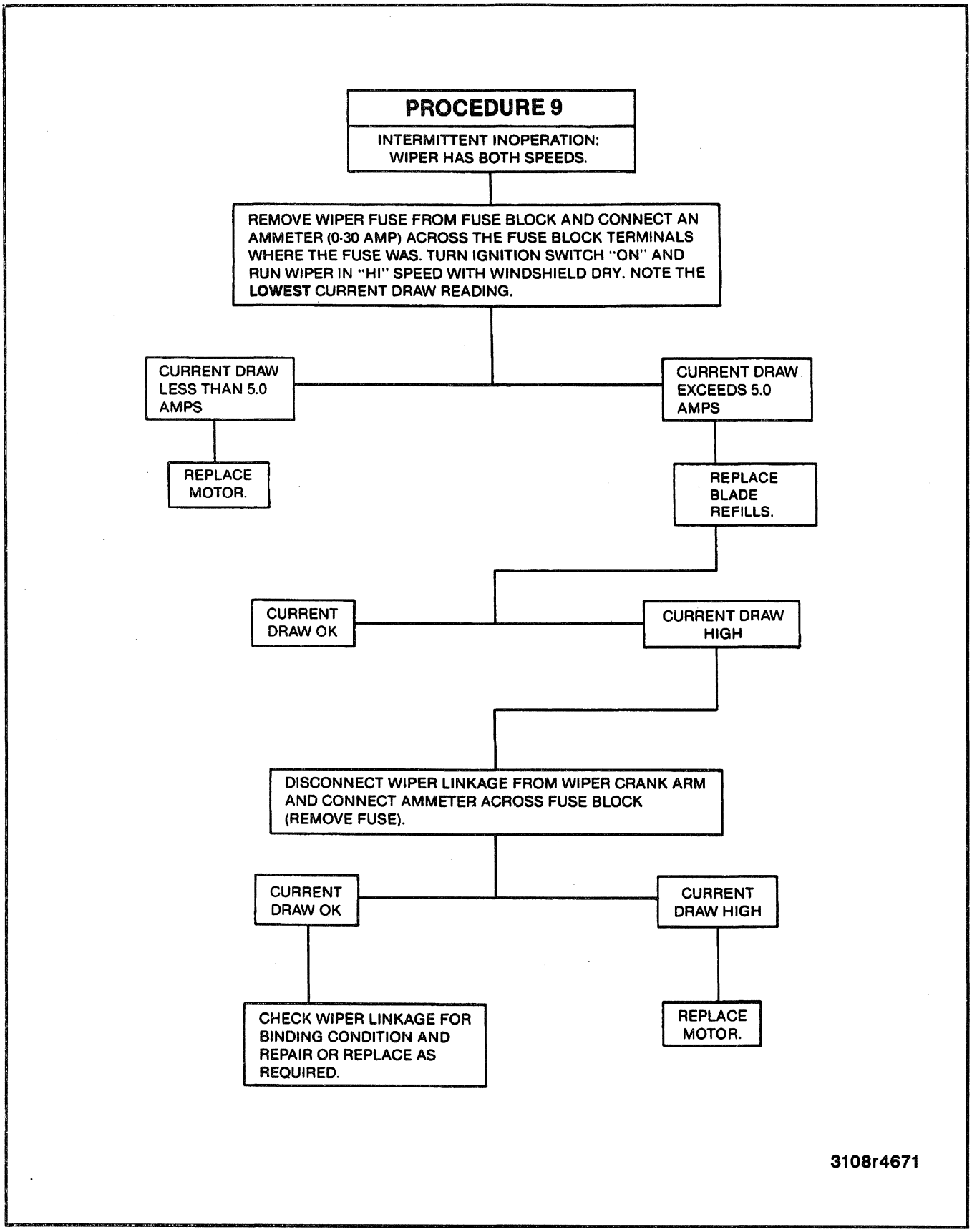

Figure 15—Wiper/Washer Diagnosis (5 of 6)

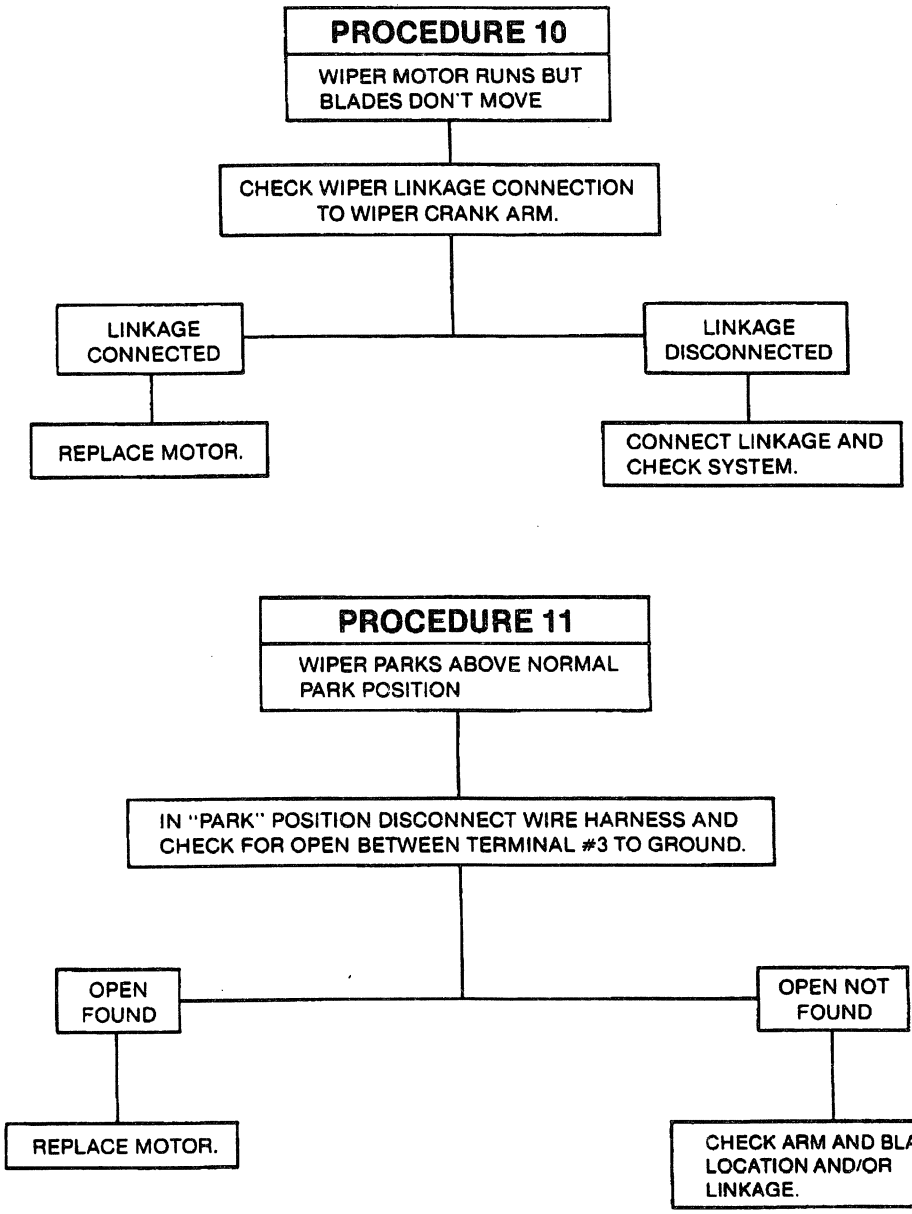

Figure 16—Wiper/Washer Diagnosis (6 of 6)

PULSE WIPER SYSTEM CHECK

ACTION	NORMAL OPERATION
1. Ignition switch in ACCY or RUN. • Hold washer switch ON for 1 to 2 seconds.	1. Washer sprays windshield until switch is released. Wipers run at low speed and continue to run for approximately 6 seconds after washer cycle is complete, then return to park position.
2. Turn wiper switch to DELAY (pulse mode). • Activate delay time by turning wiper switch through delay range.	2. Wipers make one complete sweep, then pause for 0 to 25 seconds before making next sweep.
3. Wiper switch in DELAY. • Push washer switch ON for 1 to 2 seconds.	3. Washers sprays as long as washer switch is held ON. Wipers run at low speed during spray period and continue for approximately 6 seconds after spray cycle. Wipers return to pulse mode.
4. Turn wiper switch to LO.	4. Wipers run continuously at low speed.
5. Turn wiper switch to HI.	5. Wipers run at faster speed.
6. Turn wiper switch to OFF.	6. Wipers return to park position at low speed.
7. Turn wiper switch to MIST, then release.	7. Wipers make one complete sweep at low speed and park. If switch is held in MIST, wipers run continuously at low speed until switch is released.
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ON-VEHICLE SERVICE

WIPER ARM ASSEMBLY REPLACEMENT

Important

- Before removing one or both arm and blade assemblies, use a suitable marker on the windshield to indicate proper park position to aid in reinstallation.

Remove or Disconnect (Figure 17)

1. Washer hose.
2. Lift the wiper arm assembly from windshield, then pull retaining latch.
3. Arm assembly from transmission drive shaft.

Install or Connect (Figure 17)

1. Position wiper arm assembly on the drive shaft so that the wiper blade aligns with the mark made before removal.
   - Seat the arm assembly on the drive shaft, then press in retaining latch.
2. Washer hose.

Inspect Wiper Operation

- Check wipe pattern and blade tip park position.

WIPER BLADE ASSEMBLY AND INSERT REPLACEMENT

Remove or Disconnect (Figure 18)

1. Wiper blade assembly from the arm assembly.
   - Insert a narrow-bladed screwdriver into the slot over the retainer spring. Pivot the screwdriver so that the blade tip presses downward on the retainer spring and release the blade from the pin of the wiper arm assembly.
2. Insert from blade assembly.
   - Squeeze locking tabs together and pull the insert from the blade assembly.

Important

- Insert must be replaced if removed.

Install or Connect (Figure 18)

1. Insert to the blade assembly.
   A. Position retainer at bottom end of blade assembly.
   B. Guide insert through blade assembly, making sure to engage the claw sets along the entire length of the blade.
   C. Insert is fully seated when both locking tabs engage the claw set.
2. Blade assembly to the wiper arm assembly by snapping it into place.

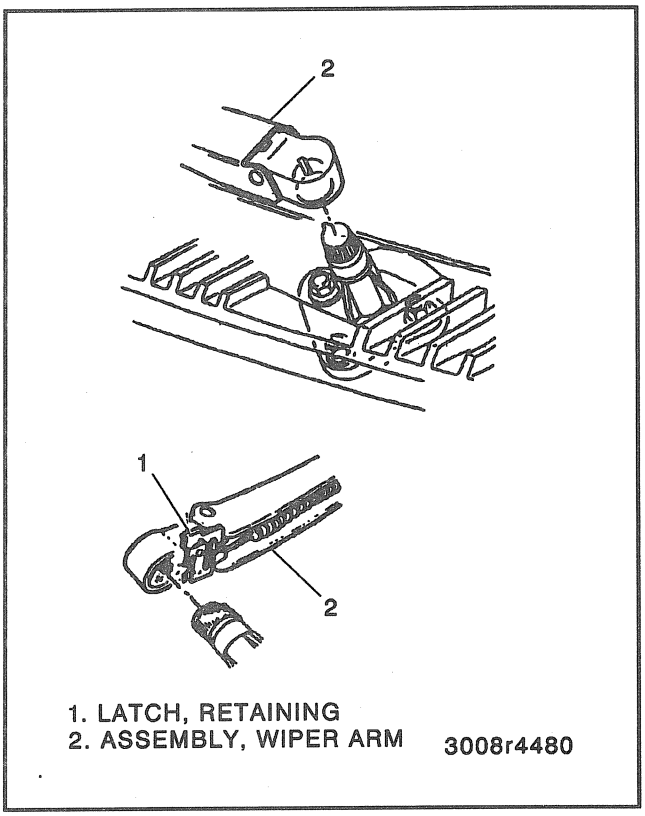


Figure 17—Wiper Arm Attachment

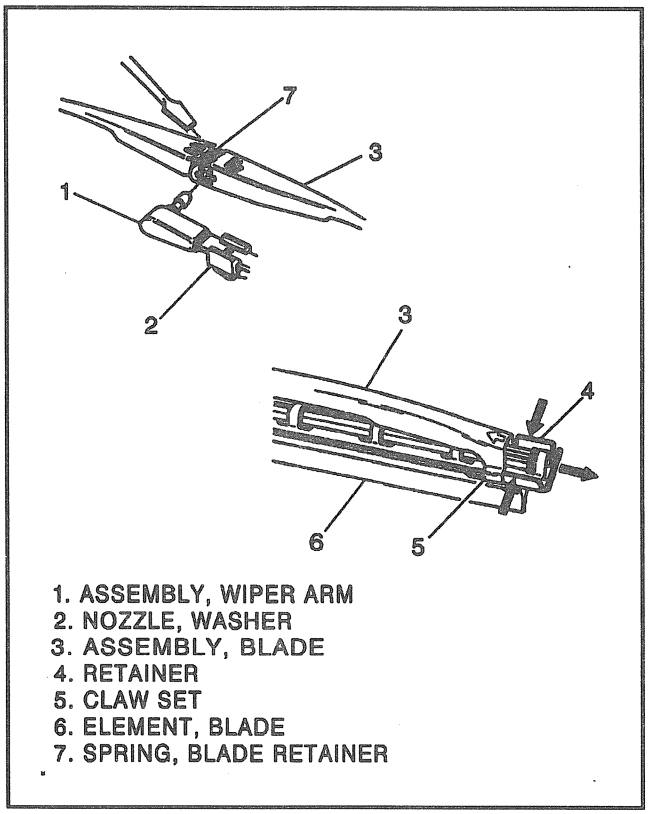


Figure 18—Wiper Blade Assembly and Insert Replacement

CIRCUIT BOARD AND TERMINAL ASSEMBLY REPLACEMENT

Remove or Disconnect (Figure 19)

1. Negative battery cable. Refer to SECTION 0A.
2. Wiper motor electrical connector.
3. Cover screws.
4. Cover.
5. Circuit board and terminal assembly by lifting up on terminal.

Install or Connect (Figure 19)

1. Circuit board and terminal assembly.

NOTICE: Refer to "Notice" on page 8E1-1.

2. Cover and three screws.

Tighten

- Screws to 2.6 N·m (23 lbs. in.).

3. Wiper motor electrical connector.
4. Negative battery cable.

WIPER TRANSMISSION ASSEMBLY REPLACEMENT

Remove or Disconnect (Figure 20)

1. Wiper arm assemblies. Refer to "Wiper Arm Assembly Replacement."
2. Cowl vent grille. Refer to SECTION 2B.
3. Loosen bracket to crank arm nuts.
4. Transmission brackets from the wiper motor crank arm.
5. Transmission to cowl bolts.
   - Note the position of the right and left transmission links for reassembly.
6. Transmission assembly from the vehicle.

Install or Connect (Figure 20)

NOTICE: For steps 2 and 4, refer to "Notice" on page 8E1-1.

1. Wiper transmission assembly to the vehicle.
2. Transmission to cowl bolts.

Tighten

- Bolts to 7 N·m (62 lbs. in.).

3. Transmission brackets to the wiper motor crank arm.

1. SCREW, 2.6 N·m (23 LBS. IN.)
2. COVER
3. ASSEMBLY, CIRCUIT BOARD AND TERMINAL

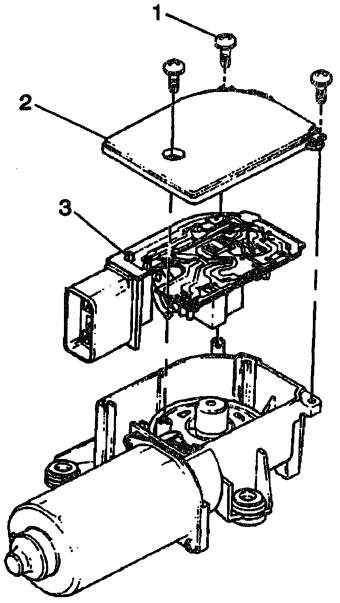


Figure 19—Circuit Board and Terminal Assembly Replacement

Tighten

- Drive link nuts to 5 N·m (44 lbs. in.).

4. Cowl vent grille. Refer to SECTION 2B.
5. Wiper arm assemblies. Refer to "Wiper Arm Assembly Replacement."

WIPER MOTOR ASSEMBLY REPLACEMENT

Remove or Disconnect (Figures 17 and 20)

1. Negative battery cable. Refer to SECTION 0A.
2. Wiper arm assemblies.
   - Lift the wiper arm into the servicing position, and move the latch into the open position before removing the wiper arm (figure 17).
3. Cowl vent grille. Refer to SECTION 2B.
4. Electrical connector from the motor assembly.
5. Drive link brackets from the wiper motor crank arm. DO NOT REMOVE THE CRANK ARM.
   - Loosen the nuts and slide the brackets off the crank arm.
6. Wiper motor screws and wiper motor assembly from the vehicle.

Install or Connect (Figures 17 and 20)

NOTICE: For steps 2 and 3, refer to "Notice" on page 8E1-1.

39. SCREWS, 7 N m (62 LBS. IN.)
40. ASSEMBLY, WIPER MOTOR
41. NUT, 5 N m (44 LBS. IN.)
42. BRACKET
43. ASSEMBLY, TRANSMISSION
44. BOLT, 7 N·m (62 LBS. IN.)

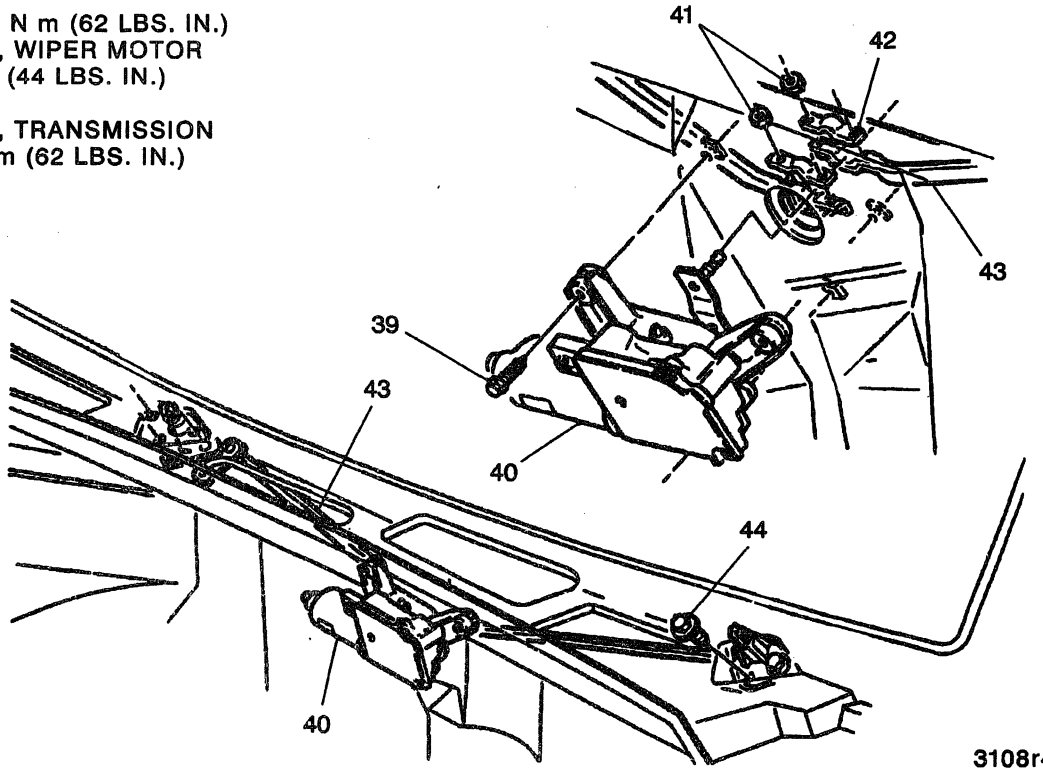


Figure 20—Wiper Transmission and Motor Assembly Replacement

1. Wiper motor assembly to the vehicle.
2. Wiper motor screws.

Tighten

- Screws to 7 N·m (62 lbs. in.).

3. Drive link brackets to the wiper motor crank arm.
   - Assemble the brackets in the order shown in figure 20. (Right side linkage closest to the wiper motor).

Tighten

- Drive link nuts to 5 N·m (44 lbs. in.).

4. Electrical connector to the wiper motor.
5. Cowl vent grille. Refer to SECTION 2B.
6. Wiper arm assemblies.
   - Place the wiper arms on the transmission drive shafts and lock them into place with the latch (figure 17).
7. Negative battery cable.

WIPER/WASHER SWITCH ASSEMBLY REPLACEMENT

The wiper/washer switch assembly is part of the steering column assembly. For replacement procedures, refer to SECTION 3F.

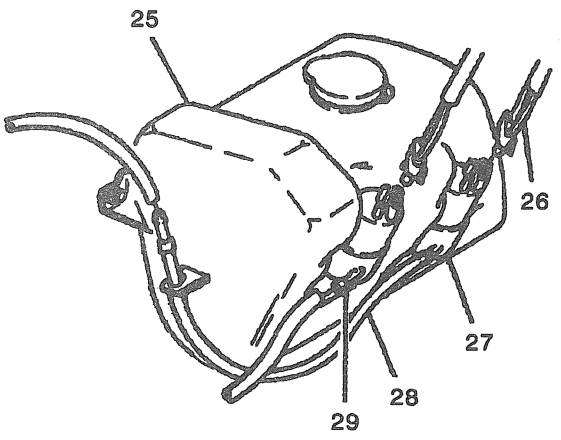
WASHER SOLVENT CONTAINER AND PUMP REPLACEMENT

Remove or Disconnect (Figure 21)

1. Negative battery cable. Refer to SECTION 0A.
2. Electrical connectors from both washer pumps (if equipped).
3. Hose(s) from washer pump connectors.
4. Solvent container bolts.
5. Container from the vehicle.
6. Washer pump(s) from the container.

Install or Connect (Figure 21)

1. Washer pump(s) to the solvent container.
   - Make sure washer pump(s) are pushed all the way into the container seals.



25. CONTAINER, SOLVENT
26. CONNECTOR
27. PUMP, REAR WASHER
28. HOSE
29. PUMP, FRONT WASHER

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Figure 21—Washer System Components

2. Solvent container to the vehicle.

NOTICE: Refer to "Notice" on page 8E1-1.

3. Container bolts.

Tighten

- Container bolts to 12 N·m (106 lbs. in.).

4. Washer hose(s) to pump connectors.
5. Electrical connectors to both washer pumps (if equipped).
6. Negative battery cable.

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

ITEM	N·m	Lbs. In.
Container Bolts	12	106
Circuit Board and Terminal Assembly Cover Screws	2.6	23
Transmission Assembly Drive Link Nuts	5	44
Transmission to Cowl Bolts	7	62
Wiper Motor to Cowl Screws	7	62

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BLANK

SECTION 8E2

REAR WINDOW WIPER/WASHER SYSTEM

CAUTION: On vehicles equipped with Supplemental Inflatable Restraint (SIR), refer to CAUTIONS in Section 9J under "ON-VEHICLE SERVICE" and the SIR Component and Wiring Location view in Section 9J before performing service on or around SIR components or wiring. Failure to follow CAUTIONS could result in possible air bag deployment, personal injury, or otherwise unneeded SIR system repairs.

NOTICE: Always use the correct fastener in the proper location. When you replace a fastener, use ONLY the exact part number for that application. General Motors will call out those fasteners that require a replacement after removal. General Motors will also call out the fasteners that require thread lockers or thread sealant. UNLESS OTHERWISE SPECIFIED, do not use supplemental coatings (paint, grease, or other corrosion inhibitors) on threaded fasteners or fastener joint interfaces. Generally, such coatings adversely affect the fastener torque and the joint clamping force, and may damage the fastener. When you install fasteners, use the correct tightening sequence and specifications. Following these instructions can help you avoid damage to parts and systems.

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GENERAL DESCRIPTION

REAR WINDOW WIPER/ WASHER SYSTEM

The rear window wiper/washer system has a one-speed, permanent magnet, depressed-park wiper motor assembly with a pulse (delay) mode (Figure 1). The wiper motor assembly drives a gear box, that in turn drives a wiper pivot that provides an oscillating output to the arm and blade.

A controller assembly is retained by the wiper motor bracket and is the only replaceable wiper motor component. The controller's printed circuit board controls all wiper motor functions as determined by the position of the wiper/washer switch (Figure 2).

SYSTEM OPERATION

The system operates only when the ignition switch is in the "RUN" or "ACCY" position. There are four electrical terminals on the controller assembly of the wiper motor assembly (Figures 3 and 4).

When the wiper switch is turned on, battery voltage is applied to terminal B of the controller. The motor and controller are grounded at terminal A. If the delay button is pressed, battery voltage is applied to terminals B and D at the controller. The operation of the wiper motor will be pulsed, with about 9 seconds between each wiper sweep.

When the wiper switch is turned off, only terminals

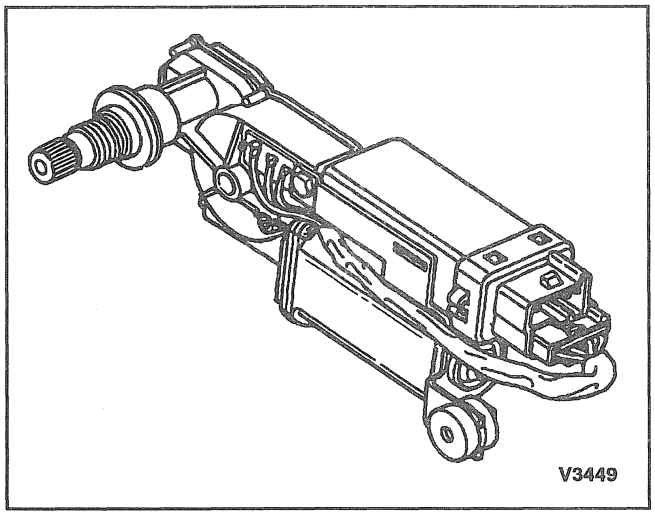

Figure 1-Wiper Motor Assembly

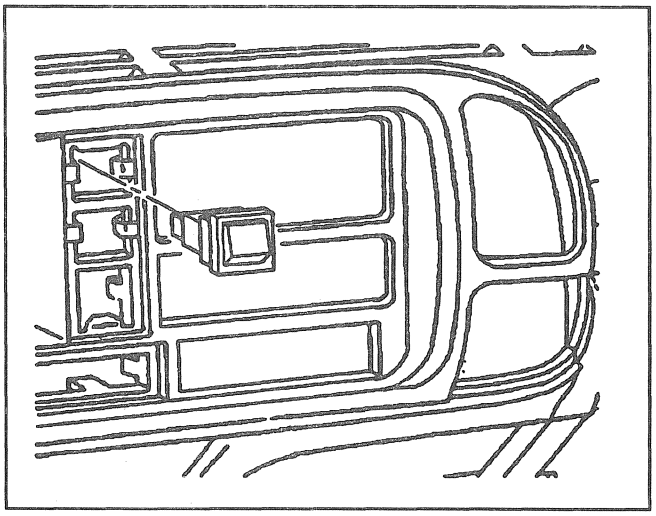

Figure 2-Wiper/Washer Switch Assembly

A and D are used. Terminal D remains battery positive and the circuit is completed through terminal A and the closed park switch terminals. A cam on the wiper motor gear then opens at the park position and the wiper motor turns off.

CONTAINER-MOUNTED WASHER SYSTEM

The rear washer pump and solvent container mounts to the left fender, inside the engine compartment. The rear window wiper/washer will always run out of solvent before the windshield wiper/washer does. If the rear washer fails to operate, try washing the windshield. If you are able to wash the windshield and not the rear window, try filling the solvent container.

The washer hose routes from the solvent container, along the inside of the left frame rail to the rear of the vehicle (Figure 5). A one-way check valve between the washer pump motor assembly and the washer hose harness allows fluid flow toward the washer nozzle only. A second check valve is behind the rear bumper, where the hose continues up the right side of the door opening frame, across the vehicle to the rear window wiper motor assembly (Figure 6).

Depressing the wash button while the wiper motor operates in either "DELAY" or "ON" completes the washer motor's circuit to ground, energizing the motor and operating the washer pump. The pump operates only while the wash button is held. When the button is released, approximately 3 wipes are made without washing activity before the wiper motor turns off.

A "demand" wash will be performed if the wash button is pressed with the wiper/washer switch in the "OFF" position. The wash action will last until the wash button is released, followed by approximately 3 wipes without washing activity before the wiper motor turns off.

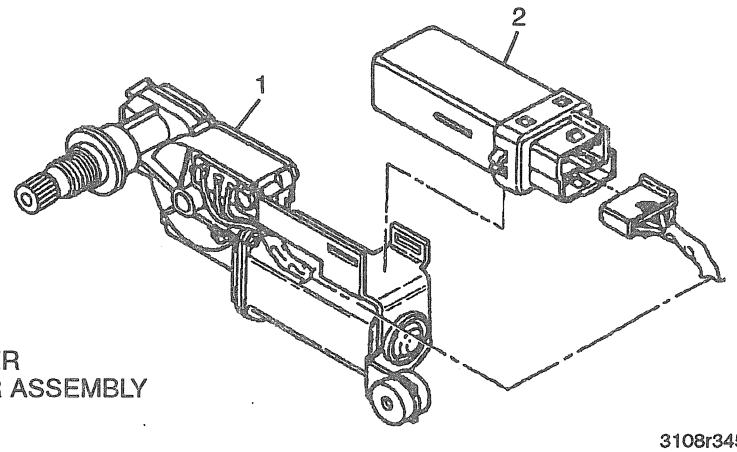

Figure 3-Wiper Motor Assembly Components

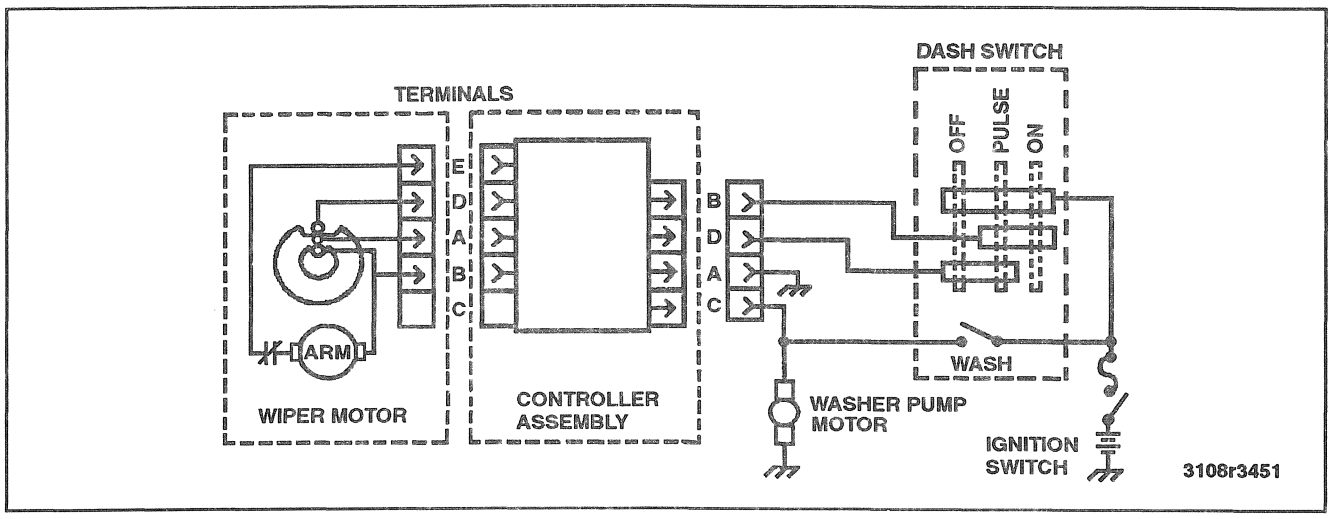

Figure 4-Wiper/Washer Motor Circuit Diagram

DIAGNOSIS OF THE REAR WINDOW WIPER/WASHER SYSTEM

Always perform the System Check first as a guide to normal operation, then verify that power and ground are at the correct wiper motor terminals. Refer to "Wiper/Washer Switch Test." The wiper motor and controller assemblies cannot be repaired. If diagnosis leads to a faulty motor or controller, replace them. The Driveability, Emissions, and Electrical Diagnosis manual for these vehicles provides circuit diagrams and harness diagnosis.

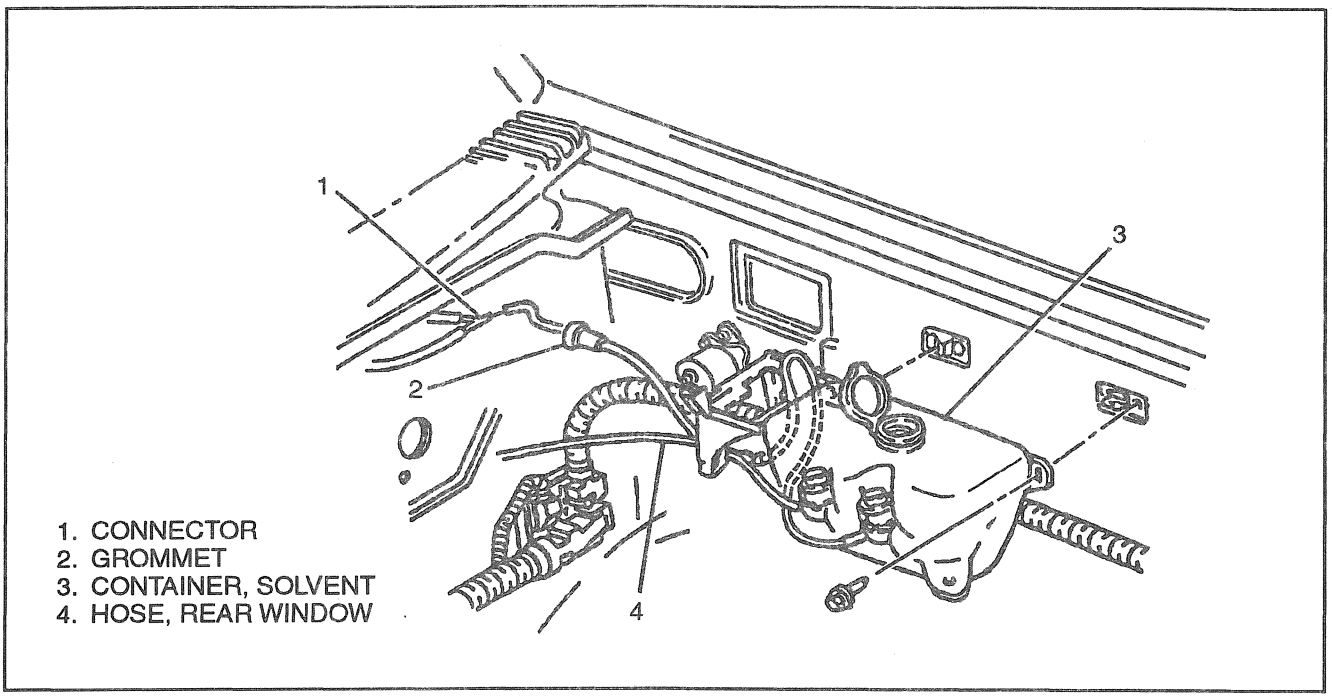

Figure 5-Washer Hose Routing (Front)

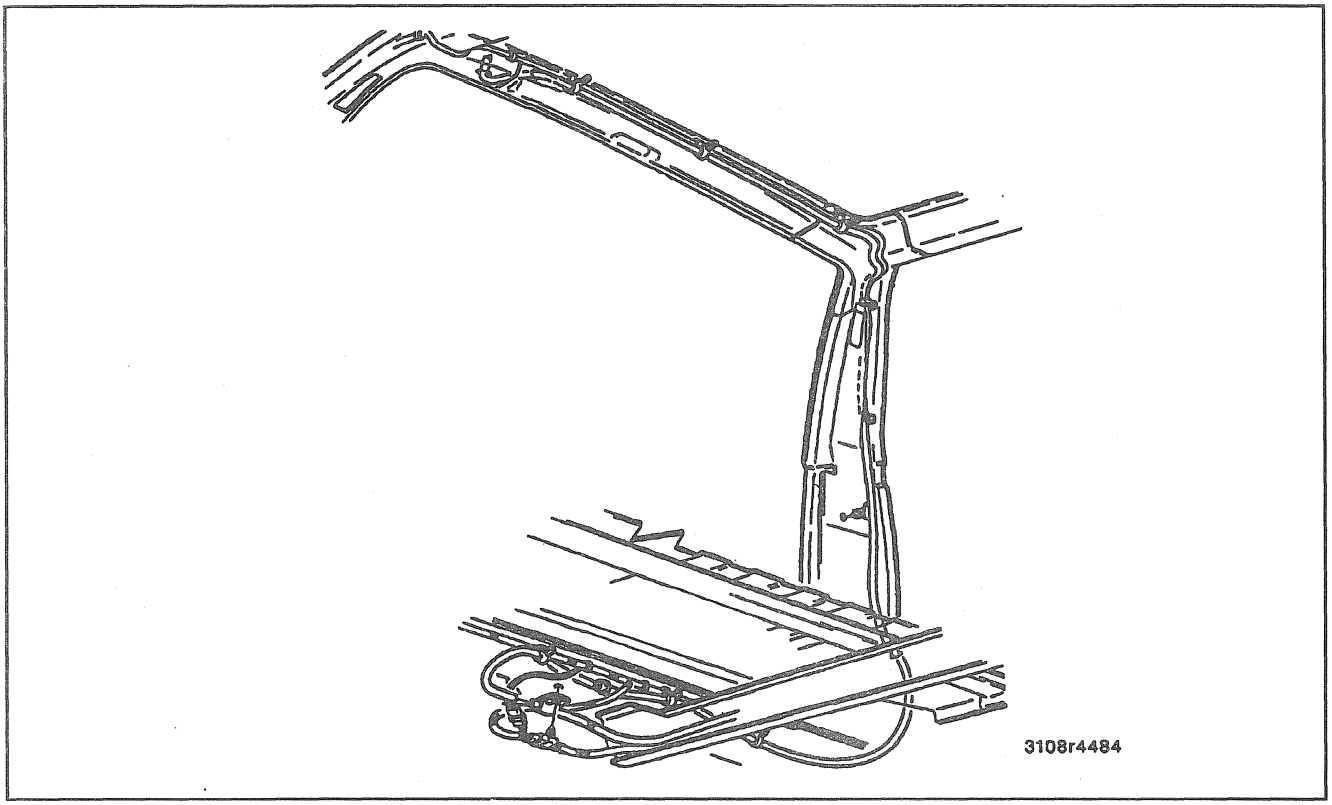

Figure 6-Washer Hose Routing (Rear)

SYSTEM CHECK

ACTION	NORMAL OPERATION
1. Slide the rear window wiper switch to the middle position.	Wiper operates in delay mode. A wipe is performed approximately every 9 seconds.
2. Slide the rear window wiper switch all the way to the right.	Wiper operates at a constant speed.
3. With wiper running, push wiper switch in.	Washer fluid sprays back window until switch is released. Wiper continues to operate.
4. Slide the rear window wiper switch all the way to the left.	Wiper returns to park position.
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WIPER/WASHER SWITCH TEST

TERMINAL	OFF	DELAY	RUN	WASH
A	0 VOLTS/CONTINUITY TO GROUND			
B	—	B+	B+	—
C	—	—	—	B+
D	B+	B+	—	—

ON-VEHICLE SERVICE

WIPER ARM ASSEMBLY REPLACEMENT

Remove or Disconnect (Figure 7)

1. Washer hose.
2. Lift the wiper arm assembly from the glass and pull the retaining latch.
3. Wiper arm assembly from the wiper motor driveshaft.

Install or Connect (Figure 7)

1. Wiper arm assembly with the wiper motor in the park position.
   A. Install the head of the wiper arm assembly onto the serrated wiper motor driveshaft in a position where the blade will rest in a proper parked position (blade parallel to the edge of the glass).
   B. Lift the wiper arm extension and push in the retaining latch when the head is fully seated onto the driveshaft.
2. Washer hose, engaging the hose grommet in the liftglass hole.

WIPER BLADE ASSEMBLY REPLACEMENT

Remove or Disconnect (Figure 7)

1. Wiper blade assembly.
   A. Insert a screwdriver into the blade retainer slot over the spring.
   B. Pivot the screwdriver so the blade tip presses downward on the retainer spring, releasing the pin of the wiper arm.

Important

- Protect the glass when removing the wiperblade assembly.

Install or Connect (Figure 7)

1. Wiper blade assembly by pressing the pin of the wiper arm assembly into the blade retainer until the pin is engaged.

WIPER BLADE ELEMENT REPLACEMENT

Remove or Disconnect (Figure 7)

1. Wiper blade element by squeezing the element retainer tabs together, then pull the blade element out.

Install or Connect (Figure 7)

1. Insert the blade element until its retainer is engaged by the outer claw set.

Important

- Make sure the blade element is secure in all claw sets.

2. Check the wipe pattern and compare it to Figure 7.

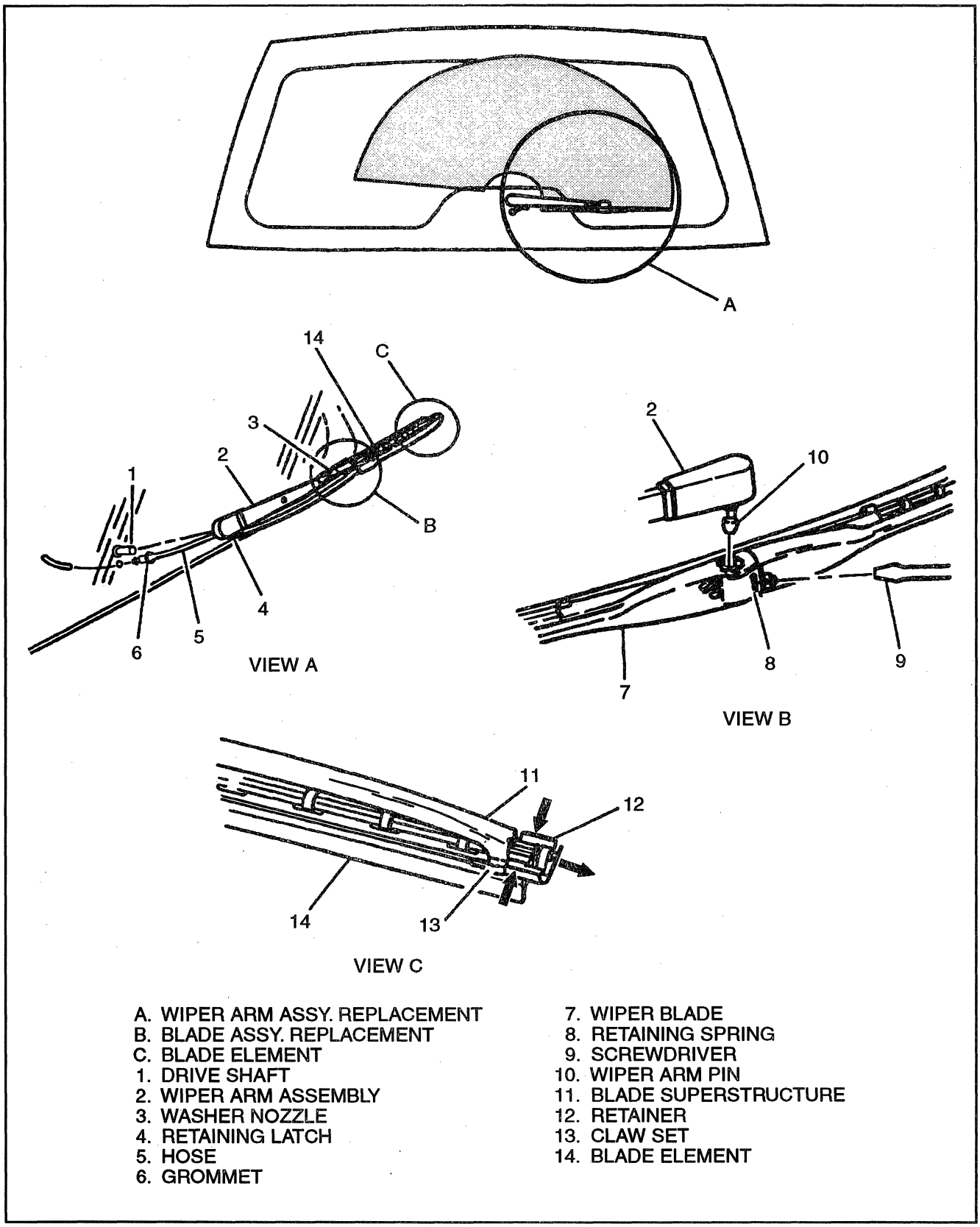
CONTROLLER ASSEMBLY REPLACEMENT

Remove or Disconnect (Figures 3 and 8)

1. Wiper motor assembly. Refer to "Wiper Motor Assembly Replacement."
2. Cover from the wiper motor.
   A. Push retainer pin completely out of retainer into cover using a small pin punch. There are four retainers.
   B. Remove four retainers and cover. Retainers should remove easily from cover.
   C. Retrieve retainer pins from cover.
3. Electrical connectors.
4. Use a screwdriver to pry the locking tabs of the controller assembly free from the slots in the wiper motor bracket.

Install or Connect (Figures 3 and 8)

1. Press the controller assembly into the wiper motor bracket so the locking tabs engage both bracket slots.
2. Electrical connectors.
3. Cover to the wiper motor.
   A. Install cover on wiper motor.
   B. Install four retainers in cover.
   C. Push four pins into retainers until top surface of pin is flush with top of retainer.
4. Wiper motor assembly to the vehicle. Refer to "Wiper Motor Assembly Replacement."



A. WIPER ARM ASSY. REPLACEMENT
B. BLADE ASSY. REPLACEMENT
C. BLADE ELEMENT
1. DRIVE SHAFT
2. WIPER ARM ASSEMBLY
3. WASHER NOZZLE
4. RETAINING LATCH
5. HOSE
6. GROMMET
7. WIPER BLADE
8. RETAINING SPRING
9. SCREWDRIVER
10. WIPER ARM PIN
11. BLADE SUPERSTRUCTURE
12. RETAINER
13. CLAW SET
14. BLADE ELEMENT

Figure 7-Wiper Arm Assembly, Blade, and Element Replacement

A. PIN, RETAINER
1. MOTOR ASSEMBLY
2. COVER, WIPER MOTOR
3. RETAINER, WIPER MOTOR COVER
4. BOLT
5. CONNECTOR, WIPER HARNESS
6. RETAINER, WIPER MOTOR
7. NUT, 6 N•m (53 LBS. IN.)
8. WASHER
9. SPACER, WIPER MOTOR
10. NUT, 6 N•m (53 LBS. IN.)

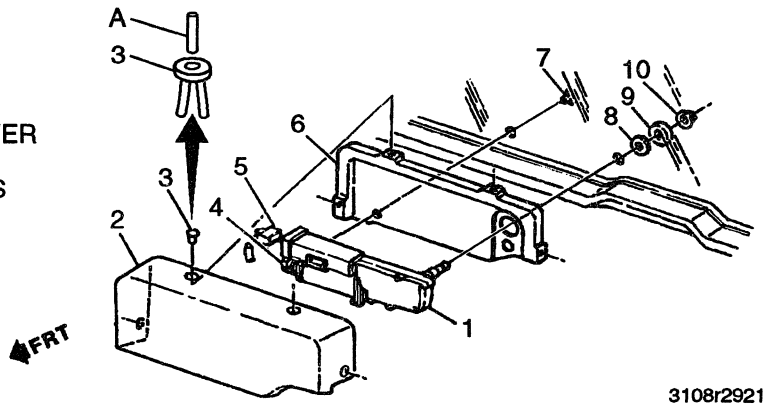


Figure 8-Wiper Motor Assembly Replacement

WIPER MOTOR ASSEMBLY REPLACEMENT

Remove or Disconnect (Figure 8)

1. Negative battery cable. Refer to SECTION 6D1.
2. Wiper arm assembly. Refer to "Wiper Arm Assembly Replacement."
3. Cover from the wiper motor.
   A. Push retainer pin completely out of retainer into cover using a small pin punch. There are four retainers.
   B. Remove four retainers and cover. Retainers should remove easily from cover.
   C. Retrieve retainer pins from cover.
4. Electrical connectors.
5. Bolt from the wiper motor.
6. Nut, spacer, and washer.
7. Nut.
8. Wiper motor assembly from the vehicle.

Install or Connect (Figure 8)

1. Wiper motor assembly to the vehicle.
2. Washer, spacer, and nut to the right side of the motor assembly.
3. Nut to the left side of the motor assembly.

NOTICE: Refer to "Notice" on page 8E2-1.

4. Bolt to the wiper motor.

Tighten

- Nut to 6 N•m (53 lb. in.).

5. Electrical connector.
6. Cover to the wiper motor.
   A. Install cover on wiper motor.
   B. Install four retainers in cover.
   C. Push four pins into retainers until top surface of pin is flush with top of retainer.
7. Wiper arm assembly. Refer to "Wiper Arm Assembly Replacement."
8. Negative battery cable.

WIPER/WASHER SWITCH ASSEMBLY REPLACEMENT

Refer to "Rear Wiper/Washer (Accessory) Switch Replacement" in SECTION 8C.

WASHER PUMP REPLACEMENT

Remove or Disconnect (Figure 9)

1. Negative battery cable. Refer to SECTION 6D1.
2. Electrical connector and washer hose.
3. Washer pump from the solvent container.

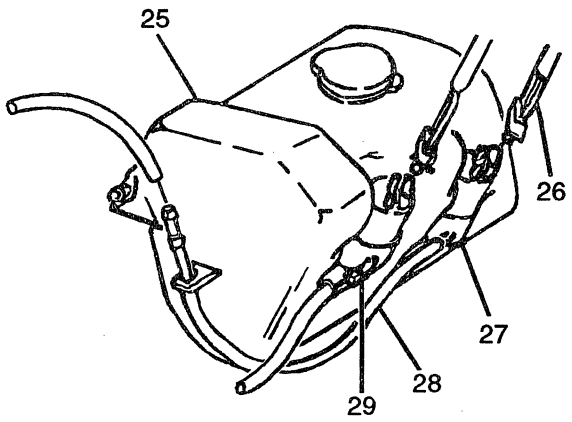
Install or Connect (Figure 9)

1. Washer pump into the solvent container.

Important

- Make sure the new washer pump is pushed all the way into the container seal.

2. Electrical connector and washer hose.
3. Negative battery cable.



25. CONTAINER, SOLVENT
26. CONNECTOR
27. PUMP, REAR WASHER
28. HOSE
29. PUMP, FRONT WASHER

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Figure 9-Washer System Components

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Item	N•m	Lb. In.
Wiper Motor Mounting Bolt	6	53
Wiper Motor Mounting Nut	6	53

T3108