

2 BODY AND INTERIOR

9. Air Conditioning	42
9.1 System Description	42
Safety Features	43
9.2 Inspections and Tests	43
Checking Refrigerant Charge	43
9.3 Air Conditioning Specifications	43

TABLES

a. Central Locking System Locking Drive Identification ..	28
b. Air Conditioning Specifications	43

Body and Interior

Introduction

The BMW 318 and 325 have unit construction steel bodies that are exceptionally strong and light. Their lightness contributes greatly to the outstanding performance and fuel economy of the cars. Because very few screws and bolts are used in assembling the body, fewer rattles are likely to develop. The ride is quieted further by the application of sound-dampening material to the floor plates and the body panels.

During manufacture, the various body panels, subassemblies, and a number of smaller pressed-steel panels and plates are joined by electric welding. Although all body panels are available as replacement parts, most of these replacement panels must be butt-welded to the body after the damaged panels have been cut away. This work should be left to an experienced body repair technician.

The front fenders, however, are bolted to the main body structure and can be easily and economically replaced in the event of damage. The hood, the grille, the doors, and the trunk lid are also removable. These bolt-on components are easily replaced even if you have little or no knowledge of auto body repair.

Also covered in this section is the ventilation and heating system. Electrical repairs to the instrument cluster, including the gauges and lights, are covered in **ELECTRICAL SYSTEM**. Care of the body, trim, upholstery, and windows is described in **LUBRICATION AND MAINTENANCE**.

If you lack the skills, special equipment, or a suitable workshop for extensive body repairs, we suggest that you leave this work to an authorized BMW dealer or other qualified repair shop. We especially urge you to consult a BMW dealer before beginning repairs on a vehicle that may be subject to BMW's warranty coverage.

4 BODY AND INTERIOR

1. GENERAL DESCRIPTION

1.1 Instrument Panel and Instrument Cluster

The padded instrument panel houses the instrument cluster and the ventilation and heating system. It is fastened to the body and can be removed using ordinary hand tools. The instrument cluster is removable as a unit without removing the instrument panel. All electrical repairs to the instrument cluster are covered in **ELECTRICAL SYSTEM**.

1.2 Seats, Seat Belts, and Interior

The front seats are mounted to the floor. Rear seats are bolted to the body and are easily removed for access to the rear seat belt mountings. The seat belts are typical three-point belts that cross the hips and the shoulder. All interior trim is easily removed using ordinary hand tools.

1.3 Ventilation, Heating, and Air Conditioning

Fresh air continuously enters the car at the air intake, located at the base of the windshield in the body cowl. Interior air exits through vents located in the side panels of the luggage compartment and through slots at the base of the rear window. The incoming air can be either heated or cooled as it flows through the integrated heating and air-conditioning system contained in the heater box located behind the instrument panel. A fresh air blower assists air flow.

The heating system is a blend system with controlled coolant flow through the heater core. In a blend system, temperature is regulated by a blending flap. See Fig. 1-1. The flap controls the amount of fresh air that passes through the heater core before it enters the passenger compartment. Coolant flow through the heater core is regulated by an solenoid valve that is controlled by the dash-mounted temperature control. Air flow to the windshield and to the footwells of the passenger compartment is controlled by two additional flaps in the heater box.

On cars with air conditioning, the fresh air can first be cooled and dehumidified by the evaporator. A portion of the air can then be directed by the blending flap through the heater core to maintain the desired temperature. In very hot conditions the interior air can be recirculated for maximum cooling.

1.4 Body

The body is of welded, unitized construction, meaning it does not have a separate frame. This design forms a very rigid passenger compartment, with large crumple zones in the front and rear for energy absorption in the event of a collision.

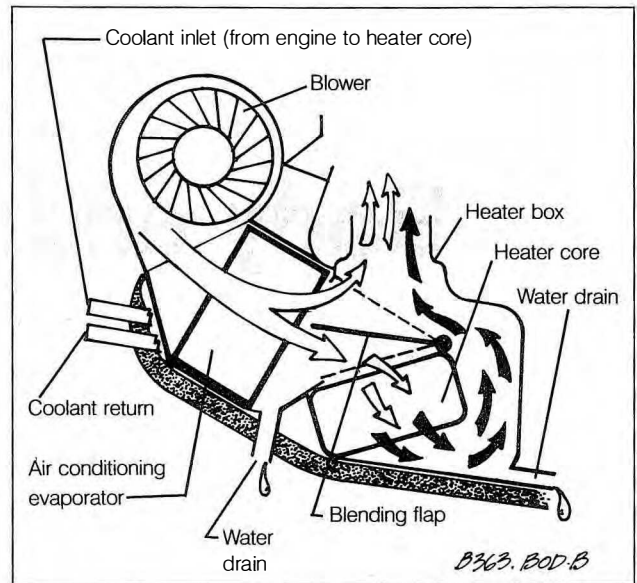


Fig. 1-1. Schematic view of heating and air conditioning system.

For corrosion protection, all steel is treated and has a multi-layer finish. The body seams are then sealed using a PVC compound. The front fenders are flanged to allow trapped moisture to evaporate. The body is undercoated and all interior cavities are flooded with a rust preventative sealant.

2. MAINTENANCE

BMW specifies the maintenance steps below to be carried out at particular time or mileage intervals for proper maintenance of body and interior components. A number in bold type indicates that the procedure is covered in this section, under that numbered heading. Information on other body and interior maintenance and on the prescribed maintenance intervals can be found in **LUBRICATION AND MAINTENANCE**.

1. Lubricate door hinges
2. Check headlight and driving light aim. **6.1**
3. Clean and lubricate sunroof slide rails. **7**
4. Check air conditioner function and refrigerant charge. **9**
5. Check seat belts. **4.5**
6. Check windshield wiper/washer system
7. Check wiper blade condition

3. TROUBLESHOOTING

Because the components and assemblies covered in this section vary widely, specific troubleshooting is covered with the repair information in this section. For more help when troubleshooting electrical problems, see **ELECTRICAL SYSTEM**, or see the discussion of troubleshooting in **FUNDAMENTALS** at the beginning of the manual.

4. INTERIOR

This section covers the removal and replacement of interior components. Repairs to interior electrical components are described in **ELECTRICAL SYSTEM**. Information on interior door trim, door locks, window controls, and other mechanical parts of the door are covered in **5. Doors**.

4.1 Instrument Cluster and Instrument Panel

This heading covers the removal and installation of instrument panel components and related trim.

Removing and Installing Instrument Cluster and Instrument Panel Trim

The instrument cluster and other instrument panel trim can be removed using ordinary hand tools and without removing the instrument panel.

To remove instrument cluster:

1. Disconnect the negative (–) cable from the battery.
2. Remove the steering wheel as described in **SUSPENSION AND STEERING**.

WARNING —

Some of the 1990 cars covered by this manual are equipped with a Supplemental Restraint System (SRS) that automatically deploys an airbag. The airbag unit uses a pyrotechnical device to electrically ignite a powerful gas. On cars so equipped, any work involving the steering wheel should only be performed by an authorized BMW dealer. Performing repairs without disarming the SRS may cause serious personal injury.

3. Remove the lower-left instrument panel trim by removing the screws indicated in Fig. 4-1.
4. Remove the instrument trim panel shown in Fig. 4-2 by removing the two knurled nuts from behind the panel.

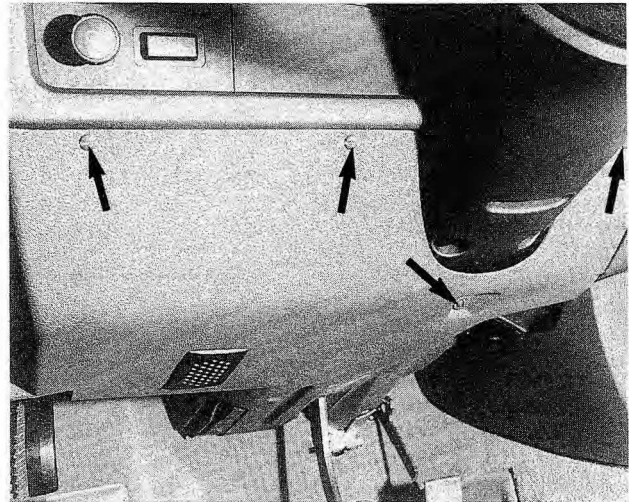


Fig. 4-1. Retaining screws (arrows) to be removed from left-side instrument panel trim.

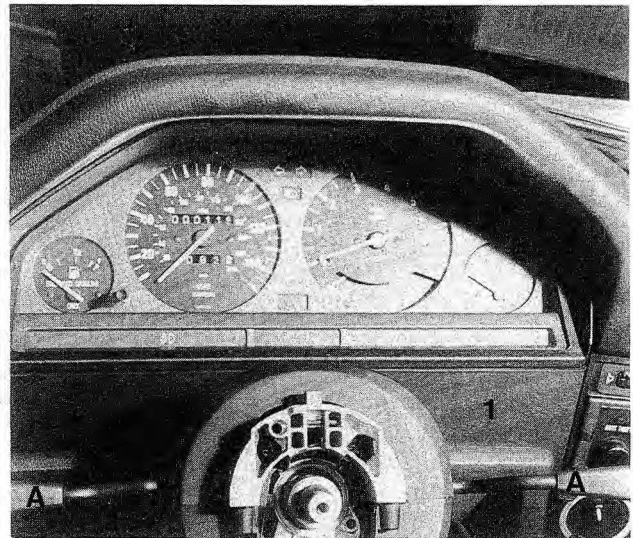


Fig. 4-2. Instrument trim panel (1) to be removed by removing two knurled nuts from up behind panel (A).

5. Remove the instrument cluster trim plate by removing the retaining screws shown in Fig. 4-3.
6. Remove the two instrument cluster retaining screws indicated in Fig. 4-4, then pull the cluster out slightly. Disconnect the electrical connectors from the back of the cluster and remove the cluster.

6 BODY AND INTERIOR

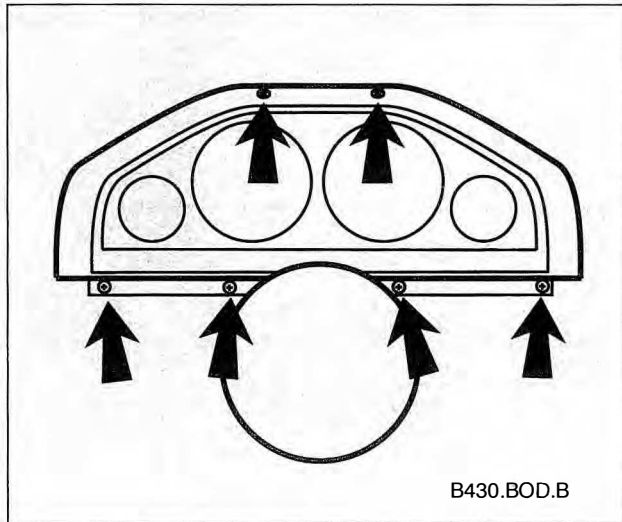


Fig. 4-3. Instrument cluster trim plate retaining screws (arrows) to be removed.

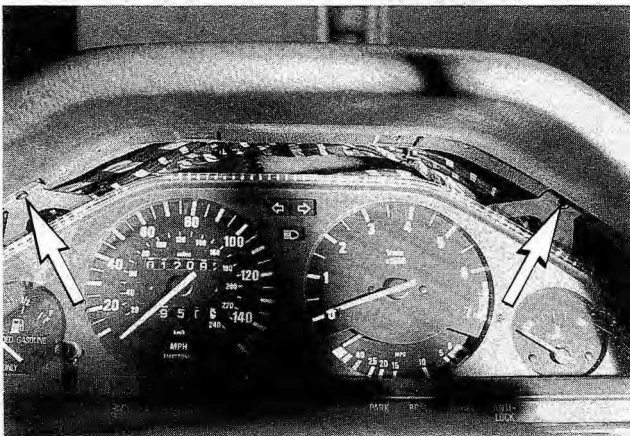


Fig. 4-4. Instrument cluster retaining screws (arrows) to be removed.

To remove shift console:

1. Disconnect the negative (-) cable from the battery.
2. Remove the lower-left instrument panel trim as shown in Fig. 4-1 above.
3. Remove the parking brake handle trim by lifting out the ashtray and removing the screw shown in Fig. 4-5. Pull the trim back slightly to disengage the tab at the front and lift it off the brake handle.

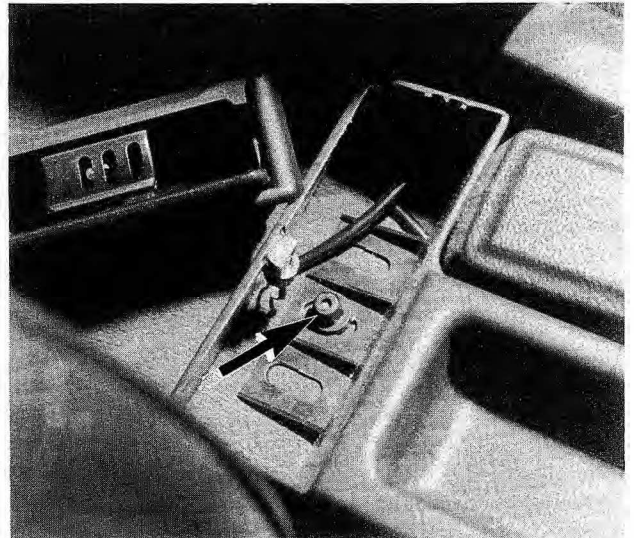


Fig. 4-5. Screw under ashtray (arrow) that secures parking brake handle trim. Remove screw and pull trim back slightly to release at front.

4. On cars with manual transmission, pull the shift knob up and off the shift lever, and then remove the shift boot.
5. On cars with automatic transmission, pry out the selector lever trim plate, remove the two screws shown in Fig. 4-6, and then remove the shift lever trim panel.



Fig. 4-6. Screws to be removed (arrows) for removal of shift lever trim panel.

6. Remove the insulation material and then remove the console mounting nut, shown in Fig. 4-7.

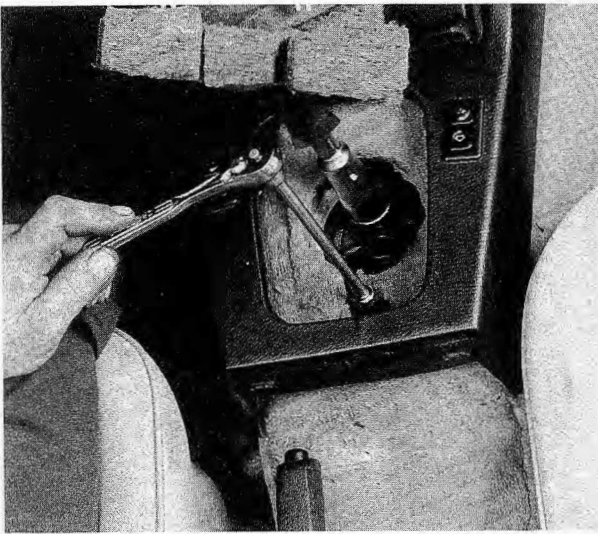


Fig. 4-7. Console mounting nut being removed.

7. Pry out the electric window switches, the heated seat switches, and the automatic transmission switch, where applicable, and disconnect the wiring connectors.
8. Remove the ashtray and cigar lighter console by removing the two screws shown in Fig. 4-8, and then disconnect the wiring.

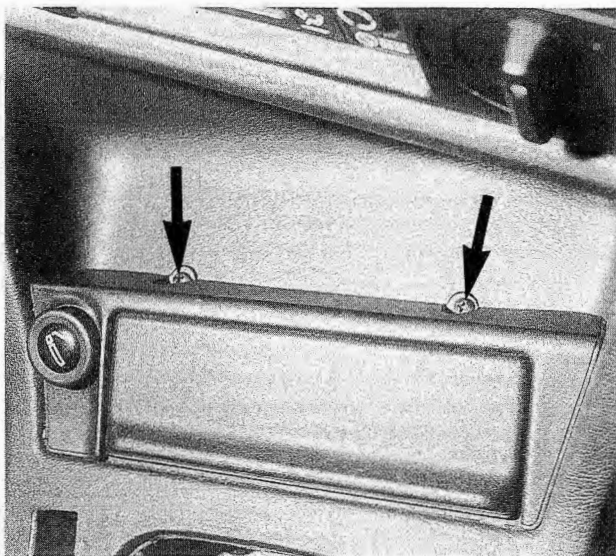


Fig. 4-8. Ashtray console retaining screws (arrows).

9. Remove the screw under the lip of the heater controls, shown in Fig. 4-9, and turn the console retainers on either side as shown in Fig. 4-10. Remove the shift console by pulling it out to the rear.

Installation is the reverse of removal.

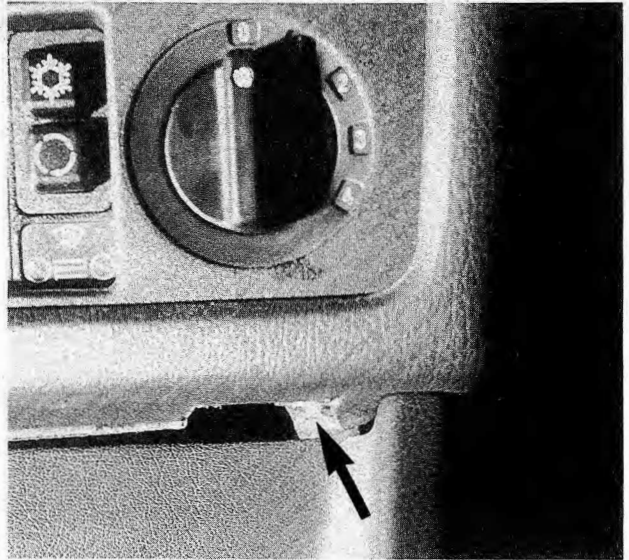


Fig. 4-9. Shift console mounting screw (arrow) under lip of heater controls.

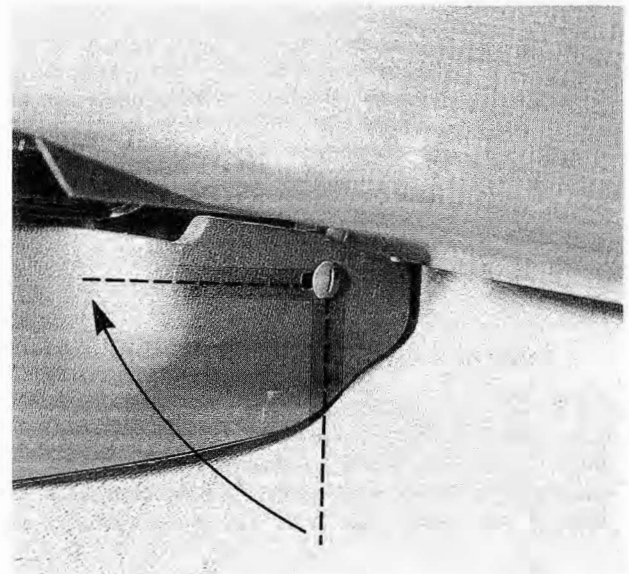


Fig. 4-10. Console retainer. To unlock, turn 90° (¼ turn) counterclockwise. Remove retainers from both sides.

8 BODY AND INTERIOR

To remove glove box:

1. Open the glove box and disconnect the retaining straps by pushing out the securing pins. See Fig. 4-11.

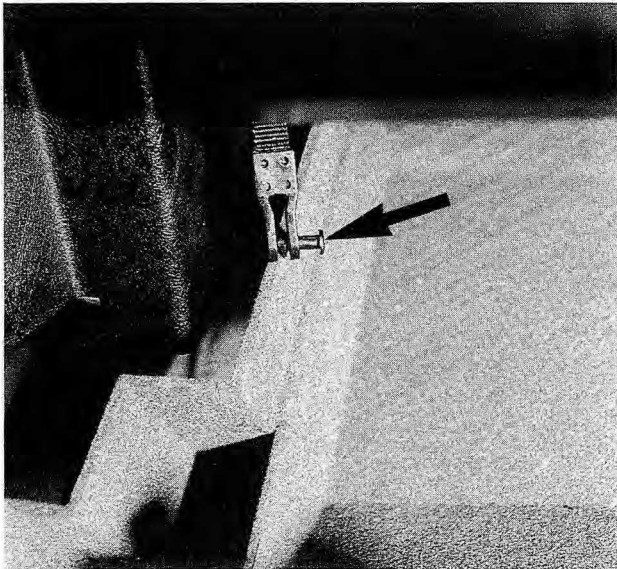


Fig. 4-11. Glove box retaining strap with pin partially removed (arrow). Remove pins from both sides.

2. Close the glove box and remove the screws that hold it to the body. The screws are located beneath the back of the glove box.
3. Lower the glove box slowly while disconnecting the light wiring from the side of the glove box.

NOTE

When installing the glove box, it may be necessary to loosen the striker plate screws and adjust the plate up or down so that the lock fully engages.

Removing and Installing Instrument Panel

This heading describes the general steps necessary to remove the instrument panel. The instrument panel is held to the body by six bolts, two on each end and two underneath attached to brackets. It will be helpful to label all wires when disconnecting them to ensure correct reinstallation.

To remove and install:

1. Remove the instrument cluster, instrument panel trim, shift console, and glove box as described above. Additional trim at the top and left side of the passenger footwell must also be removed.
2. Disconnect the wiring from the instrument panel switches. In some cases it is necessary to pry out the switch first. Also disconnect and remove the fuel injection control unit as described in **FUEL SYSTEM**. Remove the radio as described in **4.2 Radio and Antenna**.
3. Remove the wiring and cables from the heater controls as described in **4.4 Heater and Controls** and remove the controls.
4. Remove the interior A-pillar trim above the ends of the instrument panel by prying back the edge guard.
5. Remove the steering column trim, switches, and levers as described in **SUSPENSION AND STEERING**.
6. Locate and undo all plastic ties that hold the instrument panel and radio wiring harnesses to the instrument panel.
7. Remove the instrument panel mounting bolts. Make one last check for any installed bolts or wires that may still be connected, then carefully pull out the instrument panel.

Installation is the reverse of removal. Make sure the ventilation air ducts are fully seated in the instrument panel before installation, and that the cruise control lever engages both tabs when installed on the steering column.

4.2 Radio and Antenna

Factory installed radios are held in place by clips on either side of the radio. On early models, the clips can be released by inserting stiff wire hooks into the access holes in the radio's face plate. The special wire tools are available from an authorized BMW dealer or from a specialty car stereo shop. See Fig. 4-12. On later models, the clips are released by backing out the internal-hex head screws. See Fig. 4-13. Whenever removing or installing the radio, always disconnect the battery negative (-) cable.

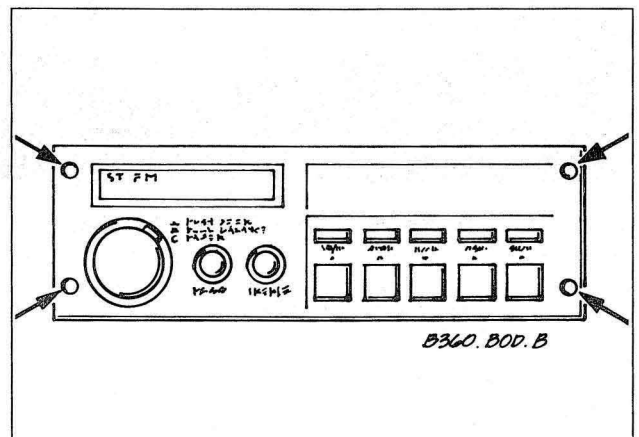


Fig. 4-12. Access holes (arrows) for retaining clips of early BMW radios. Release clips by inserting stiff wire in holes.



Fig. 4-13. Access hole (arrow) for internal-hex head screw used to retract retaining clip on late model BMW radios.

CAUTION

On BMW cars equipped with anti-theft radios, make sure you know the correct radio activation code before disconnecting the battery. If the wrong code is entered into the radio when power is restored, the radio may lock up and be rendered inoperable, even if the correct code is then entered. For more information, see your owner's manual.

Radios on some 1986 and 1987 models may have a high-frequency background noise when the radio is played with the ignition key in the Accessory position. This interference is most likely due to a fault in the Service Indicator printed circuit board. To check if the noise is caused by a faulty service indicator, remove the instrument cluster as described in **4.1 Instrument Cluster and Instrument Panel**. Disconnect the cluster wiring and then turn on the radio with the key in the Accessory position. If the noise goes away, the circuit board is faulty and should be replaced as described in **ELECTRICAL SYSTEM**.

Power Antenna and Mast

For best power antenna operation, BMW recommends monthly cleaning of the antenna mast. Clean the mast in its up position. Failure of the mast to operate may be due to an electrical fault, to dirt or corrosion in the power assembly, or to a faulty mast. Replacement power antenna masts are available from an authorized BMW dealer parts department. The entire power antenna assembly does not have to be replaced due to a damaged mast.

NOTE

Two different replacement masts are available, depending on the type of power antenna assembly. Power antennas with a plastic housing use mast Part No. 88 88 0 825 948. Antennas with a metal housing and a plastic cover use mast Part No. 88 88 0 882 090. The power antenna assembly is located in the trunk. See Fig. 4-14.

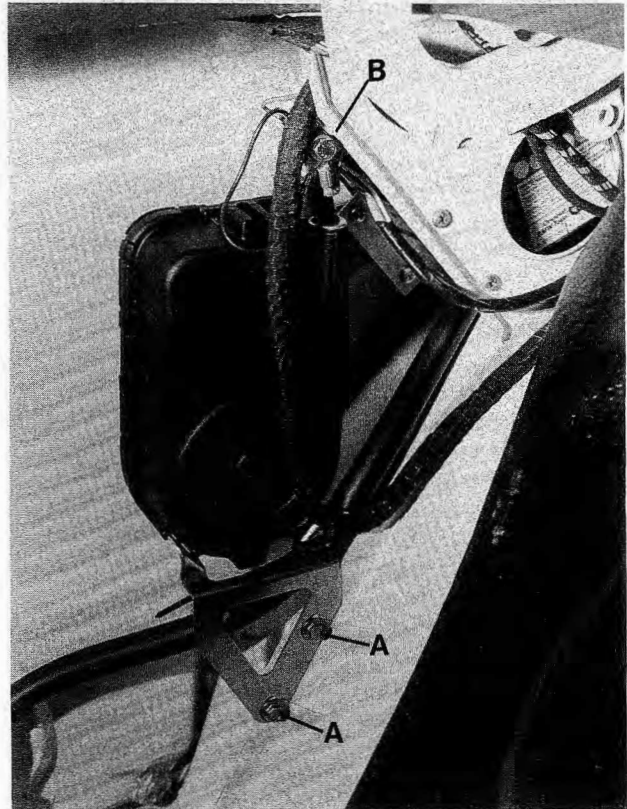


Fig. 4-14. Power antenna with plastic housing in trunk. Antenna with metal housing is similar. Housing mounting bolts are at **A**, ground strap is at **B**.

To replace power antenna mast:

1. Turn on the radio to extend the mast as far as possible, then loosen the mast clamping nut shown in Fig. 4-15.
2. Firmly pull on the antenna mast until the mast and the plastic actuating cable are free of the guide sleeve.
3. Slide the plastic tip of the new antenna mast into the guide sleeve until it is felt to contact the motor guide roller.
4. Turn off the radio so that the plastic cable is retracted by the motor, and guide the mast into the sleeve at the same time. Tighten the clamping nut when finished and recheck antenna operation.

10 BODY AND INTERIOR

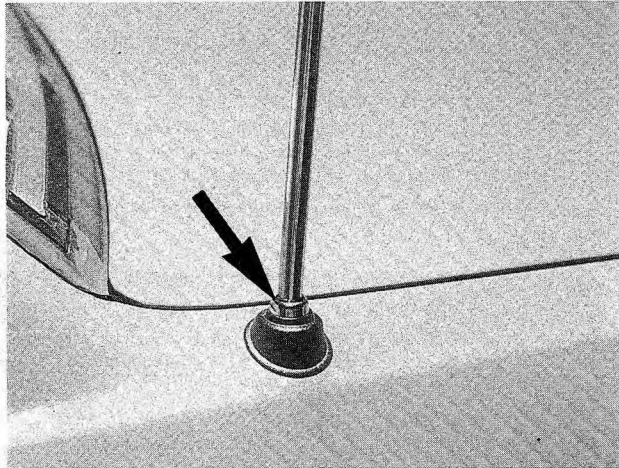


Fig. 4-15. Antenna mast clamping nut (arrow).

4.3 Interior Lights

A light failure may be caused by a blown fuse, especially if more than one bulb is out. Check and, if necessary, replace fuses as described in **ELECTRICAL SYSTEM**. Dashboard light replacement is also covered there.

Replacing Interior Light Bulbs

Always turn off the ignition before replacing a bulb. Avoid leaving fingerprints on the bulb. Fingerprints can cause hot spots or evaporate when the glass gets hot and dim the light or reflector. Wipe off any fingerprints using a soft cloth.

To replace the interior dome light bulb, press against the spring clip indicated in Fig. 4-16 and withdraw the assembly. Press the assembly back into position after installing the new bulb.

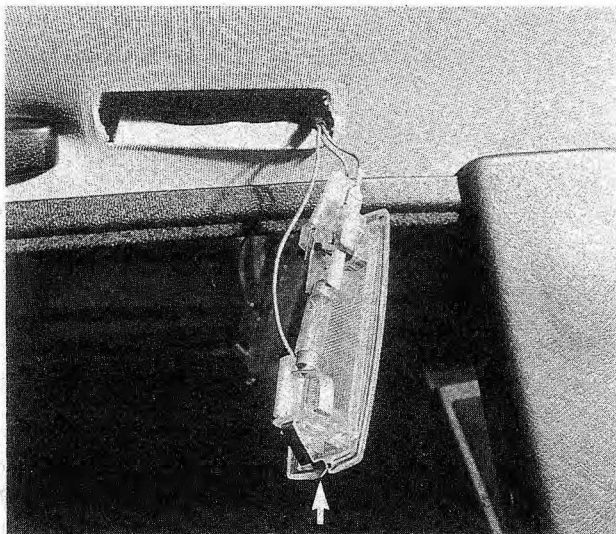


Fig. 4-16. Spring clip (arrow) that holds interior dome light in headliner.

To replace the luggage compartment light bulb, use a small flat-blade screwdriver to pry the light assembly as shown in Fig. 4-17, then withdraw the assembly. Install the wiring connector end first, and press the assembly back into position. Replace the glove compartment bulb the same way.

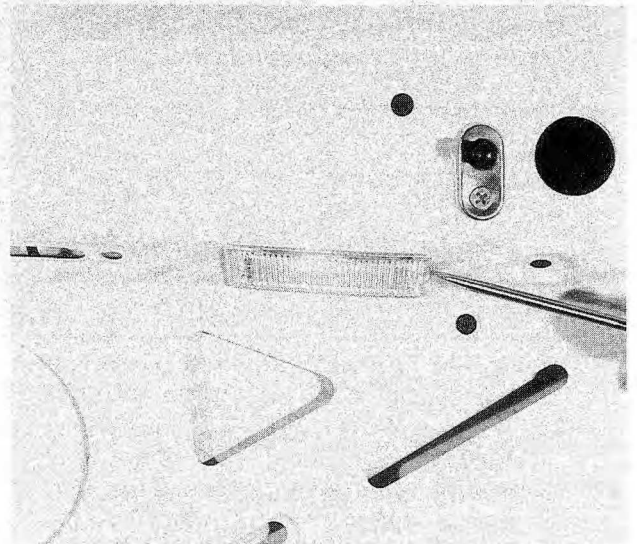


Fig. 4-17. Luggage compartment light assembly being pried out.

For 1987 and earlier cars, the center stop light is reached from inside the car. Pull the assembly cover up at an angle, then compress the tabs on either side of the bulb holder and pull out the holder. Replace the bulb and press the holder back into place until the tabs lock.

For 1988 and later cars, the center stop light is reached from inside the luggage compartment. Remove the bulb and its holder by turning it counterclockwise. See Fig. 4-18. After installing the new bulb, turn the bulb housing clockwise to install.

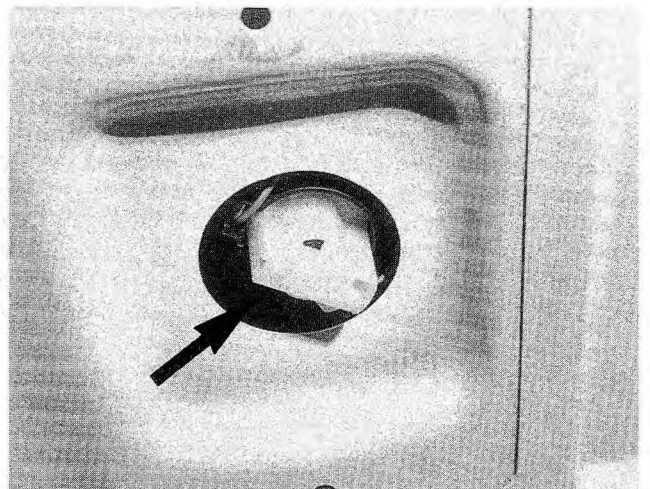


Fig. 4-18. Center stop light housing (arrow) in trunk, for 1988 and later models. Stop light for 1987 and earlier models is reached from inside passenger compartment.

On convertibles, replace the center stop light by first removing the screws that secure the light lens. Remove the lens and then remove the bulb.

4.4 Heater and Controls

The heater box and its components are shown in Fig. 4-19. Temperature and air flow are controlled by instrument panel levers, by a knob that actuates cables connected to flaps in the heater box, and by the electrically-operated heater core valve.

The rotary temperature-regulating knob controls both the opening of the blending flap and the opening of the heater core solenoid valve. The cable connection controls the flap. An electrical contact on the knob controls the power to the valve. Whenever the knob is positioned more than 20° from its coldest setting, power to the valve is interrupted and the valve opens. When the knob is turned back to its cold setting (last 20° on scale), the valve closes and stops coolant flow through the heater core.

On 1987 and earlier cars with air conditioning (A/C), the lever that regulates air flow for the instrument-panel vents also electrically controls the A/C compressor. To prevent condenser freeze-up and A/C system damage, the compressor is switched off if the lever is set below a certain point.

The flaps for air recirculation are opened and closed by small electric motors. The motors are connected to the flaps by adjustable rods. The motors are activated by a relay mounted on the heater box, just behind the control panel. See **ELECTRICAL SYSTEM** for general information on troubleshooting heating and ventilation electrical circuits.

Heater Core and Heater Valve

Insufficient heater output may be caused by a faulty heater valve, by a misadjusted blending flap cable, or by a cooling system fault. Coolant leaking visibly into the passenger compartment is a sign of a faulty core or coolant hose. A sweet, anti-freeze odor in the car's interior, or a constantly fogged windshield may also indicate a faulty core. Inspect the carpet and the area near the footwell vents for any moisture or coolant. A leaking heater core may be caused by over pressurization of the cooling system. See **COOLING SYSTEM** for more information.

When replacing the heater core or heater valve, be prepared to catch any coolant that may spill when the coolant pipe connections are opened. Also have some pre-mixed coolant on hand to top up the cooling system when finished.

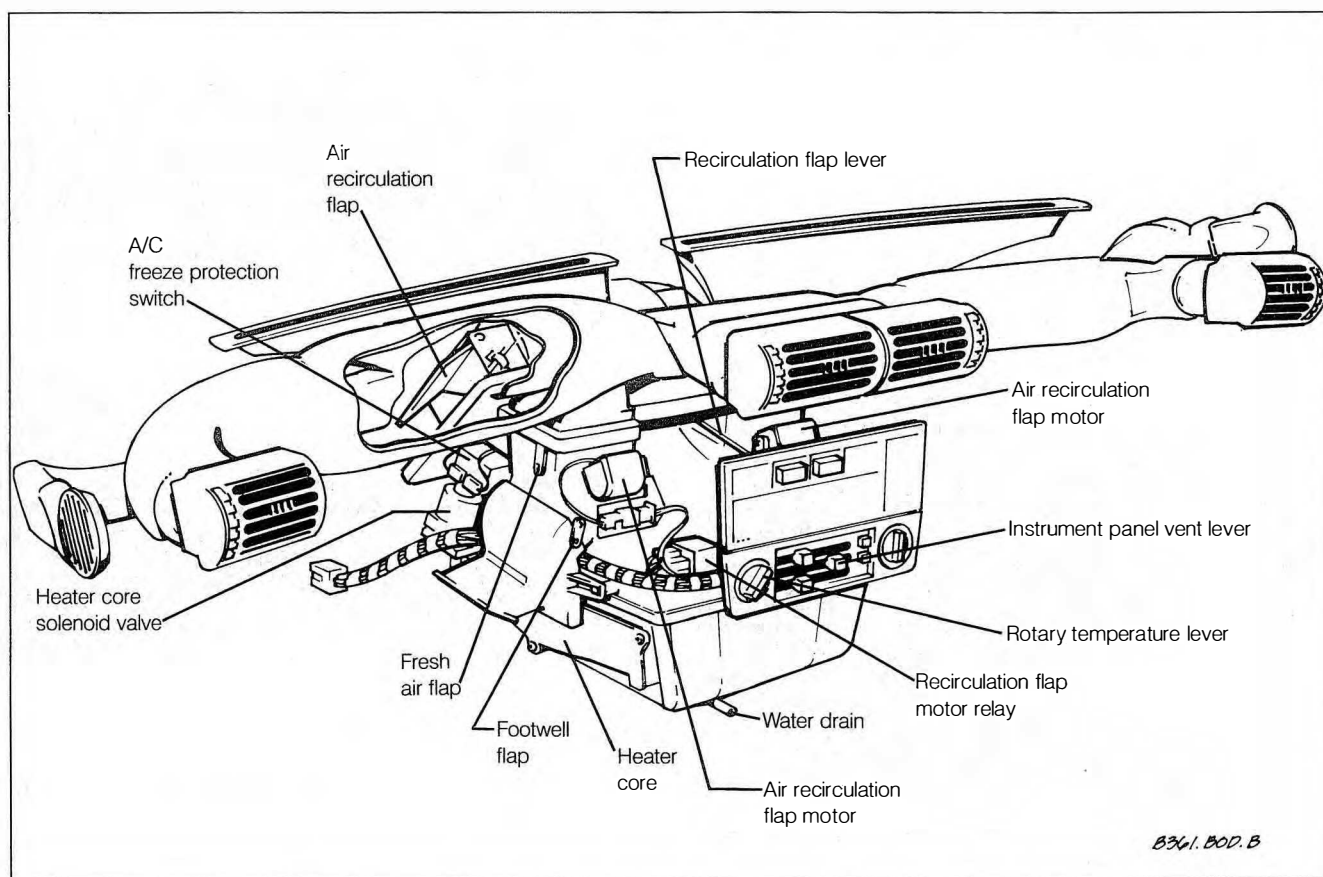


Fig. 4-19. Heater box for heating and ventilation system with air conditioning shown removed from car.