

INSTRUMENT PANEL SYSTEMS

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GENERAL INFORMATION

INTRODUCTION

This group is responsible for covering the vehicle instrument panel. However, because the instrument panel serves as the command center of the vehicle, it is a very complex unit. The instrument panel is designed to house the controls and monitors for standard and optional powertrains, climate control systems, audio systems, lighting systems, safety systems and many other comfort or convenience items. It is also designed so that all of the controls and monitors can be safely reached and viewed by the vehicle operator, while still allowing relative ease of access to these items for service.

Complete service information coverage for all of the systems and components housed in the instrument panel in this section of the service manual would not be practical. It would result in a great deal of duplication and make this group too large for the information to be easily accessed and used. Therefore, the information found in this group has been limited as follows:

- General Information - Covers non-electrical components and features of the instrument panel that are not related to other systems.
- Description and Operation - Covers gauges and their sending units, warning lamps and their switches, and instrument panel illumination lamps.
- Diagnosis and Testing - Covers gauges and their inputs, warning lamps and their inputs, and instrument panel illumination lamps.
- Removal and Installation - Covers all components installed on or in the instrument panel that require removal for diagnosis or service of any other instrument panel components covered in this group.

For more information on components or systems not covered above, refer to the proper group in this manual. If you are uncertain as to the proper group, refer to the Component and System Index at the back of this manual. Refer to Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

INSTRUMENT PANEL

This instrument panel uses a full-width structural plastic foundation as its primary support. When the three primary molded plastic components of this structure are vibration welded together they provide

superior instrument panel stiffness and integrity to help reduce buzzes, squeaks, and rattles even on the bumpiest roads.

This type of construction also provides improved energy absorption which, in conjunction with the dual airbag modules and seat belts, helps to improve occupant protection. This foundation structure also serves as the duct for the heating and air conditioning system panel and defroster outlets, which greatly reduces the number of components used over conventional instrument panel construction.

Modular instrument panel construction allows all of the gauges and controls to be serviced from the front of the panel. In addition, most of the instrument panel electrical components can be accessed without complete instrument panel removal. If necessary, the instrument panel can be removed from the vehicle as an assembly.

Removal of the steering column opening cover and knee blocker provides access to the steering column mounts, the steering column wiring, the gearshift interlock mechanism, the junction block, the relay and fuse block, and much of the instrument panel wiring. Removal of the glove box provides access to the Central Timer Module (CTM), the radio antenna coaxial cable, and additional instrument panel wiring.

Removal of the instrument cluster bezel allows access to the cluster assembly, the radio, the exterior lighting system switches, and the heating and air conditioning controls. Removal of the cluster assembly allows access to the cluster illumination and indicator lamp bulbs, and more of the instrument panel wiring. The instrument panel center bezel contains an ash receiver, a rear window (rear wiper/washer and rear window defogger) switch pod, and has provisions for a cigar lighter and an accessory power outlet.

Removal of the complete instrument panel is required for service of the passenger side airbag module and most passenger compartment components of the heating and air conditioning systems.

INSTRUMENT CLUSTER

A single instrument cluster is offered on this model. The cluster is an electromechanical unit that utilizes integrated circuitry and information carried on the Chrysler Collision Detection (CCD) data bus network for control of all gauges and many of the

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indicator lamps. This cluster also incorporates a Liquid Crystal Display (LCD) for the digital odometer/trip odometer display functions. Some variations of this cluster exist due to optional equipment and regulatory requirements.

The cluster includes the following analog gauges:

- Coolant temperature gauge
- Fuel gauge
- Oil pressure gauge
- Speedometer
- Tachometer
- Voltmeter.

This cluster also includes provisions for the following indicator lamps:

- Airbag indicator lamp
- Anti-lock Brake System (ABS) lamp
- Brake warning lamp
- Check gauges lamp
- Cruise-on indicator lamp
- Door ajar lamp
- Four-wheel drive indicator lamps (part-time and full-time)
- Headlamp high beam indicator lamp
- Liftgate ajar lamp
- Low fuel warning lamp
- Low washer fluid warning lamp
- Malfunction indicator (Check Engine) lamp
- Overdrive-off indicator lamp
- Seat belt reminder lamp
- Security lamp
- Transmission oil temperature warning lamp
- Turn signal indicator lamps

The instrument cluster also has a provision for mounting the automatic transmission gear selector indicator in the lower right corner of the cluster.

The instrument cluster circuitry has a self-diagnostic actuator test capability, which will test each of the CCD bus message-controlled functions of the cluster by lighting the appropriate indicator lamps and positioning the gauge needles at several predetermined locations on the gauge faces in a prescribed sequence. For more information on this function, see Instrument Cluster in the Diagnosis and Testing section of this group.

The instrument cluster circuitry also sends chime tone requests over a hard wired circuit to the Central Timer Module (CTM) when it monitors certain conditions or inputs. The CTM replaces the chime or buzzer module. Refer to Group 8U - Chime/Buzzer Warning Systems for more information on this cluster circuitry function.

The instrument cluster for this model is serviced only as a complete unit. If a cluster gauge or the cluster circuit board are faulty, the entire cluster must be replaced. Each of the red indicators in the cluster are illuminated by a Light-Emitting Diode

(LED). If an LED fails, the entire instrument cluster must be replaced. The cluster lens, the cluster hood, the rear cluster housing cover, and the incandescent lamp bulbs and holders are available for service replacement.

GAUGE

With the ignition switch in the On or Start positions, voltage is supplied to all gauges through the instrument cluster electronic circuit board. With the ignition switch in the Off position, voltage is not supplied to the gauges. The gauges do not accurately indicate any vehicle condition unless the ignition switch is in the On or Start positions.

All of the instrument cluster gauges, except the odometer, are air core magnetic units. Two fixed electromagnetic coils are located within the gauge. These coils are wrapped at right angles to each other around a movable permanent magnet. The movable magnet is suspended within the coils on one end of a shaft. The gauge needle is attached to the other end of the shaft.

One of the coils has a fixed current flowing through it to maintain a constant magnetic field strength. Current flow through the second coil changes, which causes changes in its magnetic field strength. The current flowing through the second coil is changed by the instrument cluster electronic circuitry in response to messages received on the Chrysler Collision Detection (CCD) data bus network.

The gauge needle moves as the movable permanent magnet aligns itself to the changing magnetic fields created around it by the electromagnets. The instrument cluster circuitry is programmed to move all of the gauge needles back to the low end of their respective scales after the ignition switch is turned to the Off position.

INDICATOR LAMP

Indicator lamps are located in the instrument cluster and are served by the cluster circuit board and connectors. Many of the indicator lamps in the instrument cluster are controlled by the instrument cluster circuitry in response to messages received over the Chrysler Collision Detection (CCD) data bus network.

The four-wheel drive indicator lamps (part-time and full-time), headlamp high beam indicator lamp, liftgate ajar lamp, low washer fluid warning lamp, overdrive off indicator lamp, security lamp and turn signal indicator lamps are hard wired. The seat belt reminder lamp is controlled by the instrument cluster programming and by CCD data bus messages from the Airbag Control Module (ACM). The brake warning lamp is controlled by a hard wired input from the parking brake switch and by CCD data bus

GENERAL INFORMATION (Continued)

messages from the Controller Anti-lock Brake (CAB). The instrument cluster circuitry uses CCD data bus messages from the Powertrain Control Module (PCM), ACM, CAB, and Central Timer Module (CTM) to control all of the remaining indicator lamps.

Each of the red indicator lamps in the instrument cluster is illuminated by a dedicated Light-Emitting Diode (LED). If an LED should fail, the entire instrument cluster must be replaced. The remaining lamps in the instrument cluster use incandescent bulbs and holders, which are available for individual service replacement.

CENTRAL TIMER MODULE

Two versions of the Central Timer Module (CTM) are available on this vehicle, a base version and a high-line version. The base version of the CTM is used on base models of the vehicle. The base version of the CTM combines the functions of a chime/buzzer module, an intermittent wipe module, an illuminated entry module and an ignition lamp time delay relay in a single unit.

The high-line version of the CTM is used on high-line vehicles. The high-line CTM provides all of the functions of the base version CTM, but also is used to control and integrate many of the additional electronic functions and features included on the high-line models. The high-line version of the CTM contains a central processing unit and interfaces with other modules in the vehicle on the Chrysler Collision Detection (CCD) data bus network.

The CCD data bus network allows the sharing of sensor information. This helps to reduce wire harness complexity, reduce internal controller hardware, and reduce component sensor current loads. At the same time, this system provides increased reliability, enhanced diagnostics, and allows the addition of many new feature capabilities.

Some of the functions and features that the CTM supports or controls include:

- Chimes for the following conditions:
- Headlamps on with ignition off and driver door open warning
- Key in ignition with ignition off and driver door open warning
- ABS lamp warning (if the vehicle is so equipped)
- Airbag lamp warning
- Check engine lamp warning
- Check gauges lamp warning
- Door ajar lamp warning
- Liftgate ajar lamp warning
- Low fuel lamp warning
- Low washer fluid lamp warning
- Seat belt reminder lamp warning
- Transmission oil temperature lamp warning
- Courtesy lamp defeat

- Courtesy lamp time-out
- Ignition key lamp timer
- Intermittent wipe control
- Enhanced accident response (high-line only)
- Horn chirp upon door lock with RKE (programmable) (high-line only)
- Illuminated entry
- Power door lock control (high-line only)
- Power lock inhibit (high-line only)
- Remote Keyless Entry (RKE) (high-line only)
- Rolling door locks (programmable) (high-line only)
- Speed sensitive intermittent wipe (high-line only)
- Vehicle Theft Security System (VTSS) (high-line only) (if the vehicle is so equipped).
- Wipe after wash

Both versions of the CTM are mounted under the passenger side end of the instrument panel, outboard of the glove box opening.

Refer to Central Timer Module in the Diagnosis and Testing section of Group 8U - Chime/Buzzer Warning Systems for diagnosis of the base version of the CTM. For diagnosis of the high-line version of the CTM or the CCD data bus, the use of a DRB scan tool and the proper Diagnostic Procedures manual are recommended. The CTM cannot be repaired and, if faulty or damaged, it must be replaced.

JUNCTION BLOCK

The junction block is mounted on the left instrument panel end bracket on the left outboard end of the instrument panel. It is concealed behind the left end of the instrument panel top cover. The junction block serves to simplify and centralize numerous electrical components.

The junction block combines the functions previously provided by a separate fuseblock module and relay center. It contains fuses, circuit breakers and relays. It also eliminates the need for numerous splice connections and serves in place of a bulkhead connector between many of the engine compartment, instrument panel, and body wire harnesses.

The left end of the instrument panel top cover has a snap-fit fuse access panel that can be removed for service of the junction block fuses. A fuse puller and spare fuse holders are located on the back of the fuse access panel. A label on the back of the fuse access panel identifies the fuse cavity assignments.

The junction block cannot be repaired and, if faulty or damaged, it must be replaced.

RELAY AND FUSE BLOCK

An additional relay and fuse block is integral to the instrument panel wire harness. The relay and fuse block is snap fit onto mounting tabs located on

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the end of the junction block nearest to the dash panel, under the left outboard end of the instrument panel. The relay and fuse block has cavities for up to four additional fuses and four additional relays, which could not be accommodated by the junction block or the Power Distribution Center (PDC).

The steering column opening cover and knee blocker can be removed from the instrument panel for service access of the relay and fuse block components. Refer to 8W-11 - Fuse/Fuse Block in Group 8W - Wiring Diagrams for identification of the relay and fuse block cavity assignments.

The relay and fuse block is serviced as part of the instrument panel wire harness assembly. If the relay and fuse block is faulty or damaged, the instrument panel wire harness assembly must be replaced.

DESCRIPTION AND OPERATION

COOLANT TEMPERATURE GAUGE

The coolant temperature gauge gives an indication of the engine coolant temperature. The instrument cluster circuitry controls the gauge pointer position. The instrument cluster circuitry calculates the proper gauge pointer position based upon engine coolant temperature messages received from the Powertrain Control Module (PCM) on the Chrysler Collision Detection (CCD) data bus.

The PCM uses an input from the engine coolant temperature sensor and internal programming to decide what engine coolant temperature messages are required. The PCM then sends the proper messages to the instrument cluster on the CCD data bus.

If the PCM messages indicate that coolant temperature is too high, the instrument cluster circuitry moves the gauge needle to the high end of the scale on the gauge face, turns on the Check Gauges lamp, and sends a chime tone request to the Central Timer Module (CTM).

The engine coolant temperature sensor is installed in a threaded hole that penetrates a coolant passage of the engine. It is a thermistor-type sensor that changes its internal resistance with changes in engine coolant temperature. Refer to Group 14 - Fuel Systems for more information on the PCM and the coolant temperature sensor.

FUEL GAUGE

The fuel gauge gives an indication of the level of fuel in the fuel tank. The instrument cluster circuitry controls the gauge pointer position. The instrument cluster circuitry calculates the proper gauge pointer position based upon fuel level messages received from the Powertrain Control Module (PCM) on the Chrysler Collision Detection (CCD) data bus.

The PCM uses an input from the fuel gauge sending unit and internal programming to decide what fuel level messages are required. The PCM then sends the proper messages to the instrument cluster on the CCD data bus. If the PCM messages indicate that the fuel level is below one-eighth of a full tank for more than ten seconds, the instrument cluster circuitry turns on the low fuel warning lamp and sends a chime tone request to the Central Timer Module (CTM).

The fuel gauge sending unit is mounted to the electric fuel pump module located inside the fuel tank. The sending unit has a float attached to the end of a swing-arm. The float moves up or down within the fuel tank as the fuel level changes. As the float moves, an electrical contact on the pivot end of the swing-arm wipes across a resistor coil, which changes the internal electrical resistance of the sending unit. Refer to Group 14 - Fuel Systems for more information on the PCM and the fuel gauge sending unit service procedures.

ODOMETER AND TRIP ODOMETER

The odometer and the trip odometer share the same Liquid Crystal Display (LCD) on the instrument cluster circuit board. Each gives an indication of the distance the vehicle has travelled. However, by depressing the reset knob on the face of the instrument cluster, the display mode can be switched from odometer to trip odometer. Depressing the reset knob for longer than two seconds while in the trip odometer mode will reset the trip odometer to zero. The odometer and trip odometer display values are based upon odometer and trip odometer messages received from the Powertrain Control Module (PCM) on the Chrysler Collision Detection (CCD) data bus.

The PCM uses a speed pulse input received from the Controller Anti-lock Brake (CAB) and internal programming to decide what vehicle speed and distance messages are required. The PCM then sends the proper messages to the instrument cluster circuitry on the CCD data bus. The CAB uses an input from the rear wheel speed sensor and internal programming, which includes a programmable pinion factor to compensate for different axle gear ratios and tire sizes, to determine what speed pulse output is required. The CAB then sends the proper speed pulse to the PCM on a hard wired circuit.

The instrument cluster stores both the last odometer and last trip odometer distance messages it receives from the PCM, and displays the proper value based upon ignition key-on and trip odometer reset knob inputs. If the instrument cluster stops receiving distance messages from the PCM during its current ignition key-on cycle, the odometer or trip odometer will display the last distance value that

DESCRIPTION AND OPERATION (Continued)

was received. If the instrument cluster has not received any distance messages from the PCM during its current ignition key-on cycle, the odometer or trip odometer display will blink.

The rear wheel speed sensor is excited by an exciter ring on the differential case within the rear axle housing. Incorrect tire size, incorrect axle ratio, an incorrect pinion factor, a faulty or improperly installed rear wheel speed sensor, a faulty rear axle exciter ring, or a faulty CAB can each result in inaccurate odometer readings. For diagnosis of the odometer and trip odometer inputs, a DRB scan tool and the proper Diagnostic Procedures manual are recommended. Refer to Group 5 - Brakes for more information on the CAB, the rear wheel speed sensor and the rear axle exciter ring. Refer to Group 14 - Fuel Systems for more information on the PCM.

OIL PRESSURE GAUGE

The oil pressure gauge gives an indication of the engine oil pressure. The instrument cluster circuitry controls the gauge pointer position. The instrument cluster circuitry calculates the proper gauge pointer position based upon engine oil pressure messages received from the Powertrain Control Module (PCM) on the Chrysler Collision Detection (CCD) data bus.

The PCM uses an input from the engine oil pressure sensor and internal programming to decide what engine oil pressure messages are required. The PCM then sends the proper messages to the instrument cluster on the CCD data bus. If the PCM messages indicate that oil pressure is too low, the instrument cluster circuitry moves the gauge needle to the 0 PSI graduation on the gauge face, turns on the Check Gauges lamp, and sends a chime tone request to the Central Timer Module (CTM). If the PCM messages indicate that oil pressure is too high, the instrument cluster circuitry moves the gauge needle to the 110 PSI graduation on the gauge face.

The engine oil pressure sensor is installed in a threaded hole that penetrates an oil passage of the engine. The engine oil pressure sensor contains a flexible diaphragm and a variable resistor coil. The diaphragm moves in response to changes in the engine oil pressure, which changes the internal electrical resistance of the sensor. Refer to Group 14 - Fuel Systems for more information on the PCM and the engine oil pressure sensor.

SPEEDOMETER

The speedometer gives an indication of the current vehicle speed. The instrument cluster circuitry controls the gauge pointer position. The instrument cluster circuitry calculates the proper gauge pointer position based upon vehicle speed messages received

from the Powertrain Control Module (PCM) on the Chrysler Collision Detection (CCD) data bus.

The PCM uses a speed pulse input received from the Controller Anti-lock Brake (CAB) and internal programming to decide what vehicle speed and distance messages are required. The PCM then sends the proper messages to the instrument cluster circuitry on the CCD data bus. The CAB uses an input from the rear wheel speed sensor and internal programming, which includes a programmable pinion factor to compensate for different axle gear ratios and tire sizes, to determine what speed pulse output is required. The CAB then sends the proper speed pulse to the PCM on a hard wired circuit.

The rear wheel speed sensor is excited by an exciter ring on the differential case within the rear axle housing. Incorrect tire size, incorrect axle ratio, an incorrect pinion factor, a faulty or improperly installed rear wheel speed sensor, a faulty rear axle exciter ring, or a faulty CAB can each result in inaccurate speedometer readings. For diagnosis of the speedometer inputs, a DRB scan tool and the proper Diagnostic Procedures manual are recommended. Refer to Group 5 - Brakes for more information on the CAB, the rear wheel speed sensor and the rear axle exciter ring. Refer to Group 14 - Fuel Systems for more information on the PCM.

TACHOMETER

The tachometer gives an indication of the engine speed in revolutions-per-minute (RPM). The instrument cluster circuitry controls the gauge pointer position. The instrument cluster circuitry calculates the proper gauge pointer position based upon engine speed messages received from the Powertrain Control Module (PCM) on the Chrysler Collision Detection (CCD) data bus.

The PCM uses an input from the crankshaft position sensor and internal programming to calculate what engine speed messages are required. The PCM then sends the proper messages to the instrument cluster on the CCD data bus. The crankshaft position sensor is a hall-effect sensor installed near the rear of the engine, where it is aimed at the trigger wheel attached to the rear flange of the crankshaft.

Refer to Group 14 - Fuel Systems for more information on the PCM. Refer to Group 8D - Ignition Systems for more information on the crankshaft position sensor.

VOLTMETER

The voltmeter gives an indication of the electrical system voltage. The instrument cluster circuitry controls the gauge pointer position. The instrument cluster circuitry calculates the proper gauge pointer position based upon system voltage messages

DESCRIPTION AND OPERATION (Continued)

received from the Powertrain Control Module (PCM) on the Chrysler Collision Detection (CCD) data bus.

The PCM uses an input from the electrical system and internal programming to decide what system voltage messages are required. The PCM then sends the proper messages to the instrument cluster on the CCD data bus. If the PCM messages indicate that the charging system has failed, the electrical system voltage is less than 11 volts or greater than 16.6 volts, the instrument cluster circuitry turns on the Check Gauges lamp and sends a chime tone request to the Central Timer Module (CTM).

Refer to Group 14 - Fuel Systems for more information on the PCM. Refer to Group 8C - Charging Systems for more information on the charging system components and their diagnosis.

AIRBAG INDICATOR LAMP

The airbag indicator lamp gives an indication when the airbag system is faulty or inoperative. The lamp is controlled by the instrument cluster circuitry based upon messages received from the Airbag Control Module (ACM) on the Chrysler Collision Detection (CCD) data bus. The lamp is turned on by the ACM for about seven seconds when the ignition switch is turned to the On position as a bulb test.

The ACM continually monitors the airbag system circuits and sensors to decide whether the system is in good operating condition. The ACM then sends the proper messages to the instrument cluster on the CCD data bus to turn the lamp on or off. If the ACM turns the lamp on after the bulb test, it indicates the ACM has detected a system malfunction and/or that the airbag system has become inoperative. The instrument cluster circuitry will also send a chime request to the Central Timer Module (CTM) when a lamp-on message is received from the ACM. A lamp-on message does not mean that either or both airbags will not deploy upon an impact, only that they might not deploy, depending upon the nature of the detected malfunction. Each time that the instrument cluster circuitry receives a lamp-on message from the ACM, it will light the lamp for three seconds or the duration of the airbag system malfunction, whichever is longer.

The airbag indicator lamp also has a lamp backup feature. About ten seconds after the ignition switch is turned to the On position, if an inoperative airbag warning lamp circuit was detected during the bulb test sequence, the instrument cluster circuitry will flash the seat belt reminder lamp on and off for about thirty seconds. If the seat belt reminder lamp stays on after flashing for thirty seconds, or comes on at any time other than about ten seconds after the initial ignition-on sequence, it may indicate that an

airbag system fault has been detected and that the airbag indicator lamp is inoperative.

See Seat Belt Reminder Lamp in the Description and Operation section of this group for more information on the airbag lamp backup feature. Refer to Airbag System in Group 8M - Passive Restraint Systems for more information on the airbag system.

ANTI-LOCK BRAKE SYSTEM LAMP

The Anti-Lock Brake System (ABS) lamp gives an indication when the ABS system is faulty or inoperative. The lamp is controlled by the instrument cluster circuitry based upon messages received from the Controller Anti-lock Brake (CAB) on the Chrysler Collision Detection (CCD) data bus. The lamp is turned on by the CAB for about two seconds when the ignition switch is turned to the On position as a bulb test.

After the bulb test, the CAB turns the lamp on or off based upon the results of the ABS self-tests. The CAB continually monitors the ABS circuits and sensors to decide whether the system is in good operating condition. The CAB then sends the proper messages to the instrument cluster on the CCD data bus to turn the lamp on or off. If the CAB turns the lamp on after the bulb test, it indicates that the CAB has detected a system malfunction and/or that the ABS system has become inoperative. If only the amber ABS lamp is illuminated, and the red brake warning lamp remains off, the base brake system will operate normally.

Each time the instrument cluster circuitry receives a lamp-on message from the CAB, it will light the lamp for the duration of the ABS malfunction. The CAB will also flash this lamp during the diagnostic mode, unless a hard fault is present. If a hard fault is present, the ABS lamp will illuminate without flashing. Refer to Group 5 - Brakes for more information on the ABS systems.

BRAKE WARNING LAMP

The brake warning lamp gives an indication when the parking brake is applied, when the pressures in the two halves of the split brake hydraulic system are unequal, if the Anti-lock Brake System (ABS) lamp has failed and an ABS fault occurs, and during ABS diagnostics. The lamp is turned on by the instrument cluster circuitry for about two seconds when the ignition switch is moved to the Start position as a bulb test. After the bulb test, the lamp is controlled by a hard wired input from the parking brake switch and/or by the instrument cluster circuitry based upon messages received from the Controller Anti-lock Brake (CAB) on the Chrysler Collision Detection (CCD) data bus.

DESCRIPTION AND OPERATION (Continued)

The CAB turns the lamp on or off based upon the results of the ABS self-tests. The CAB continually monitors the ABS circuits and sensors, including the brake warning switch and the ABS lamp, to decide whether the system is in good operating condition. The CAB then sends the proper messages to the instrument cluster on the CCD data bus to turn the lamp on or off. If the CAB turns the lamp on after the bulb test, it indicates that the CAB has detected a system malfunction.

The parking brake switch is hard wired to the instrument cluster and closes to ground when the parking brake is applied. The brake warning switch is hard wired to the CAB and closes to ground when it senses unequal hydraulic pressures in the two halves of the split brake hydraulic system, possibly due to low brake fluid level or brake fluid leakage.

After the bulb test, if the red brake warning lamp remains illuminated with the parking brake released, the base brake system may not be operational. The vehicle should never be operated while the red brake warning lamp is illuminated. Refer to Group 5 - Brakes for more information.

CHECK GAUGES LAMP

The check gauges lamp gives an indication when certain gauges reflect a condition requiring immediate attention. The lamp is turned on by the instrument cluster circuitry for about three seconds after the ignition switch is turned to the On position as a bulb test. After the bulb test, the lamp is controlled by the instrument cluster circuitry based upon gauge data messages received from the Powertrain Control Module (PCM) on the Chrysler Collision Detection (CCD) data bus.

The PCM uses several inputs to decide what gauge data messages are required. The PCM then sends the proper message to the instrument cluster on the CCD data bus. When the instrument cluster circuitry receives a gauge data message that requires the check gauges lamp to be turned on, it also sends a chime tone request to the Central Timer Module (CTM).

The gauge data messages for which the instrument cluster is programmed to turn on the check gauges lamp are:

- Engine coolant temperature is high
- Engine oil pressure is low
- System voltage is high or low.

CIGAR LIGHTER

A cigar lighter is standard equipment on this model. The cigar lighter is installed in the instrument panel lower bezel, which is located near the center of the instrument panel, below the radio. The

cigar lighter base is secured by a snap fit within the instrument panel lower bezel.

The cigar lighter consists of two major components: a knob and heating element unit, and the cigar lighter base or receptacle shell. The receptacle shell is connected to ground, and an insulated contact in the bottom of the shell is connected to battery current. The cigar lighter receives battery voltage from a fuse in the junction block only when the ignition switch is in the Accessory or On positions.

The knob and heating element are encased within a spring-loaded housing, which also features a sliding protective heat shield. When the knob and heating element are inserted in the receptacle shell, the heating element resistor coil is grounded through its housing to the receptacle shell. If the cigar lighter knob is pushed inward, the heat shield slides up toward the knob exposing the heating element, and the heating element extends from the housing toward the insulated contact in the bottom of the receptacle shell.

Two small spring-clip retainers are located on either side of the insulated contact inside the bottom of the receptacle shell. These clips engage and hold the heating element against the insulated contact long enough for the resistor coil to heat up. When the heating element is engaged with the contact, battery current can flow through the resistor coil to ground, causing the resistor coil to heat.

When the resistor coil becomes sufficiently heated, excess heat radiates from the heating element causing the spring-clips to expand. Once the spring-clips expand far enough to release the heating element, the spring-loaded housing forces the knob and heating element to pop back outward to their relaxed position. When the cigar lighter knob and element are pulled out of the receptacle shell, the protective heat shield slides downward on the housing so that the heating element is recessed and shielded around its circumference for safety.

The cigar lighter knob and heating element unit, and the cigar lighter receptacle unit are available for service. These components cannot be repaired and, if faulty or damaged, they must be replaced.

CLUSTER ILLUMINATION LAMP

The cluster illumination lamps are hard wired in the instrument cluster. When the park or head lamps are turned on, the cluster illumination lamps light. Illumination brightness is adjusted by rotating the headlamp switch knob (clockwise to dim, counter-clockwise to brighten). The instrument cluster illumination lamps receive battery feed from the panel dimmer rheostat in the headlamp switch through a fuse in the junction block.

DESCRIPTION AND OPERATION (Continued)

The instrument cluster circuitry monitors the cluster illumination lamp dimming level and responds by sending dimming level messages over the Chrysler Collision Detection (CCD) data bus network. These dimming level messages are then used by the overhead console display module to coordinate the dimming level of its Vacuum Fluorescent Display (VFD) with that of the instrument cluster.

Each of the cluster illumination lamps is located on the instrument cluster circuit board. Each lamp has a replaceable bulb and bulb holder. Refer to Group 8L - Lamps for more information.

CRUISE-ON INDICATOR LAMP

The cruise-on indicator lamp gives an indication when the vehicle speed control system is turned on, even when the system is not currently engaged. The lamp is turned on by the instrument cluster circuitry for about two seconds when the ignition switch is turned to the On position as a bulb test. After the bulb test, the lamp is controlled by the instrument cluster circuitry based upon messages received from the Powertrain Control Module (PCM) on the Chrysler Collision Detection (CCD) data bus.

The PCM uses an input from the analog resistor-multiplexed vehicle speed control switches in the steering wheel to decide whether to turn the lamp on or off. The PCM then sends the proper messages to the instrument cluster on the CCD data bus. Refer to Group 8H - Vehicle Speed Control System for more information.

DOOR AJAR LAMP

The door ajar lamp is only operational on vehicles equipped with a high-line Central Timer Module (CTM). The door ajar lamp gives an indication when a driver or passenger door is not completely latched. The lamp is turned on by the instrument cluster circuitry for about two seconds when the ignition switch is turned to the On position as a bulb test. After the bulb test, the lamp is controlled by the instrument cluster circuitry based upon messages received from the CTM on the Chrysler Collision Detection (CCD) data bus.

The high-line CTM uses inputs from the door ajar switches and internal programming to decide whether to turn the lamp on or off. The CTM then sends the proper messages to the instrument cluster on the CCD data bus.

The door ajar switches are integral to the door latches on the driver door and each passenger door. Refer to Group 8Q - Vehicle Theft/Security Systems for more information on the door ajar switches.

FOUR-WHEEL DRIVE INDICATOR LAMP*PART TIME*

On vehicles with the optional part time four-wheel drive transfer case (Model NV231), the Part Time indicator lamp lights when the transfer case is engaged in the 4H or 4L positions. On vehicles with the optional full-time four-wheel drive transfer case (Model NV242), the Part Time indicator lamp lights when the transfer case is engaged in the 4 X 4 Part Time or 4 Lo positions.

When the ignition switch is in the On position, battery voltage is supplied to one side of the indicator lamp bulb. A normally-open, plunger-type, four-wheel drive switch threaded into the transfer case is hard wired in series between the other side of the indicator lamp bulb and ground. When the transfer case is shifted into the proper position, the plunger of the four-wheel drive switch is moved, closing the switch and providing a path to ground. This causes the Part Time indicator lamp bulb to light.

Refer to Group 21 - Transmission for more information on the transfer case shift mechanism.

FULL TIME

The Full Time indicator lamp is only operational on vehicles equipped with the optional full-time four-wheel drive transfer case (Model NV242). The Full Time indicator lamp lights when the transfer case is engaged in the 4 X 4 Full Time position.

When the ignition switch is in the On position, battery voltage is supplied to one side of the indicator lamp bulb. A normally-open, plunger-type, four-wheel drive switch threaded into the transfer case is hard wired in series between the other side of the indicator lamp bulb and ground. When the transfer case is shifted into the proper position, the plunger of the four-wheel drive switch is moved, closing the switch and providing a path to ground. This causes the Full Time indicator lamp bulb to light.

Refer to Group 21 - Transmission for more information on the transfer case shift mechanism.

GEAR SELECTOR INDICATOR

The gear selector indicator gives an indication of the position of the automatic transmission gear selector lever. The indicator is mounted to the rear of the instrument cluster housing.

The indicator is mechanically actuated by a cable connected to the gear selector indicator driver lever of the gear selector lever mechanism on the steering column. This group covers only the removal and installation of the gear selector indicator. Refer to Group 19 - Steering for the gear selector indicator cable adjustment procedures.

DESCRIPTION AND OPERATION (Continued)

HEADLAMP HIGH BEAM INDICATOR LAMP

The headlamp high beam indicator lamp gives an indication when the headlamp high beams are turned on. The lamp is controlled by a hard wired input from the headlamp dimmer (multi-function) switch.

One side of the high beam indicator lamp bulb is grounded at all times. The other side of the bulb receives a battery feed through the contacts of the dimmer switch when the multi-function switch stalk is actuated to turn on the headlamp high beams. Refer to Group 8L - Lamps for more information.

LIFTGATE AJAR LAMP

The liftgate ajar lamp gives an indication when the liftgate is not completely latched. When the ignition switch is in the On position, battery voltage is supplied to one side of the indicator lamp. A normally-open, liftgate ajar switch is hard wired in series between the other side of the indicator lamp and ground. When the liftgate is opened, the liftgate ajar switch closes providing a path to ground. This causes the liftgate ajar lamp to light.

The liftgate ajar switch is integral to the liftgate latch. Refer to Group 8Q - Vehicle Theft/Security Systems for more information on the liftgate ajar switch.

LOW FUEL WARNING LAMP

The low fuel warning lamp gives an indication when the fuel level in the fuel tank has fallen below about one-eighth of a full tank, as registered on the fuel gauge. The instrument cluster circuitry lights the lamp for about two seconds when the ignition switch is turned to the On position as a bulb test. After the bulb test, the instrument cluster circuitry controls the lamp based upon fuel level and vehicle speed messages received from the Powertrain Control Module (PCM) on the Chrysler Collision Detection (CCD) data bus.

The PCM uses inputs from the fuel gauge sending unit, the Controller Anti-lock Brake (CAB), and internal programming to decide what messages are required. The PCM then sends the proper messages to the instrument cluster on the CCD data bus.

If the PCM messages indicate that the fuel level is below one-eighth of a full tank for more than ten seconds, and that the vehicle is not moving, the instrument cluster circuitry turns on the low fuel warning lamp and sends a chime tone request to the Central Timer Module (CTM). To reduce the effects of fuel sloshing, if the vehicle speed message indicates that the vehicle is moving, the fuel level message must remain below one-eighth of a full tank for more than sixty seconds before the lamp will be illuminated.

The fuel gauge sending unit is mounted to the electric fuel pump module inside the fuel tank. The sending unit has a float attached to the end of a swing-

arm. The float moves up or down within the fuel tank as the fuel level changes. As the float moves, an electrical contact on the pivot end of the swing-arm wipes across a resistor coil, which changes the resistance of the sending unit. Refer to Group 14 - Fuel Systems for more information on the PCM and its inputs.

LOW WASHER FLUID WARNING LAMP

The low washer fluid warning lamp gives an indication when the fluid level in the washer fluid reservoir is too low. The instrument cluster circuitry lights the lamp for about two seconds when the ignition switch is turned to the On position as a bulb test. After the bulb test, the instrument cluster circuitry controls the lamp based upon a hard wired input from the washer fluid level sensor.

The washer fluid level sensor uses a float in the washer fluid reservoir to monitor the fluid level. The up and down action of the float opens or closes the switch within the washer fluid level sensor that provides a ground signal to the instrument cluster circuitry.

If the instrument cluster circuitry senses a ground input from the washer fluid level sensor for more than about sixty seconds, it turns on the low washer fluid warning lamp and sends a chime tone request to the Central Timer Module (CTM). This helps to reduce the effects of fluid sloshing within the reservoir. This lamp also latches. Once the lamp has been turned on, it will remain on until washer fluid is added to the reservoir and the ignition switch is cycled.

Refer to Washer Fluid Level Sensor in Group 8K - Wiper and Washer Systems for more information.

MALFUNCTION INDICATOR LAMP

The Check Engine or Malfunction Indicator Lamp (MIL) gives an indication when the Powertrain Control Module (PCM) has recorded a Diagnostic Trouble Code (DTC) for an On-Board Diagnostics II (OBDII) emissions-related circuit or component malfunction. The lamp is controlled by the instrument cluster circuitry based upon messages received from the PCM on the Chrysler Collision Detection (CCD) data bus. The PCM sends lamp-on messages for about two seconds when the ignition switch is turned to the On position as a bulb test.

Following the bulb test, the PCM uses inputs from many emissions-related circuits and sensors, along with its internal programming, to decide whether a condition exists that requires the MIL lamp to be turned on. The PCM then sends the proper messages to the instrument cluster on the CCD data bus to turn the lamp on or off.

DESCRIPTION AND OPERATION (Continued)

Refer to Group 14 - Fuel Systems for more information on the PCM or the PCM inputs. Refer to Group 25 - Emission Control Systems for more information on DTCs and their retrieval.

OVERDRIVE-OFF INDICATOR LAMP

The overdrive-off indicator lamp gives the driver an indication that the automatic transmission overdrive has been locked out. The lamp is controlled by the Powertrain Control Module (PCM) on a hard wired circuit to instrument cluster.

The PCM receives an input from the momentary overdrive lockout switch, which is located on the end of the automatic transmission gearshift selector lever. The PCM uses the overdrive lockout switch input, along with numerous other sensor inputs and its internal programming to decide whether the overdrive-off indicator lamp should be on or off. The PCM then turns the lamp on or off by controlling the ground path for the lamp control circuit.

Refer to Group 14 - Fuel Systems for more information on the PCM and its inputs.

POWER OUTLET

An accessory power outlet is optional equipment on this model. The power outlet is installed in the instrument panel lower bezel, which is located near the center of the instrument panel, below the radio. The power outlet base is secured by a snap fit within the instrument panel lower bezel. A plastic protective cap snaps into the power outlet base when the power outlet is not being used.

The power outlet base or receptacle shell is connected to ground, and an insulated contact in the bottom of the shell is connected to battery current. The power outlet receives battery voltage from a fuse in the Power Distribution Center (PDC) at all times.

While the power outlet is very similar to a cigar lighter base unit, it does not include the two small spring-clip retainers inside the bottom of the receptacle shell that are used to secure the cigar lighter heating element to the insulated contact.

The power outlet receptacle unit and the accessory power outlet protective cap are available for service. The power outlet receptacle cannot be repaired and, if faulty or damaged, it must be replaced.

SEAT BELT REMINDER LAMP

The seat belt reminder lamp gives a visual reminder to the vehicle occupants to fasten their seat belts. The lamp is turned on by the instrument cluster circuitry for about seven seconds when the ignition switch is turned to the On position.

The instrument cluster also receives a hard wired input from the driver seat belt switch. However, this input only affects the chime function and has no

effect on the seat belt reminder lamp operation. If the driver seat belt switch is closed (seat belt is not buckled), the instrument cluster will send a chime request to the Central Timer Module (CTM) lasting the duration of the seat belt reminder lamp illumination. The chime warning will stop when the driver seat belt switch is open (seat belt is buckled).

The seat belt reminder lamp also serves as a backup for the airbag indicator lamp. About twenty seconds after the ignition switch is turned to the On position, if an inoperative airbag indicator lamp circuit was detected during the bulb test sequence, the instrument cluster circuitry will flash the seat belt reminder lamp on and off for about thirty seconds. If the seat belt reminder lamp stays on after flashing for thirty seconds, or comes on at any time other than about twenty seconds after the initial ignition-on sequence, it indicates an airbag system fault has been detected and that the airbag indicator lamp is inoperative.

Refer to Group 8M - Passive Restraint Systems for more information on the airbag system. Refer to Group 8U - Chime/Buzzer Warning Systems for more information on the chime system and the driver seat belt switch.

SECURITY LAMP

The security lamp gives an indication of the status of the optional Vehicle Theft Security System (VTSS). The lamp is controlled by a hard wired input to the instrument cluster from the high-line Central Timer Module (CTM). The lamp is turned on by the instrument cluster circuitry for about two seconds when the ignition switch is turned to the On position as a bulb test.

After the bulb test, the CTM turns the lamp on or off based upon the arming status of the VTSS. If the security lamp stays on for about thirty seconds after the ignition switch is turned to the On position, it indicates that Chrysler Collision Detection (CCD) data bus communication with the Powertrain Control Module (PCM) is inoperative, and that the next attempt to arm the VTSS may not be successful.

Refer to Group 8Q - Vehicle Theft/Security Systems for more information on the VTSS and the security lamp.

TRANSMISSION OIL TEMPERATURE WARNING LAMP

The transmission oil temperature warning lamp gives an indication when the Powertrain Control Module (PCM) has detected that the automatic transmission oil is overheated. The lamp is controlled by the instrument cluster circuitry based upon messages received from the PCM on the Chrysler Collision Detection (CCD) data bus. The PCM sends lamp-on

DESCRIPTION AND OPERATION (Continued)

messages for about two seconds when the ignition switch is turned to the On position as a bulb test.

Following the bulb test, the PCM uses an input from the automatic transmission oil temperature sensor located within the transmission, along with its internal programming, to decide whether a condition exists that requires the transmission oil temperature warning lamp to be turned on. The PCM then sends the proper messages to the instrument cluster on the CCD data bus to turn the lamp on or off. When the instrument cluster receives a message to turn the transmission oil temperature warning lamp on, it also sends a chime tone request to the Central Timer Module (CTM).

Refer to Group 21 - Transmission for more information on the oil temperature sensor. Refer to Group 14 - Fuel Systems for more information on the PCM and the PCM inputs.

TURN SIGNAL INDICATOR LAMP

The left and right turn signal indicator lamps give an indication when the turn signal circuits are activated. The lamps are hard wired in the instrument cluster, and are completely controlled by the turn signal and hazard warning (multi-function) switches.

The indicator lamps are grounded at all times and receive battery feed through the contacts of the multi-function switch when the turn signal lever (multi-function switch stalk) or the hazard warning button are actuated to their On positions. The instrument cluster circuitry does not perform a bulb test of these lamps. Refer to Group 8J - Turn Signal and Hazard Warning Systems for more information.

DIAGNOSIS AND TESTING**INSTRUMENT CLUSTER**

If all of the gauges and/or indicator lamps are inoperative, perform the Preliminary Diagnosis. If an individual gauge or Chrysler Collision Detection (CCD) data bus message-controlled indicator lamp is inoperative, go directly to the Self-Diagnostic Test. If an individual hard wired indicator lamp is inoperative, go directly to the diagnosis for that lamp. For circuit descriptions and diagrams, refer to 8W-40 - Instrument Cluster in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

PRELIMINARY DIAGNOSIS

(1) If the indicator lamps operate, but none of the gauges operate, go to Step 2. If all of the gauges and the data bus message-controlled indicator lamps are inoperative, go to Step 5.

(2) Check the Ignition-Off Draw (IOD) fuse in the junction block. If OK, go to Step 3. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(3) Check for battery voltage at the IOD fuse in the junction block. If OK, go to Step 4. If not OK, repair the open circuit as required.

(4) Disconnect and isolate the battery negative cable. Remove the instrument cluster. Connect the battery negative cable. Check for battery voltage at the fused B(+) circuit cavity of the instrument cluster wire harness connector (connector A). If OK, go to the Self-Diagnostic Test. If not OK, repair the open circuit to the IOD fuse as required.

(5) Check the fused ignition switch output (run/start) fuse in the junction block. If OK, go to Step 6. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(6) Turn the ignition switch to the On position and check for battery voltage at the fused ignition switch output (run/start) fuse in the junction block. If OK, go to Step 7. If not OK, repair the open circuit to the ignition switch as required.

(7) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Reinstall the instrument cluster. Connect the battery negative cable. Turn the ignition switch to the On position. Set the parking brake. The red brake warning lamp should light. If OK, go to Step 8. If not OK, go to Step 9.

(8) Turn the ignition switch to the Off position. Turn on the park lamps and adjust the panel lamps dimmer rheostat to the full bright position. The cluster illumination lamps should light. If OK, go to Step 10. If not OK, repair the power ground circuit from the instrument cluster wire harness connector (connector A) to ground as required.

(9) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Remove the instrument cluster. Connect the battery negative cable. Turn the ignition switch to the On position. Check for battery voltage at the fused ignition switch output (run/start) circuit cavity of the instrument cluster wire harness connector (connector A). If OK, go to the Self-Diagnostic Test. If not OK, repair the open circuit to the junction block fuse as required.

(10) Disconnect and isolate the battery negative cable. Remove the instrument cluster. Check for continuity between the logic ground circuit cavity of the instrument cluster wire harness connector (connector

DIAGNOSIS AND TESTING (Continued)

A) and a good ground. There should be continuity. If OK, go to the Self-Diagnostic Test. If not OK, repair the open circuit to ground as required.

SELF-DIAGNOSTIC TEST

The instrument cluster self-diagnostic test will put the instrument cluster into its self-diagnostic mode. In this mode the instrument cluster can perform a self-diagnostic test that will confirm that the instrument cluster circuitry, the gauges, and the CCD data bus message-controlled indicator lamps are capable of operating as designed.

However, there may still be a problem with the CCD data bus, the Powertrain Control Module (PCM), the Airbag Control Module (ACM), the Controller Anti-lock Brake (CAB), the Central Timer Module (CTM) or the inputs to one of these electronic control modules. Use a DRB scan tool and the proper Diagnostic Procedures manual for testing of these components.

(1) Begin the test with the ignition switch in the Off position.

(2) Depress the trip odometer reset button.

(3) While holding the trip odometer reset button depressed, turn the ignition switch to the On position, but do not start the engine.

(4) Keep the trip odometer reset button depressed for about ten seconds, until CHEC appears in the odometer display, then release the odometer reset button.

(5) A series of three-digit numeric failure messages may appear in the odometer display, depending upon the failure mode. If a failure message appears, see the Instrument Cluster Failure Message chart for the description and proper correction. If no failure message appears, the Self-Diagnostics will proceed as described in Step 6.

INSTRUMENT CLUSTER FAILURE MESSAGE		
Message	Description	Correction
110	A failure has been identified in the cluster CPU, RAM, or EEPROM.	1. Replace the faulty cluster.
900	The CCD data bus is not operational.	1. Check the CCD data bus connections at the cluster. 2. Check the cluster fuses. 3. Check the CCD data bus bias. 4. Check the CCD data bus voltage. 5. Check the CCD data bus terminations.
920	The cluster is not receiving a vehicle speed message from the PCM.	1. Check the PCM software level and reflash if required. 2. Use a DRB scan tool to verify that the vehicle speed message is being sent by the PCM.
921	The cluster is not receiving a distance pulse message from the PCM.	1. Check the PCM software level and reflash if required. 2. Use a DRB scan tool to verify that the distance pulse message is being sent by the PCM.
940	The cluster is not receiving an airbag lamp-on message from the ACM.	1. Check the CCD data bus connections at the ACM. 2. Check the ACM fuse.
950	The cluster is not receiving an ABS lamp-on message from the CAB.	1. Check the CCD data bus connections at the CAB. 2. Check the CAB fuse.
999	An error has been discovered.	1. Record the failure message. 2. Depress the trip odometer reset button to continue the Self-Diagnostic Test.

DIAGNOSIS AND TESTING (Continued)

(6) The instrument cluster will begin the odometer walking segment test. This test will require the operator to visually inspect each odometer segment as it is displayed to determine a pass or fail condition. First, all of the segments will be illuminated at once; then, each individual segment of the odometer display will be illuminated in sequence. If any segment in the display fails to illuminate, repeat the test to confirm the failure. If the failure is confirmed, replace the faulty instrument cluster. Following the odometer walking segment test, the instrument cluster Self-Diagnostic Test will automatically proceed as described in Step 7.

(7) The instrument cluster will perform a bulb check of each indicator lamp that the instrument cluster circuitry controls. If an individual amber indicator lamp does not illuminate during this test, the instrument cluster should be removed. However, check that the incandescent lamp bulb is not faulty and that the bulb holder is properly installed on the instrument cluster circuit board before considering instrument cluster replacement. If the bulb and bulb holder check OK, replace the faulty instrument cluster. Each of the red indicators are illuminated by a Light Emitting Diode (LED). If an LED fails to illuminate during this test, the instrument cluster must be replaced. Following the bulb check test, the instrument cluster Self-Diagnostic Test will automatically proceed as described in Step 8.

(8) The instrument cluster will perform a gauge actuator test. In this test the instrument cluster circuitry positions each of the gauge needles at three different calibration points, then returns the gauge needles to their relaxed positions. If an individual gauge does not respond properly, or does not respond at all during the gauge actuator test, the instrument cluster should be removed. However, check that the gauge terminal pins are properly inserted through the spring-clip terminal pin receptacles on the instrument cluster circuit board before considering instrument cluster replacement. If the gauge terminal connections are OK, replace the faulty instrument cluster.

(9) The Self-Diagnostic Test is now completed. The instrument cluster will automatically exit the self-diagnostic mode and return to normal operation at the completion of the test, if the ignition switch is turned to the Off position during the test, or if a vehicle speed message indicating that the vehicle is moving is received from the PCM on the CCD data bus during the test.

(10) Go back to Step 1 to repeat the test, if required.

COOLANT TEMPERATURE GAUGE

If the problem being diagnosed is related to coolant temperature gauge accuracy, be certain to confirm that the problem is with the gauge and not with cooling system performance. The actual engine coolant temperature should be checked with a test gauge or thermometer and compared to the instrument cluster coolant temperature gauge readings before you proceed with gauge diagnosis. Refer to Group 7 - Cooling System for more information. Refer to Group 8W - Wiring Diagrams for circuit descriptions and diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

Diagnosis of the coolant temperature sensor and circuit, the Chrysler Collision Detection (CCD) data bus, and/or the Powertrain Control Module (PCM) should be performed with a DRB scan tool as described in the proper Diagnostic Procedures manual. For further diagnosis of the coolant temperature gauge and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

FUEL GAUGE

If the problem being diagnosed is related to fuel gauge accuracy, be certain to confirm that the problem is with the gauge or sending unit and not with the fuel tank. Inspect the fuel tank for signs of damage or distortion that could affect the sending unit performance before you proceed with fuel gauge diagnosis. Refer to Group 8W - Wiring Diagrams for circuit descriptions and diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

Diagnosis of the fuel gauge sending unit and circuit, the Chrysler Collision Detection (CCD) data bus, and/or the Powertrain Control Module (PCM) should be performed with a DRB scan tool as

DIAGNOSIS AND TESTING (Continued)

described in the proper Diagnostic Procedures manual. For further diagnosis of the fuel gauge and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

ODOMETER AND TRIP ODOMETER

If the problem being diagnosed is related to odometer and/or trip odometer accuracy, be certain to confirm that the problem is with the display and not with an incorrect pinion factor, axle ratio, or tire size. Refer to Group 5 - Brakes for more information on the Controller Anti-lock Brake (CAB) pinion factor. Refer to Group 8W - Wiring Diagrams for circuit descriptions and diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

Diagnosis of the rear wheel speed sensor and circuit, the CAB, the Chrysler Collision Detection (CCD) data bus, and/or the Powertrain Control Module (PCM) should be performed with a DRB scan tool as described in the proper Diagnostic Procedures manual. For further diagnosis of the odometer and/or trip odometer and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

OIL PRESSURE GAUGE

If the problem being diagnosed is related to oil pressure gauge accuracy, be certain to confirm that the problem is with the gauge and not with the engine oiling system performance. The actual engine oil pressure should be checked with a test gauge and compared to the instrument cluster oil pressure gauge readings before you proceed with gauge diagnosis. Refer to Group 9 - Engines for more information. Refer to Group 8W - Wiring Diagrams for circuit descriptions and diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

NOTE: Increased oil pressure gauge needle activity may be noted with this instrument cluster than with previous designs. This increased needle activity is due to changes that were made to the instrument cluster software that are intended to make the gauge more responsive, and not due to any problem with the engine oiling or oil pressure gauge systems. No attempt at service of these systems should be made, unless the oil pressure gauge readings remain in the high end or the low end of the normal range.

Diagnosis of the oil pressure sensor and circuit, the Chrysler Collision Detection (CCD) data bus, and/or the Powertrain Control Module (PCM) should be performed with a DRB scan tool as described in the proper Diagnostic Procedures manual. For further diagnosis of the oil pressure gauge and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

SPEEDOMETER

If the problem being diagnosed is related to speedometer accuracy, be certain to confirm that the problem is with the speedometer gauge and not with an incorrect pinion factor, axle ratio, or tire size. Refer to Group 5 - Brakes for more information on the Controller Anti-lock Brake (CAB) pinion factor. Refer to Group 8W - Wiring Diagrams for circuit descriptions and diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

Diagnosis of the rear wheel speed sensor and circuit, the CAB, the Chrysler Collision Detection (CCD) data bus, and/or the Powertrain Control Module (PCM) should be performed with a DRB scan tool as described in the proper Diagnostic Procedures manual. For further diagnosis of the speedometer and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

TACHOMETER

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

DIAGNOSIS AND TESTING (Continued)

Refer to Group 8W - Wiring Diagrams for circuit descriptions and diagrams. Diagnosis of the crankshaft position sensor and circuit, the Chrysler Collision Detection (CCD) data bus, and/or the Powertrain Control Module (PCM) should be performed with a DRB scan tool as described in the proper Diagnostic Procedures manual. For further diagnosis of the tachometer and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

VOLTMETER

If the problem being diagnosed is related to voltmeter gauge accuracy, be certain to confirm proper charging system operation before considering instrument cluster replacement. Refer to Group 8C - Charging System for more information. Refer to Group 8W - Wiring Diagrams for circuit descriptions and diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

Diagnosis of the system voltage input circuit, the Chrysler Collision Detection (CCD) data bus, and/or the Powertrain Control Module (PCM) should be performed with a DRB scan tool as described in the proper Diagnostic Procedures manual. For further diagnosis of the voltmeter and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

AIRBAG INDICATOR LAMP

The diagnosis found here addresses an inoperative airbag indicator lamp condition. If the airbag indicator lamp stays on with the ignition switch in the On position, or comes on and stays on while driving, refer to Airbag System in Group 8M - Passive Restraint Systems for diagnosis. For circuit descriptions and diagrams, refer to 8W-40 - Instrument Cluster, and 8W-43 - Airbag System in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-

BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

The airbag indicator lamp has a lamp backup feature. Ten seconds after the ignition switch is turned to the On position, if the instrument cluster circuitry has detected an inoperative airbag warning lamp circuit it will flash the seat belt reminder lamp on and off for thirty seconds. Once the instrument cluster circuitry has detected an inoperative airbag warning lamp circuit, if a lamp-on message is received from the Airbag Control Module (ACM) on the Chrysler Collision Detection (CCD) data bus, the seat belt reminder lamp will remain on for the duration of the airbag system malfunction.

If the airbag indicator lamp fails to light when the ignition switch is turned to the On position, and the seat belt reminder lamp flashes following its normal display function (about six seconds after the ignition switch is turned to the On position), diagnosis of the airbag system and/or the CCD data bus should be performed with a DRB scan tool as described in the proper Diagnostic Procedures manual. For further diagnosis of the airbag indicator lamp and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

ANTI-LOCK BRAKE SYSTEM LAMP

The diagnosis found here addresses an inoperative Anti-lock Brake System (ABS) lamp condition. If the ABS lamp stays on with the ignition switch in the On position, or comes on and stays on while driving, refer to Group 5 - Brakes for diagnosis. For circuit descriptions and diagrams, refer to 8W-34 - Rear-Wheel Anti-Lock Brakes, 8W-35 - All-Wheel Anti-Lock Brakes, and 8W-40 - Instrument Cluster in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

If the ABS lamp fails to light when the ignition switch is turned to the On position, replace the ABS lamp bulb with a known good unit. If the ABS lamp still fails to operate, diagnosis of the ABS system and the Chrysler Collision Detection (CCD) data bus should be performed with a DRB scan tool as described in the proper Diagnostic Procedures manual. For further diagnosis of the ABS lamp and the

DIAGNOSIS AND TESTING (Continued)

instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

BRAKE WARNING LAMP

The diagnosis found here addresses an inoperative brake warning lamp condition. If the brake warning lamp stays on with the ignition switch in the On position and the parking brake released, or comes on while driving, refer to Group 5 - Brakes for diagnosis. If no service brake, parking brake or Anti-Lock Brake System (ABS) problem is found, the following procedure will help locate a faulty parking brake switch or circuit. Refer to 8W-40 - Instrument Cluster in Group 8W - Wiring Diagrams for circuit descriptions and diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Check the fuse in the junction block. If OK, go to Step 2. If not OK, repair the shorted circuit or component and replace the faulty fuse.

(2) Turn the ignition switch to the On position. Check for battery voltage at the fuse in the junction block. If OK, go to Step 3. If not OK, repair the open circuit to the ignition switch as required.

(3) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Unplug the wire harness connector at the park brake switch. With the park brake released, check for continuity between the park brake switch terminal and a good ground. There should be no continuity. If OK, go to Step 4. If not OK, adjust or replace the faulty park brake switch.

(4) Remove the instrument cluster. With the park brake switch wire harness connector still unplugged, check for continuity between the park brake switch wire harness connector cavity and a good ground. There should be no continuity. If OK, go to Step 5. If not OK, repair the short circuit as required.

(5) Check for continuity between the park brake switch sense circuit cavities of the instrument cluster wire harness connector (connector A) and the park brake switch wire harness connector. There should be continuity. If OK, see Instrument Cluster in the Diagnosis and Testing section of this group for further testing of the brake warning lamp and the instrument cluster circuitry. If not OK, repair the open circuit as required.

CHECK GAUGES LAMP

The diagnosis found here addresses an inoperative check gauges lamp condition. If the check gauges lamp stays on with the ignition switch in the On position, or comes on while driving with no unusual gauge readings evident, diagnosis of the Powertrain Control Module (PCM) and the Chrysler Collision Detection (CCD) data bus should be performed with a DRB scan tool as described in the proper Diagnostic Procedures manual. For circuit descriptions and diagrams, refer to 8W-40 - Instrument Cluster in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

If the coolant temperature gauge, oil pressure gauge, or voltmeter are giving an indication that should trigger the check gauges lamp, but the check gauges lamp still fails to operate, see Instrument Cluster in the Diagnosis and Testing section of this group for further diagnosis of the check gauges lamp and the instrument cluster circuitry.

CIGAR LIGHTER

For circuit descriptions and diagrams, refer to 8W-41 - Horns/Cigar Lighter in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Check the fuse in the junction block. If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(2) Turn the ignition switch to the On position. Check for battery voltage at the fuse in the junction block. If OK, go to Step 3. If not OK, repair the open circuit to the ignition switch as required.

(3) Turn the ignition switch to the Off position. Remove the cigar lighter knob and element from the cigar lighter receptacle. Check for continuity between the inside circumference of the cigar lighter recepta-

DIAGNOSIS AND TESTING (Continued)

cle and a good ground. There should be continuity. If OK, go to Step 4. If not OK, go to Step 5.

(4) Turn the ignition switch to the On position. Check for battery voltage at the insulated contact located at the back of the cigar lighter receptacle. If OK, replace the faulty cigar lighter knob and element. If not OK, go to Step 5.

(5) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Remove the instrument panel lower bezel. Check for continuity between the ground circuit cavity of the cigar lighter wire harness connector and a good ground. There should be continuity. If OK, go to Step 6. If not OK, repair the open circuit to ground as required.

(6) Connect the battery negative cable. Turn the ignition switch to the On position. Check for battery voltage at the fused ignition switch output (run/accessory) circuit cavity of the cigar lighter wire harness connector. If OK, replace the faulty cigar lighter receptacle. If not OK, repair the open circuit to the junction block fuse as required.

CLUSTER ILLUMINATION LAMP

The diagnosis found here addresses an inoperative instrument cluster illumination lamp condition. If the problem being diagnosed includes inoperative exterior lighting controlled by the headlamp switch, that system needs to be repaired first. If the exterior lamps controlled by the headlamp switch are inoperative, refer to Group 8L - Lamps for diagnosis. If no exterior lighting system problems are found, the following procedure will help locate a short or open in the cluster illumination lamp circuit. For circuit descriptions and diagrams, refer to 8W-40 - Instrument Cluster in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Check the fuse in the junction block. If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(2) Turn the park lamps on with the headlamp switch. Rotate the headlamp switch knob counterclockwise to just before the interior lamps detent. Check for battery voltage at the fuse in the junction block. Rotate the headlamp switch knob clockwise while observing the test voltmeter. The reading should go from battery voltage to zero volts. If OK,

go to Step 3. If not OK, repair the open circuit to the headlamp switch or refer to Group 8L - Lamps to diagnose the headlamp switch.

(3) Disconnect and isolate the battery negative cable. Remove the instrument cluster. Turn the headlamp switch off. Remove the fuse from the junction block. Probe the fused panel lamp dimmer switch signal circuit cavity of the instrument cluster wire harness connector (connector B). Check for continuity to a good ground. There should be no continuity. If OK, go to Step 4. If not OK, repair the short circuit as required.

(4) Reinstall the fuse in the junction block. Connect the battery negative cable. Turn the park lamps on with the headlamp switch. Rotate the headlamp switch knob counterclockwise to just before the interior lamps detent. Check for battery voltage at the fused panel lamp dimmer switch signal circuit cavity of the instrument cluster wire harness connector (connector B). If OK, replace the faulty bulb(s) and bulb holder(s). If not OK, repair the open circuit as required.

CRUISE-ON INDICATOR LAMP

The diagnosis found here addresses an inoperative cruise-on indicator lamp condition. If the problem being diagnosed is an inaccurate cruise-on indicator lamp, refer to Group 8H - Vehicle Speed Control for diagnosis of the vehicle speed control system. For circuit descriptions and diagrams, refer to 8W-33 - Vehicle Speed Control and 8W-40 - Instrument Cluster in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

If the cruise-on indicator lamp fails to light during the bulb test (about two seconds after the ignition switch is turned to the On position), replace the cruise-on indicator lamp bulb with a known good unit. If the cruise-on lamp still fails to operate, diagnosis of the Powertrain Control Module (PCM) and the Chrysler Collision Detection (CCD) data bus should be performed with a DRB scan tool as described in the proper Diagnostic Procedures manual. For further diagnosis of the cruise-on indicator lamp and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

DIAGNOSIS AND TESTING (Continued)

DOOR AJAR LAMP

The diagnosis found here addresses an inoperative door ajar lamp condition. If the problem being diagnosed is an inaccurate door ajar lamp condition, the use of a DRB scan tool and the proper Diagnostic Procedures manual are recommended. The DRB will provide confirmation that the Chrysler Collision Detection (CCD) data bus is functional, that the high-line Central Timer Module (CTM) is receiving and sending the proper messages on the CCD data bus, that the CTM is receiving the proper hard wired inputs from the door ajar switches, and that the instrument cluster is receiving the CCD data bus messages from the CTM. Refer to 8W-40 - Instrument Cluster and 8W-45 - Central Timer Module in Group 8W - Wiring Diagrams for circuit descriptions and diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

If the door ajar lamp fails to light during the bulb test function (about two seconds after the ignition switch is turned to the On position), see Instrument Cluster in the Diagnosis and Testing section of this group for further diagnosis of the door ajar lamp and the instrument cluster circuitry.

FOUR-WHEEL DRIVE INDICATOR LAMP

The diagnosis found here addresses an inoperative four-wheel drive indicator lamp condition. If the problem being diagnosed is related to lamp accuracy, be certain to confirm that the problem is with the lamp or switch and not with a damaged or inoperative transfer case or transfer case linkage. Refer to Group 21 - Transmission for more information. If no transfer case problem is found, the following procedure will help locate a short or open in the indicator lamp circuit. For circuit diagrams and descriptions, refer to 8W-40 - Instrument Cluster in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-

BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.*PART TIME*

(1) Check the fuse in the junction block. If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(2) Turn the ignition switch to the On position. Check for battery voltage at the fuse in the junction block. If OK, go to Step 3. If not OK, repair the open circuit to the ignition switch as required.

(3) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Unplug the transfer case switch wire harness connector. Check for continuity between the ground circuit cavity of the transfer case switch wire harness connector and a good ground. There should be continuity. If OK, go to Step 4. If not OK, repair the open circuit to ground as required.

(4) Connect the battery negative cable. Turn the ignition switch to the On position. Install a jumper wire between the part time four wheel drive indicator lamp driver circuit cavity of the transfer case switch wire harness connector and a good ground. The part time four-wheel drive indicator lamp should light. If OK, replace the faulty transfer case switch. If not OK, go to Step 5.

(5) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Remove the instrument cluster. With the transfer case switch wire harness connector still unplugged, check for continuity between the part time four wheel drive indicator lamp driver circuit cavity of the instrument cluster wire harness connector (connector B) and a good ground. There should be no continuity. If OK, go to Step 6. If not OK, repair the short circuit as required.

(6) Check for continuity between the part time four wheel drive indicator lamp driver circuit cavities of the instrument cluster wire harness connector (connector B) and the transfer case switch wire harness connector. There should be continuity. If OK, replace the faulty bulb. If not OK, repair the open circuit as required.

FULL TIME

(1) Check the fuse in the junction block. If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(2) Turn the ignition switch to the On position. Check for battery voltage at the fuse in the junction block. If OK, go to Step 3. If not OK, repair the open circuit to the ignition switch as required.

(3) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Unplug the transfer case switch wire harness connec-

DIAGNOSIS AND TESTING (Continued)

tor. Check for continuity between the ground circuit cavity of the transfer case switch wire harness connector and a good ground. There should be continuity. If OK, go to Step 4. If not OK, repair the open circuit to ground as required.

(4) Connect the battery negative cable. Turn the ignition switch to the On position. Install a jumper wire between the full time four wheel drive indicator lamp driver circuit cavity of the transfer case switch wire harness connector and a good ground. The full time four-wheel drive indicator lamp should light. If OK, replace the faulty transfer case switch. If not OK, go to Step 5.

(5) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Remove the instrument cluster. With the transfer case switch wire harness connector still unplugged, check for continuity between the full time four wheel drive indicator lamp driver circuit cavity of the instrument cluster wire harness connector (connector A) and a good ground. There should be no continuity. If OK, go to Step 6. If not OK, repair the short circuit as required.

(6) Check for continuity between the full time four wheel drive indicator lamp driver circuit cavities of the instrument cluster wire harness connector (connector A) and the transfer case switch wire harness connector. There should be continuity. If OK, replace the faulty bulb. If not OK, repair the open circuit as required.

HEADLAMP HIGH BEAM INDICATOR LAMP

The diagnosis found here addresses an inoperative headlamp high beam indicator lamp condition. If the problem being diagnosed is related to inoperative headlamp high beams, refer to Group 8L - Lamps for diagnosis of the headlamp system. If no headlamp system problems are found, the following procedure will help locate an open in the high beam indicator lamp circuit. For circuit descriptions and diagrams, refer to 8W-40 - Instrument Cluster and 8W-50 - Front Lighting in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable. Remove the instrument cluster.

(2) Connect the battery negative cable. Turn the headlamps on and select the high beams with the

multi-function switch stalk. Check for battery voltage at the high beam indicator driver circuit cavity of the instrument cluster wire harness connector (connector B). If OK, replace the faulty bulb. If not OK, repair the open circuit to the headlamp dimmer (multi-function) switch as required.

LIFTGATE AJAR LAMP

The diagnosis found here addresses an inoperative liftgate ajar lamp condition. If the problem being diagnosed is related to lamp accuracy, be certain to confirm that the problem is with the lamp or liftgate ajar switch and not with a damaged or improperly adjusted liftgate latch or latch striker. Inspect the liftgate for proper closing and latch adjustment before you proceed with lamp diagnosis. Refer to Group 23 - Body for more information. Refer to 8W-40 - Instrument Cluster and 8W-45 - Central Timer Module in Group 8W - Wiring Diagrams for circuit descriptions and diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Check the fuse in the junction block. If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(2) Turn the ignition switch to the On position. Check for battery voltage at the fuse in the junction block. If OK, go to Step 3. If not OK, repair the open circuit to the ignition switch as required.

(3) Turn the ignition switch to the Off position. Unplug the wire harness connector from the liftgate ajar switch. Check for continuity between the ground circuit cavity of the liftgate ajar switch wire harness connector and a good ground. There should be continuity. If OK, go to Step 4. If not OK, repair the open circuit to ground as required.

(4) Install a jumper wire between the ground circuit and the liftgate ajar switch sense circuit cavities of the liftgate ajar switch wire harness connector. Turn the ignition switch to the On position. The liftgate ajar lamp should light. Remove the jumper wire and the lamp should go off. If OK, replace the faulty liftgate latch. If not OK, go to Step 5.

(5) Disconnect and isolate the battery negative cable. Remove the instrument cluster. The liftgate ajar switch wire harness connector is still unplugged. Check for continuity between the liftgate ajar switch sense circuit cavity of the instrument cluster wire

DIAGNOSIS AND TESTING (Continued)

harness connector (connector B) and a good ground. There should be no continuity. If OK, go to Step 6. If not OK, repair the short circuit as required.

(6) Check for continuity between the liftgate ajar switch sense circuit cavities of the instrument cluster wire harness connector (connector B) and the liftgate ajar switch wire harness connector. There should be continuity. If OK, see Instrument Cluster in the Diagnosis and Testing section of this group for further testing of the liftgate ajar lamp and the instrument cluster circuitry. If not OK, repair the open circuit as required.

LOW FUEL WARNING LAMP

The diagnosis found here addresses an inoperative low fuel warning lamp condition. If the problem being diagnosed is related to lamp accuracy, be certain to confirm the problem is with the low fuel warning lamp and not with the fuel gauge circuit. See Fuel Gauge in the Diagnosis and Testing section of this group. If no fuel gauge problem is found, see Instrument Cluster in the Diagnosis and Testing section of this group. For circuit descriptions and diagrams, refer to 8W-40 - Instrument Cluster in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

If the low fuel warning lamp fails to light during the bulb test (about two seconds after the ignition switch is turned to the On position), replace the low fuel warning lamp bulb with a known good unit. If the indicator lamp still fails to operate, diagnosis of the fuel gauge sending unit and circuit, the Powertrain Control Module (PCM), and the Chrysler Collision Detection (CCD) data bus should be performed with a DRB scan tool as described in the proper Diagnostic Procedures manual. For further diagnosis of the low fuel warning lamp and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

LOW WASHER FLUID WARNING LAMP

The diagnosis found here addresses an inoperative low washer fluid warning lamp condition. If the problem being diagnosed is related to lamp accuracy, be certain to confirm that the problem is with the lamp or washer fluid level sensor and not with a damaged or empty washer fluid reservoir. Inspect the reservoir

for proper fluid level and signs of damage or distortion that could affect sensor performance before you proceed with lamp diagnosis. Refer to Group 8K - Wiper and Washer Systems for more information. For circuit descriptions and diagrams, refer to 8W-40 - Instrument Cluster in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Check the fuse in the junction block. If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(2) Turn the ignition switch to the On position. Check for battery voltage at the fuse in the junction block. If OK, go to Step 3. If not OK, repair the open circuit to the ignition switch as required.

(3) Turn the ignition switch to the Off position. Unplug the wire harness connector from the washer fluid level sensor. Install a jumper wire between the two cavities of the sensor wire harness connector. Turn the ignition switch to the On position. The low washer fluid warning lamp should light. Remove the jumper wire and the lamp should go off. If OK, replace the faulty washer fluid level sensor. If not OK, go to Step 4.

(4) Turn the ignition switch to the Off position. Check for continuity between the ground circuit cavity of the washer fluid level sensor wire harness connector and a good ground. There should be continuity. If OK, go to Step 5. If not OK, repair the open circuit as required.

(5) Disconnect and isolate the battery negative cable. Remove the instrument cluster. The washer fluid level sensor wire harness connector is still unplugged. Check for continuity between the washer fluid level sense circuit cavity of the instrument cluster wire harness connector (connector B) and a good ground. There should be no continuity. If OK, go to Step 6. If not OK, repair the short circuit as required.

(6) Check for continuity between the washer fluid level sense circuit cavities of the instrument cluster wire harness connector (connector B) and the washer fluid level sensor wire harness connector. There should be continuity. If OK, replace the faulty bulb. If not OK, repair the open circuit as required.

DIAGNOSIS AND TESTING (Continued)

MALFUNCTION INDICATOR LAMP

The diagnosis found here addresses an inoperative malfunction indicator (Check Engine) lamp condition. If the lamp comes on and stays on with the engine running, refer to Group 14 - Fuel Systems for diagnosis. For circuit descriptions and diagrams, refer to 8W-40 - Instrument Cluster in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

If the malfunction indicator lamp fails to light during the bulb test (about two seconds after the ignition switch is turned to the On position), replace the malfunction indicator lamp bulb with a known good unit. If the indicator lamp still fails to operate, diagnosis of the Powertrain Control Module (PCM) and the Chrysler Collision Detection (CCD) data bus should be performed with a DRB scan tool as described in the proper Diagnostic Procedures manual. For further diagnosis of the malfunction indicator lamp and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

OVERDRIVE-OFF INDICATOR LAMP

The diagnosis found here addresses an inoperative overdrive-off indicator lamp condition. If the overdrive-off indicator lamp comes on and stays on with the engine running, refer to the proper Diagnostic Procedures manual for diagnosis of the Powertrain Control Module (PCM) and the transmission control system circuits. For circuit descriptions and diagrams, refer to 8W-31 - Transmission Control System and 8W-40 - Instrument Cluster in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Check the fuse in the junction block. If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(2) Turn the ignition switch to the On position. Check for battery voltage at the fuse in the junction block. If OK, go to Step 3. If not OK, repair the open circuit to the ignition switch as required.

(3) Disconnect and isolate the battery negative cable. Unplug the gray PCM wire harness connector. Install a jumper wire between the overdrive lamp driver circuit cavity of the gray PCM wire harness connector and a good ground. Connect the battery negative cable. Turn the ignition switch to the On position. The overdrive-off indicator lamp should light. Remove the jumper wire and the lamp should turn off. If OK, refer to the proper Diagnostic Procedures manual for diagnosis of the Powertrain Control Module (PCM) and the transmission control system circuits. If not OK, go to Step 4.

(4) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Remove the instrument cluster. Check for continuity between the overdrive lamp driver circuit cavity of the gray PCM wire harness connector and a good ground. There should be no continuity. If OK, go to Step 5. If not OK, repair the short circuit as required.

(5) Check for continuity between the overdrive lamp driver circuit cavities of the gray PCM wire harness connector and the instrument cluster wire harness connector (connector A). There should be continuity. If OK, replace the faulty bulb. If not OK, repair the open circuit as required.

POWER OUTLET

For circuit descriptions and diagrams, refer to 8W-41 - Horns/Cigar Lighter in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Check the fuse in the Power Distribution Center (PDC). If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(2) Check for battery voltage at the fuse in the PDC. If OK, go to Step 3. If not OK, repair the open circuit to the battery as required.

DIAGNOSIS AND TESTING (Continued)

(3) Remove the plastic protective cap from the power outlet receptacle. Check for continuity between the inside circumference of the power outlet receptacle and a good ground. There should be continuity. If OK, go to Step 4. If not OK, go to Step 5.

(4) Check for battery voltage at the insulated contact located at the back of the power outlet receptacle. If not OK, go to Step 5.

(5) Disconnect and isolate the battery negative cable. Remove the instrument panel lower bezel. Check for continuity between the ground circuit cavity of the power outlet wire harness connector and a good ground. There should be continuity. If OK, go to Step 6. If not OK, repair the open circuit to ground as required.

(6) Connect the battery negative cable. Check for battery voltage at the fused B(+) circuit cavity of the power outlet wire harness connector. If OK, replace the faulty power outlet receptacle. If not OK, repair the open circuit to the PDC fuse as required.

SEAT BELT REMINDER LAMP

The diagnosis found here addresses an inoperative seat belt reminder lamp condition. If the lamp comes on and flashes following its display function (about ten seconds after the ignition switch is turned to the On position), it indicates an inoperative airbag indicator lamp. See Airbag Indicator Lamp in the Diagnosis and Testing section of this group for further diagnosis. For circuit descriptions and diagrams, refer to 8W-40 - Instrument Cluster in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

If the seat belt reminder lamp fails to light during its normal display function (about six seconds after the ignition switch is turned to the On position), see Instrument Cluster in the Diagnosis and Testing section of this group for further diagnosis. This lamp is completely controlled by the instrument cluster circuitry. The hard wired seat belt switch input to the instrument cluster has no control over the seat belt reminder lamp function and is only used by the instrument cluster circuitry as a reference for its chime request function. Refer to Group 8U - Chime/Buzzer Warning Systems for more information on the seat belt switch input to the instrument cluster.

SECURITY LAMP

The diagnosis found here addresses an inoperative security lamp condition. If the problem being diagnosed is an inaccurate security lamp, refer to Group 8Q - Vehicle Theft/Security Systems for diagnosis of the Vehicle Theft Security System (VTSS). For circuit descriptions and diagrams, refer to 8W-39 - Vehicle Security System and 8W-40 - Instrument Cluster in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Check the fuse in the Power Distribution Center (PDC). If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(2) Check for battery voltage at the fuse in the PDC. If OK, go to Step 3. If not OK, repair the open circuit to the battery as required.

(3) Disconnect and isolate the battery negative cable. Remove the Central Timer Module (CTM). Unplug the CTM wire harness connectors. Connect the battery negative cable. Install a jumper wire between the security indicator control circuit cavity of the 18-way CTM wire harness connector and a good ground. The security lamp should light. If OK, use a DRB scan tool and the proper Diagnostic Procedures manual to diagnose the Vehicle Theft Security System (VTSS) and the CTM. If not OK, go to Step 4.

(4) Disconnect and isolate the battery negative cable. Remove the instrument cluster. Check for continuity between the fused B(+) circuit cavity of the instrument cluster wire harness connector (connector A) and the fuse in the PDC. There should be continuity. If OK, go to Step 5. If not OK, repair the open circuit to the PDC as required.

(5) Check for continuity between the security indicator control circuit cavities of the instrument cluster wire harness connector (connector A) and the 18-way CTM wire harness connector. There should be continuity. If OK, see Instrument Cluster in the Diagnosis and Testing section of this group for further diagnosis of the security lamp and the instrument cluster circuitry. If not OK, repair the open circuit as required.

DIAGNOSIS AND TESTING (Continued)

TRANSMISSION OIL TEMPERATURE WARNING LAMP

The diagnosis found here addresses an inoperative transmission oil temperature warning lamp condition. If the transmission oil temperature warning lamp comes on and stays on with the engine running, refer to Group 21 - Transmission for diagnosis of a transmission overheating condition. For circuit descriptions and diagrams, refer to 8W-40 - Instrument Cluster in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

If the transmission oil temperature warning lamp fails to light during the bulb test (about two seconds after the ignition switch is turned to the On position), diagnosis of the Powertrain Control Module (PCM) and the Chrysler Collision Detection (CCD) data bus should be performed with a DRB scan tool as described in the proper Diagnostic Procedures manual. For further diagnosis of the transmission oil temperature warning lamp and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

TURN SIGNAL INDICATOR LAMP

The diagnosis found here addresses an inoperative turn signal indicator lamp condition. For any other turn signal problem, refer to Group 8J - Turn Signal and Hazard Warning Systems for diagnosis. If no turn signal or hazard warning system problem is found, the following procedure will help locate a short or open in the indicator lamp circuit. For circuit descriptions and diagrams, refer to 8W-40 - Instrument Cluster and 8W-50 - Front Lighting in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable. Remove the instrument cluster.

(2) Connect the battery negative cable. Activate the hazard warning system by moving the hazard warning switch button to the On position. Check for battery voltage at the inoperative (right or left) turn signal circuit cavity of the instrument cluster wire harness connector (connector B). There should be a switching (on and off) battery voltage signal. If OK, replace the faulty (right or left) turn signal indicator lamp bulb. If not OK, repair the open circuit to the turn signal/hazard warning (multi-function) switch as required.

REMOVAL AND INSTALLATION**CLUSTER BEZEL**

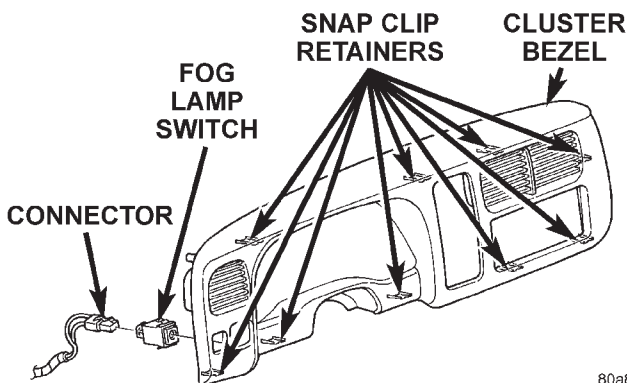
WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) If the vehicle is equipped with an automatic transmission, turn the ignition switch to the Unlock position, set the parking brake, and place the automatic transmission gear selector lever in the Low position.

(3) If the vehicle is so equipped, set the tilt steering column in its lowest position.

(4) Using a trim stick or another suitable wide flat-bladed tool, gently pry around the perimeter of the cluster bezel to disengage the nine snap clip retainers that secure the bezel to the instrument panel (Fig. 1).



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Fig. 1 Cluster Bezel Remove/Install

REMOVAL AND INSTALLATION (Continued)

(5) Pull the cluster bezel away from the instrument panel far enough to access and unplug the wire harness connector from the back of the fog lamp switch delete plug or, if the vehicle is so equipped, the fog lamp switch.

(6) Remove the cluster bezel from the instrument panel.

(7) Reverse the removal procedures to install.

FOG LAMP SWITCH

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Remove the cluster bezel from the instrument panel. See Cluster Bezel in the Removal and Installation section of this group for the procedures.

(3) From the back side of the cluster bezel, squeeze the tabs on the back of the fog lamp switch that secure it in the receptacle on the back of the bezel (Fig. 2).

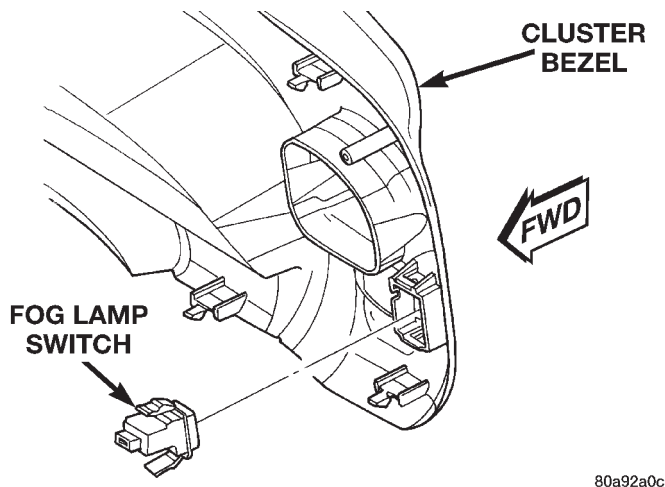


Fig. 2 Fog Lamp Switch Remove/Install

(4) Pull the fog lamp switch out of the receptacle on the back of the cluster bezel.

(5) Reverse the removal procedures to install. Be certain that the fog lamp switch latches are fully engaged in the cluster bezel receptacle.

HEADLAMP SWITCH

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

WARNING: IF THE HEADLAMP SWITCH WAS ON, WAIT FIVE MINUTES TO ALLOW THE CERAMIC DIMMER RESISTOR TO COOL. IF THE CERAMIC DIMMER RESISTOR IS NOT ALLOWED TO COOL, IT CAN BURN YOUR FINGERS.

(1) Disconnect and isolate the battery negative cable.

(2) Remove the cluster bezel from the instrument panel. See Cluster Bezel in the Removal and Installation section of this group for the procedures.

(3) Remove the three screws that secure the headlamp switch bezel to the instrument panel (Fig. 3).

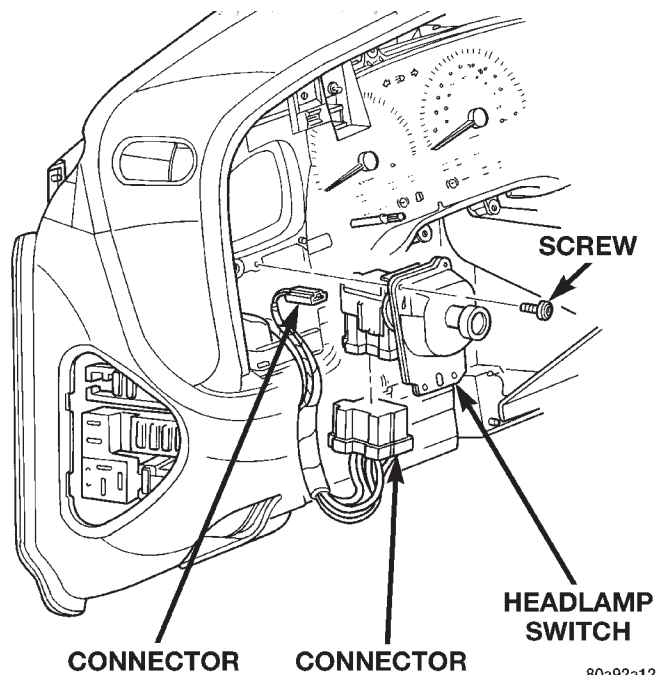


Fig. 3 Headlamp Switch and Bezel Remove/Install

(4) Pull the headlamp switch and bezel out from the instrument panel far enough to access the wire harness connectors.

(5) Unplug the two wire harness connectors from the headlamp switch.

(6) Pull the headlamp switch control knob out to the On position stop.

REMOVAL AND INSTALLATION (Continued)

(7) Depress the headlamp switch knob and shaft release button on the top of the switch.

(8) While holding the release button depressed, pull the knob and shaft out of the headlamp switch.

(9) Remove the push nut retainer that secures the headlamp switch bezel to the switch mounting bracket.

(10) Remove the headlamp switch bezel from the switch mounting bracket.

(11) Remove the spanner nut that secures the headlamp switch mounting bracket to the switch.

(12) Remove the headlamp switch mounting bracket from the switch.

(13) Reverse the removal procedures to install. Tighten the headlamp switch and bezel mounting screws to 2.2 N·m (20 in. lbs.).

INSTRUMENT CLUSTER

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Remove the cluster bezel from the instrument panel. See Cluster Bezel in the Removal and Installation section of this group for the procedures.

(2) Remove the four screws that secure the instrument cluster to the instrument panel (Fig. 4).

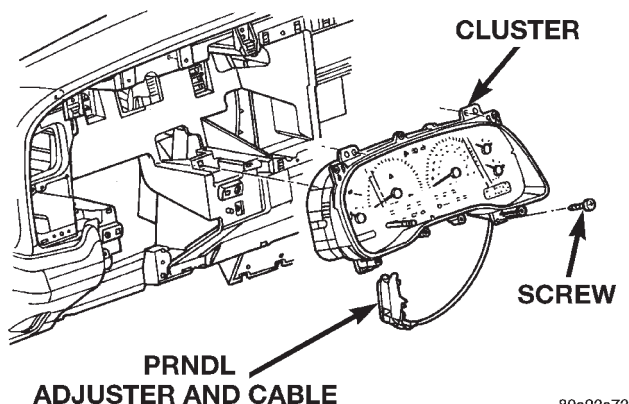


Fig. 4 Instrument Cluster Remove/Install

(3) Pull the instrument cluster rearward to disengage the two self-docking wire harness connectors.

NOTE: The instrument cluster has two self-docking wire harness connectors that will be automatically

aligned with, and connected to the instrument panel wire harness when the cluster is installed in the instrument panel.

(4) Pull the instrument cluster rearward far enough to access and remove the gear selector indicator from the back of the cluster housing. See Gear Selector Indicator in the Removal and Installation section of this group for the procedures.

(5) Remove the instrument cluster from the instrument panel.

(6) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

CLUSTER COMPONENTS

CLUSTER LENS AND HOOD

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Remove the instrument cluster from the instrument panel. See Instrument Cluster in the Removal and Installation section of this group for the procedures.

(3) Remove the seven screws that secure the cluster lens and hood to the cluster housing (Fig. 5).

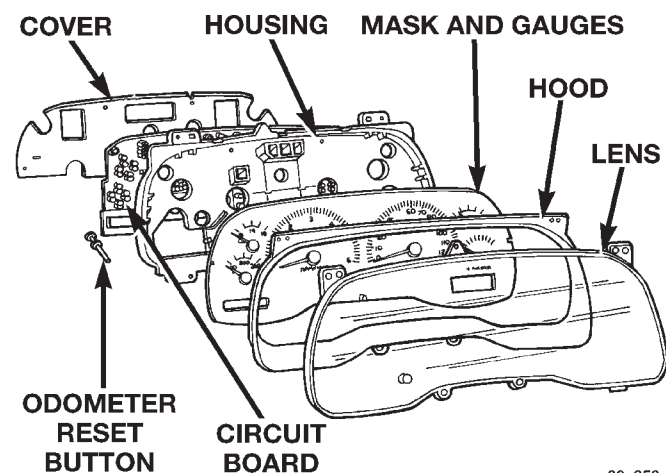


Fig. 5 Instrument Cluster Components

REMOVAL AND INSTALLATION (Continued)

(4) Remove the cluster lens and the cluster hood from the cluster housing.

CAUTION: Do not touch the face of the gauge mask or the back of the cluster lens with your finger. It will leave a permanent finger print.

(5) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

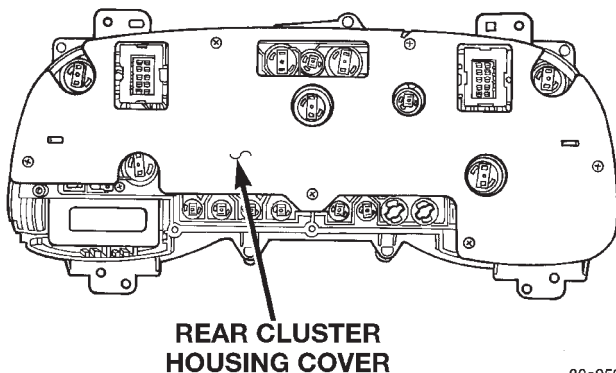
CLUSTER HOUSING REAR COVER

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Remove the instrument cluster from the instrument panel. See Instrument Cluster in the Removal and Installation section of this group for the procedures.

(3) Remove the six screws that secure the rear cover to the cluster housing (Fig. 6).



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Fig. 6 Cluster Housing Rear Cover Remove/Install

(4) Remove the rear cover from the cluster housing.

(5) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

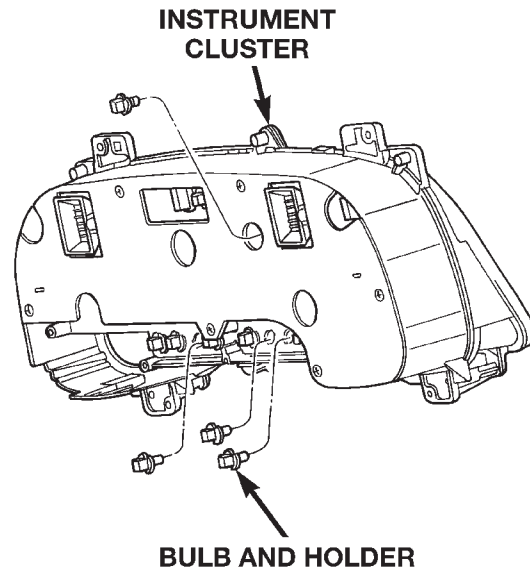
CLUSTER BULB

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRE-

CAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Remove the instrument cluster from the instrument panel. See Instrument Cluster in the Removal and Installation section of this group for the procedures.

(2) Remove the bulb and bulb holder from the circuit board on the rear of the instrument cluster housing by turning the holder counterclockwise (Fig. 7).



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Fig. 7 Cluster Bulb Remove/Install

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the instrument cluster circuit board and/or the gauges.

(3) Reverse the removal procedures to install.

STEERING COLUMN OPENING COVER AND KNEE BLOCKER

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Remove the three screws that secure the bottom of the steering column opening cover and knee

REMOVAL AND INSTALLATION (Continued)

blocker to the lower instrument panel reinforcement (Fig. 8).

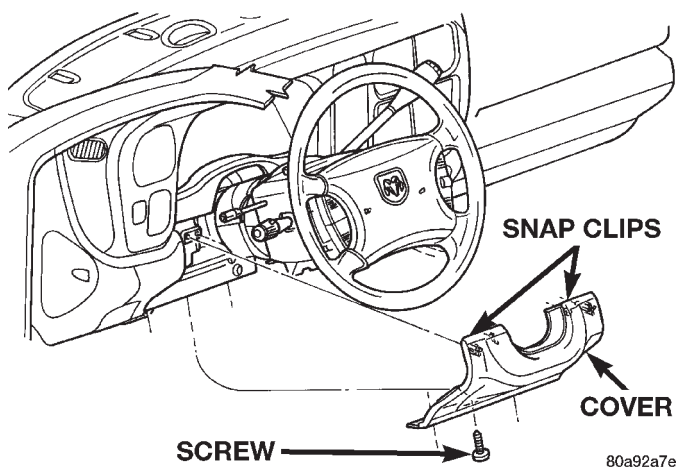


Fig. 8 Steering Column Opening Cover and Knee Blocker Remove/Install

(3) Using a trim stick or another suitable wide flat-bladed tool, gently pry the upper edges of the steering column opening cover and knee blocker to release the snap clip retainers that secure it to the instrument panel on each side of the steering column.

(4) Remove the steering column opening cover and knee blocker from the instrument panel.

(5) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

GEAR SELECTOR INDICATOR

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Remove the instrument cluster from the instrument panel. See Instrument Cluster in the Removal and Installation section of this group for the procedures.

(3) Remove the two screws that secure the gear selector indicator mechanism to the rear of the instrument cluster housing (Fig. 9).

(4) Remove the gear selector indicator mechanism from the cluster housing.

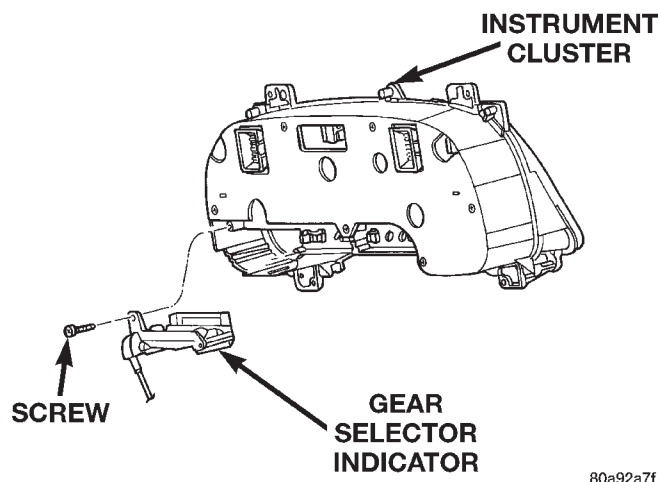


Fig. 9 Gear Selector Indicator Remove/Install

(5) Remove the steering column opening cover and knee blocker from the instrument panel. See Steering Column Opening Cover and Knee Blocker in the Removal and Installation section of this group for the procedures.

(6) Disengage the loop end of the gear selector indicator cable from the lever on the left side of the steering column (Fig. 10).

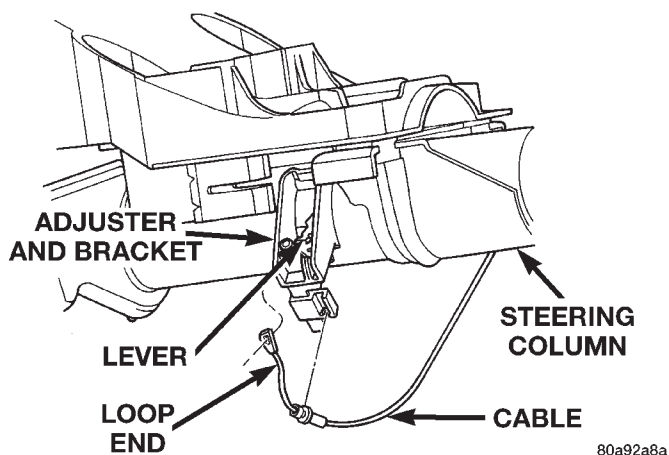


Fig. 10 Gear Selector Indicator Cable Remove/Install

(7) Squeeze the sides of the plastic adjuster bracket to disengage the tabs that secure it to the sides of the steering column window.

(8) Reverse the removal procedures to install. Tighten the gear selector indicator mounting screws to 2.2 N·m (20 in. lbs.). Refer to Group 19 - Steering for the gear selector indicator cable adjustment procedure.

REMOVAL AND INSTALLATION (Continued)

PARK BRAKE RELEASE HANDLE

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

- (1) Disconnect and isolate the battery negative cable.
- (2) Reach under the driver side outboard end of the instrument panel to access and unsnap the plastic retainer clip from the park brake release linkage rod at the back of the park brake release handle.
- (3) Disengage the park brake release linkage rod end from the back of the park brake release handle.
- (4) Using a trim stick or another suitable wide flat-bladed tool, gently pry one of the park brake handle hinge tabs away from its pivot pin on the instrument panel (Fig. 11).

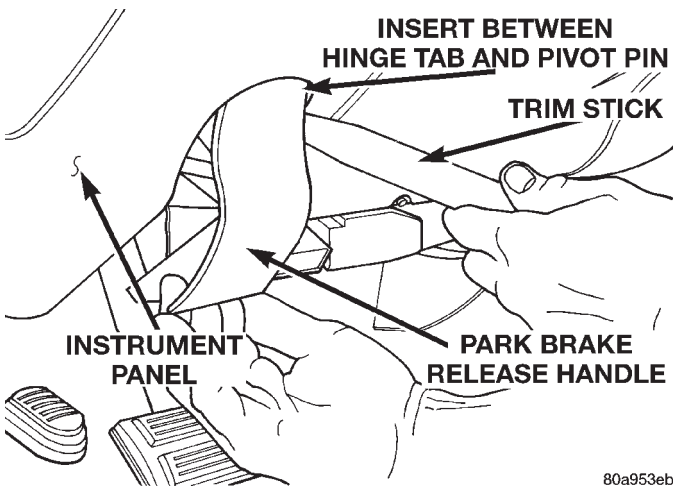


Fig. 11 Park Brake Release Handle Remove/Install

- (5) While prying the park brake release handle hinge tab with one hand, use the other hand to pull the handle firmly down and away from the pivot pin.
- (6) Reverse the removal procedures to install.

JUNCTION BLOCK

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- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the fuse access panel by unsnapping it from the left outboard end of the instrument panel (Fig. 12).

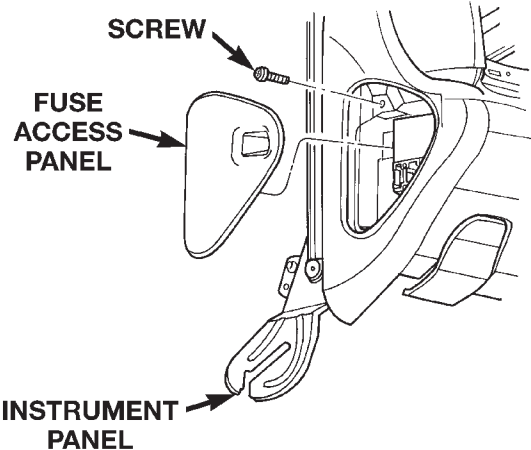
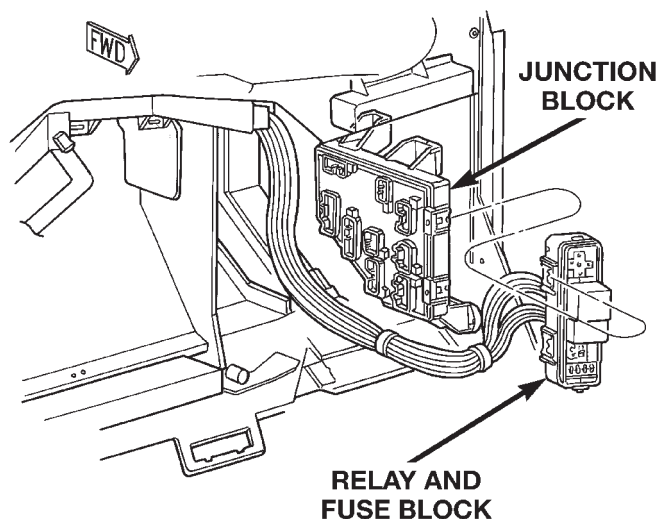


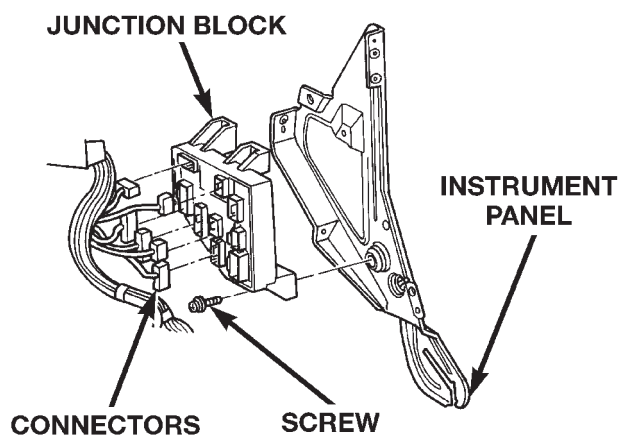
Fig. 12 Fuse Access Panel Remove/Install

- (3) Remove one screw through the instrument panel fuse access panel opening that secures the junction block to the left instrument panel end bracket.
- (4) Remove the steering column opening cover and knee blocker from the instrument panel. See Steering Column Opening Cover and Knee Blocker in the Removal and Installation section of this group for the procedures.
- (5) Reach through the outboard side of the instrument panel steering column opening to access and unplug all of the wire harness connectors from the junction block cavities.
- (6) Still reaching through the instrument panel steering column opening, remove the relay and fuse block from the junction block. Push the relay and fuse block towards the left end of the instrument panel to disengage the mounting slots from the tabs on the junction block (Fig. 13).
- (7) Still reaching through the instrument panel steering column opening, remove the one screw that secures the junction block to the left instrument panel end bracket (Fig. 14).
- (8) Remove the junction block from the left instrument panel end bracket.
- (9) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

REMOVAL AND INSTALLATION (Continued)



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Fig. 13 Relay and Fuse Block Remove/Install

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Fig. 14 Junction Block Remove/Install**INSTRUMENT PANEL LOWER REINFORCEMENT**

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

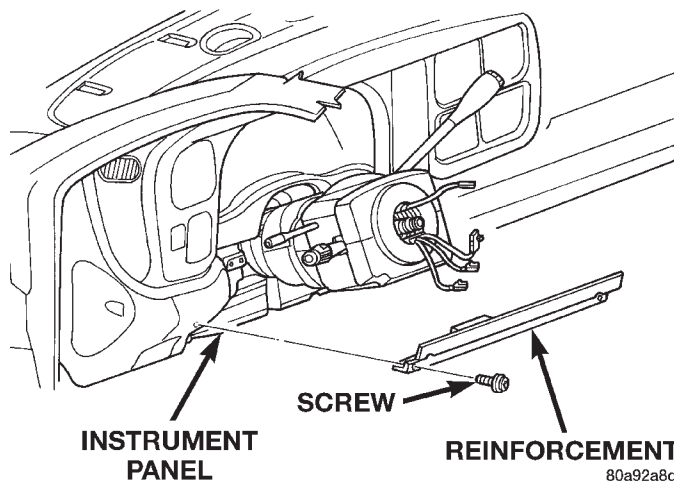
(1) Disconnect and isolate the battery negative cable.

(2) Remove the steering column opening cover and knee blocker from the instrument panel. See Steering Column Opening Cover and Knee Blocker in the Removal and Installation section of this group for the procedures.

(3) Remove the two screws that secure the inside hood latch release handle to the instrument panel lower reinforcement and lower the release handle to the floor.

(4) Depress the latch tabs that secure the 16-way data link wire harness connector in the mounting tab on the instrument panel lower reinforcement, and push the connector out of its mounting hole.

(5) Remove the four screws that secure the lower reinforcement to the instrument panel (Fig. 15).



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Fig. 15 Instrument Panel Lower Reinforcement Remove/Install

(6) Remove the lower reinforcement from the instrument panel.

(7) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

INSTRUMENT PANEL CENTER SUPPORT BRACKET

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Pull the carpet back from the front of the floor panel transmission tunnel far enough to access the center support bracket mounting screws.

(3) Remove the two screws that secure the bracket to the instrument panel center support.

(4) Remove the two screws on the left, and one screw on the right that secure the instrument panel center support bracket to the Airbag Control Module

REMOVAL AND INSTALLATION (Continued)

(ACM) bracket on the floor panel transmission tunnel (Fig. 16).

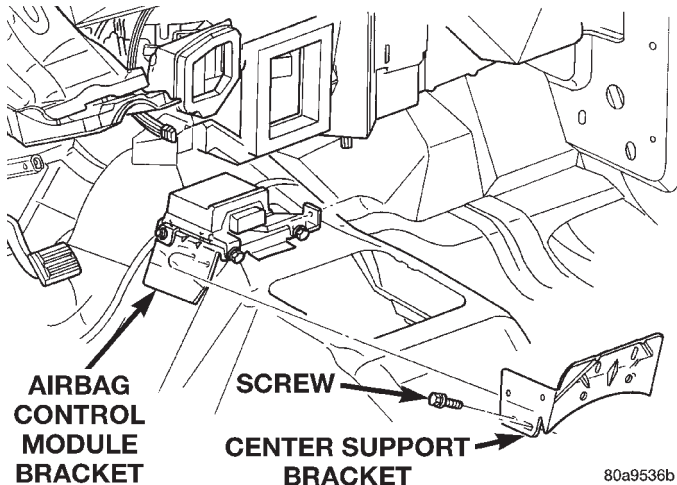


Fig. 16 Instrument Panel Center Support Bracket Remove/Install

(5) Remove the center support bracket from the instrument panel.

(6) Reverse the removal procedures to install. Tighten the mounting screws to 12 N·m (105 in. lbs.).

ASH RECEIVER

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Open the ash receiver. Depress the spring retainer in the center of the ash receiver to release it, then lift the ash receiver slightly and pull it out from the pivot pins in the instrument panel lower bezel.

(3) Remove the two screws that secure the flame shield to the instrument panel lower bezel (Fig. 17).

(4) Pull the flame shield out from the instrument panel lower bezel far enough to disengage the two retaining tabs on the top, then lower the shield far enough to access the ash receiver lamp and hood.

(5) Squeeze the ash receiver lamp and hood bracket to remove the unit from the mounting hole in the flame shield.

(6) Remove the flame shield from the instrument panel lower bezel.

(7) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

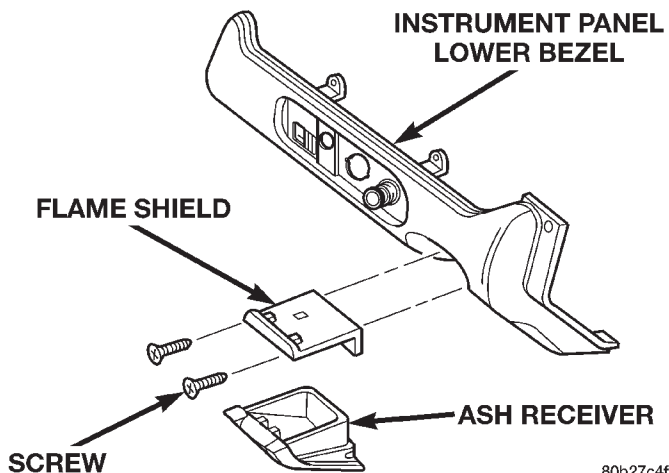


Fig. 17 Ash Receiver Remove/Install

INSTRUMENT PANEL LOWER BEZEL

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(1) Disconnect and isolate the battery negative cable.

(2) Remove the cluster bezel from the instrument panel. See Cluster Bezel in the Removal and Installation section of this group for the procedures.

(3) Open the glove box.

(4) Remove the two screws that secure the bottom of the lower bezel to the instrument panel (Fig. 18).

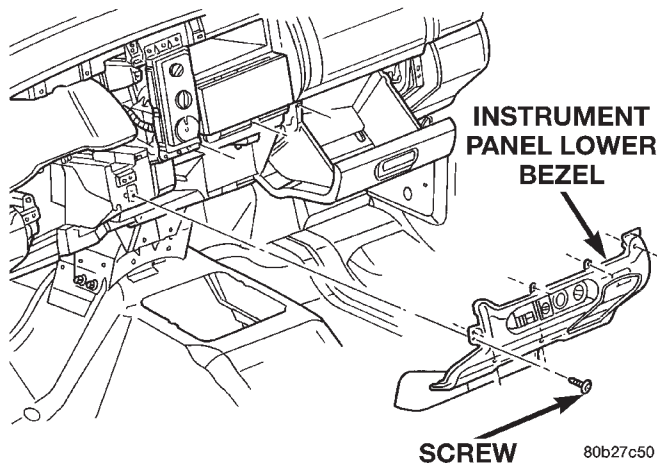


Fig. 18 Instrument Panel Lower Bezel Remove/Install

REMOVAL AND INSTALLATION (Continued)

(5) Remove the four screws that secure the top of the lower bezel to the instrument panel.

(6) Pull the bezel away from the instrument panel far enough to access and unplug the wire harness connectors from the cigar lighter, the power outlet, and the rear window switch module.

(7) Squeeze the ash receiver lamp and hood bracket to remove the unit from the mounting hole in the flame shield.

(8) Remove the lower bezel from the instrument panel.

(9) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

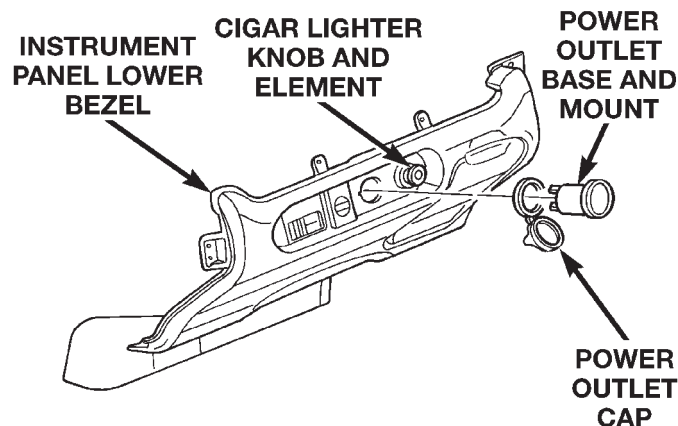
CIGAR LIGHTER AND POWER OUTLET

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Remove the lower bezel from the instrument panel. See Instrument Panel Lower Bezel in the Removal and Installation section of this group for the procedures.

(3) Pull the cigar lighter knob and element out of the cigar lighter receptacle base, or unsnap the power outlet cap from the power outlet receptacle base (Fig. 19).



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Fig. 19 Cigar Lighter and Power Outlet

(4) Look inside the cigar lighter or power outlet receptacle base and note the position of the rectangular retaining bosses of the mount that secures the

receptacle base to the instrument panel lower bezel (Fig. 20).

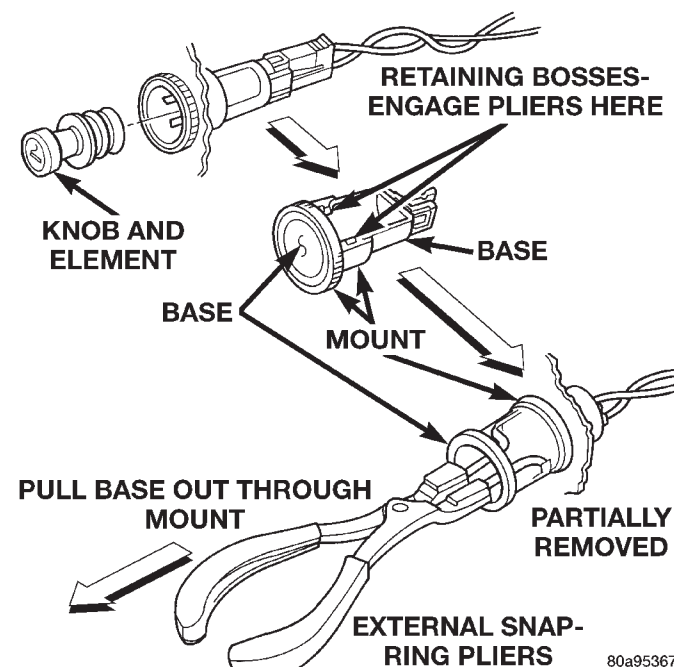


Fig. 20 Cigar Lighter and Power Outlet Remove/Install

(5) Insert a pair of external snap ring pliers into the cigar lighter or power outlet receptacle base and engage the tips of the pliers with the retaining bosses of the mount.

(6) Squeeze the pliers to disengage the mount retaining bosses from the receptacle base and, using a gentle rocking motion, pull the pliers and the receptacle base out of the mount.

(7) Remove the cigar lighter or power outlet mount from the instrument panel lower bezel.

(8) Reverse the removal procedures to install.

GLOVE BOX LAMP AND SWITCH

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Open the glove box.

(3) Reach through and above the instrument panel glove box opening upper reinforcement to unlatch

REMOVAL AND INSTALLATION (Continued)

and unplug the wire harness connector from the glove box lamp and switch (Fig. 21).

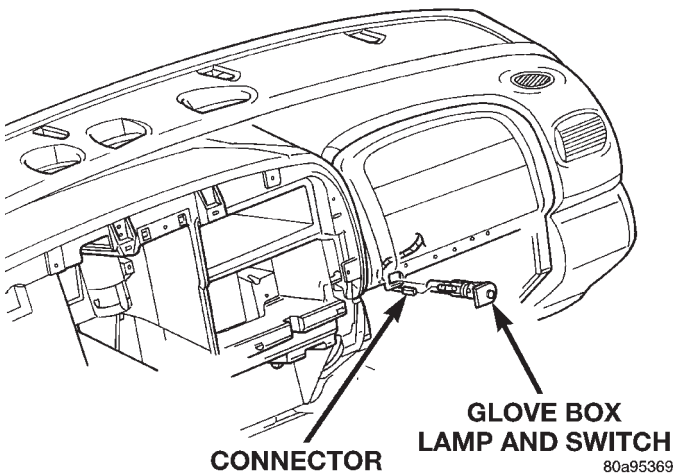


Fig. 21 Glove Box Lamp and Switch Remove/Install

(4) Reach through and above the instrument panel glove box opening upper reinforcement to depress the retaining tabs on the top and bottom of the glove box lamp and switch housing.

(5) While holding the retaining tabs depressed, push the glove box lamp and switch unit out through the mounting hole in the instrument panel glove box opening upper reinforcement.

(6) Reverse the removal procedures to install.

GLOVE BOX LATCH STRIKER

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Open the glove box.

(3) Remove the two screws that secure the glove box latch striker to the instrument panel glove box opening upper reinforcement (Fig. 22).

(4) Remove the glove box latch striker from the glove box opening upper reinforcement.

(5) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

GLOVE BOX

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE

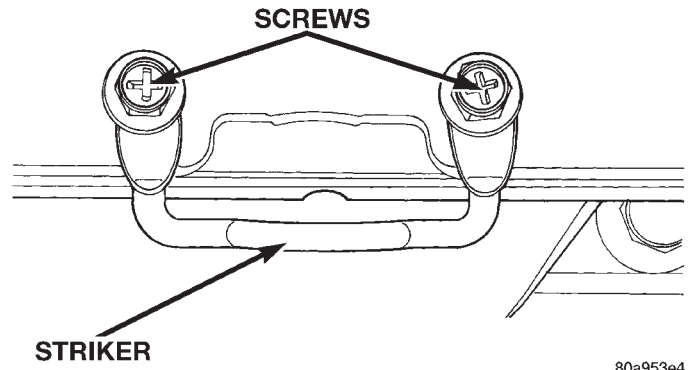


Fig. 22 Glove Box Latch Striker Remove/Install

RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Open the glove box.

(3) Locate three screws in the bottom of the glove box bin. Remove only the center screw.

(4) Depress the two sides of the glove box bin far enough so that the rubber stop bumpers on each side of the bin will clear the metal stops of the bracket on each side of the glove box opening.

(5) While holding the sides of the glove box bin depressed, roll the glove box downward until the stop bumpers are beyond the stops, then release the sides of the bin.

(6) Grasp the upper outboard corner of the glove box door securely with both hands.

(7) Pull the door firmly and quickly away from the instrument panel to unsnap the three glove box hinge hooks (Fig. 23) from the three hinge pins on the instrument panel (Fig. 24).

(8) When installing the glove box, first insert the glove box bin in the glove box opening far enough so that the rubber stop bumpers on each side of the bin are behind the metal stops on each side of the glove box opening.

(9) Starting on the outboard side of the glove box, insert the first glove box hinge hook over the first hinge pin on the instrument panel.

(10) Use a slight twisting action on the glove box to insert the second hinge hook under the second hinge pin.

(11) Finally, again using a slight twisting action on the glove box, insert the last hinge hook over the last hinge pin.

REMOVAL AND INSTALLATION (Continued)

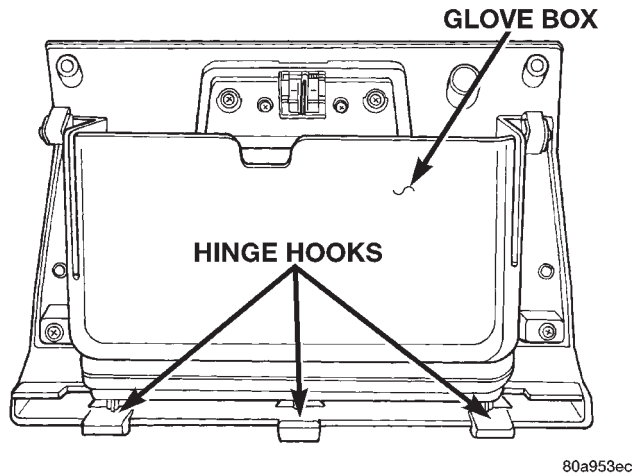


Fig. 23 Glove Box Hinge Hooks

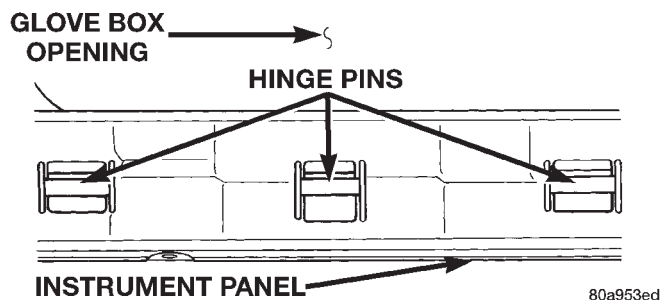


Fig. 24 Glove Box Hinge Pins

(12) Reinstall the center screw in the bottom of the glove box bin. Tighten the screw to 2.2 N·m (20 in. lbs.).

(13) Close the glove box, then reopen it to check for proper hinge operation.

GLOVE BOX COMPONENTS

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(1) Disconnect and isolate the battery negative cable.

(2) Remove the glove box from the instrument panel. See Glove Box in the Removal and Installation section of this group for the procedures.

(3) Remove the two screws that secure each outboard flange of the glove box bin to the glove box door (Fig. 25).

(4) Remove the two remaining screws in the bottom of the glove box bin (the center screw was

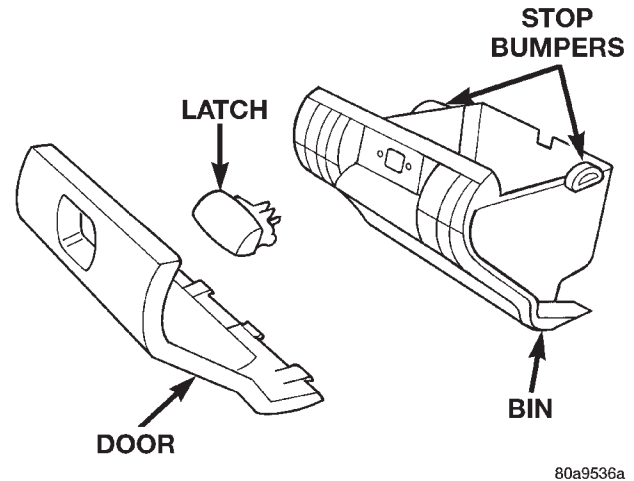


Fig. 25 Glove Box Components Remove/Install

removed during glove box removal) that secure the bin to the bottom of the glove box door.

(5) Remove the four screws that secure the top of the glove box bin and the glove box latch to the glove box door.

(6) Separate the glove box bin and the glove box latch from the glove box door.

(7) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

CENTRAL TIMER MODULE

Before replacing a high-line Central Timer Module (CTM), use a DRB scan tool to determine the current settings for the CTM programmable features. These settings should be duplicated in the replacement CTM using the DRB scan tool, before returning the vehicle to service.

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(1) Disconnect and isolate the battery negative cable.

(2) Remove the glove box from the instrument panel. See Glove Box in the Removal and Installation section of this group for the procedures.

(3) Remove the three screws that secure the bracket to the outboard side of the instrument panel glove box opening (Fig. 26).

(4) Remove the two screws that secure the Central Timer Module (CTM) mounting bracket to the outboard instrument panel glove box opening bracket.

REMOVAL AND INSTALLATION (Continued)

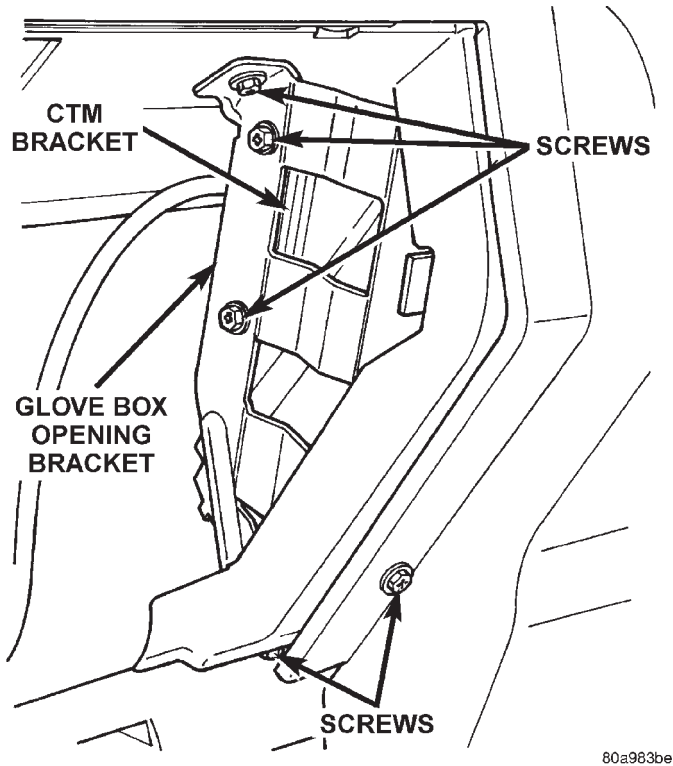


Fig. 26 Central Timer Module Remove/Install

(5) Remove the outboard glove box opening bracket from the instrument panel through the glove box opening.

(6) Pull the CTM and its mounting bracket into the glove box opening far enough to access and disengage the wire harness retainer from the CTM mounting bracket.

(7) Unplug the wire harness connector(s) (one connector for the base CTM, two connectors for high-line CTM) from the CTM.

(8) Remove the CTM from the instrument panel.

(9) Reverse the removal procedures to install. Be certain to engage the mounting tab on the outboard side of the CTM mounting bracket with the slot in the right instrument panel end bracket. Tighten the CTM and mounting bracket screws to 2.2 N·m (20 in. lbs.).

NOTE: If a new high-line Central Timer Module is installed, the programmable features must be enabled and/or disabled to the customer's preferred settings. Use a DRB scan tool and the proper Diagnostic Procedures manual to perform these operations.

INSTRUMENT PANEL ASSEMBLY

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY

STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Place the front wheels in the straight-ahead position.

(2) Disconnect and isolate the battery negative cable.

(3) Using a trim stick or another suitable wide flat-bladed tool, gently pry along the edges of the right and left front door sill trim to release the clips that secure it to the sill (Fig. 27). Carefully disengage the ends of the sill trim from the inner cowl side trim panel at the front, and from the lower B-pillar trim at the rear, then remove the sill trim from the sill.

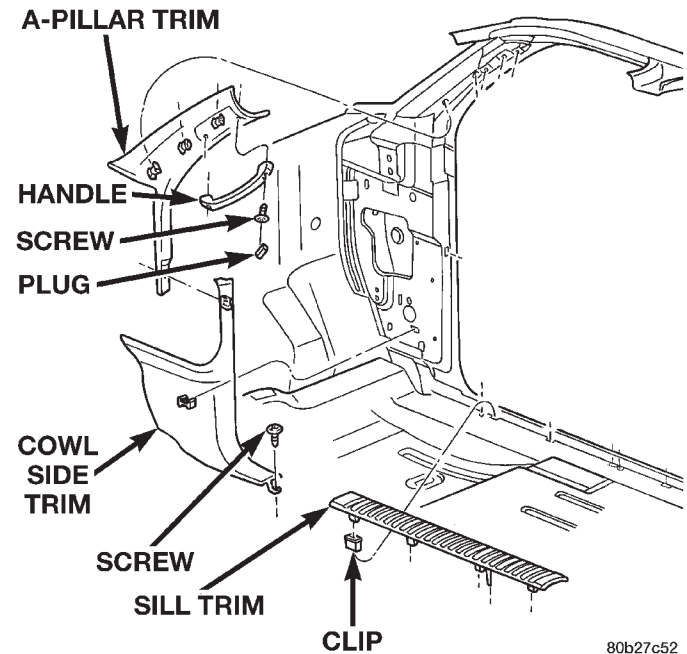


Fig. 27 Cowl Side Trim Remove/Install

(4) Remove the screw that secures the rear tab on the inner cowl side trim panel to the sill.

(5) Grasp the forward edge of the trim panel and pull it inboard far enough to disengage the clip that secures it to the cowl side.

(6) Using a trim stick or another suitable wide flat-bladed tool, gently pry the inner cowl side trim panel to release the clip that secures it to the A-pillar trim and the front door hinge pillar.

(7) Remove the steering column opening cover and knee blocker from the instrument panel. See Steering Column Opening Cover and Knee Blocker in the Removal and Installation section of this group for the procedures.

REMOVAL AND INSTALLATION (Continued)

(8) Remove the two screws that secure the inside hood latch release handle to the instrument panel lower reinforcement and lower the release handle to the floor.

(9) Unplug the driver side airbag module wire harness connector at the instrument panel lower reinforcement.

(10) If the vehicle is so equipped, remove the tilt steering column lever.

(11) Remove both the upper and lower shrouds from the steering column (Fig. 28).

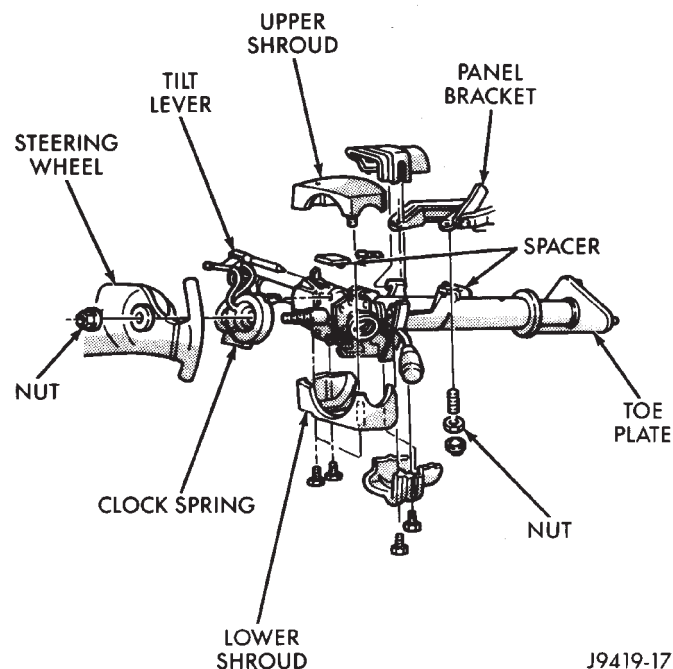


Fig. 28 Steering Column Shrouds Remove/Install - Typical

(12) Remove the lower fixed column shroud.

(13) Move the upper fixed column shroud far enough to access the rear of the multi-function switch (Fig. 29).

(14) Remove the tamper proof mounting screws (a Snap On tamper proof torx bit TTXR20B2 or equivalent is required) that secure the multi-function switch to the steering column.

(15) Gently pull the switch away from the steering column far enough to access and loosen the multi-function switch wire harness connector screw. The screw will remain in the wire harness connector.

(16) Unplug the wire harness connector from the multi-function switch.

(17) Unplug the remaining steering column wire harness connectors (Fig. 30).

(18) If the vehicle is so equipped, unplug the over-drive lockout switch wire harness connector near the instrument panel lower reinforcement.

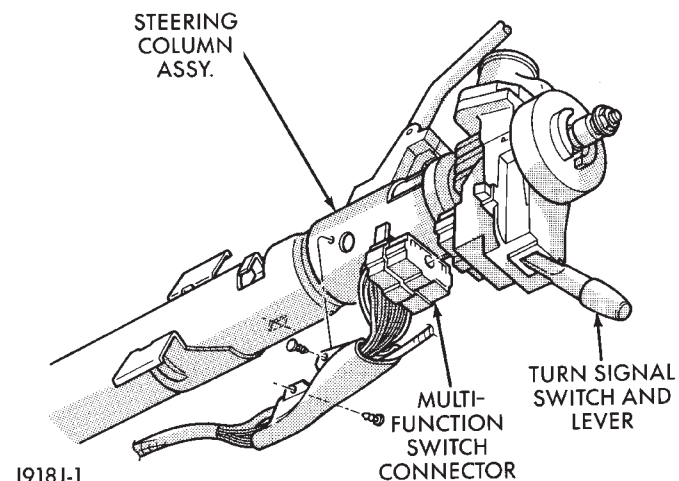


Fig. 29 Multi-Function Switch Connector - Typical

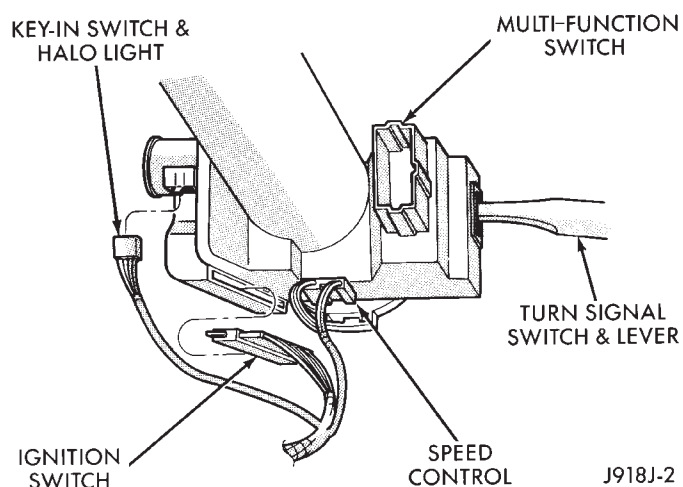


Fig. 30 Steering Column Connectors - Typical

(19) Remove the steering column from the vehicle. Refer to Group 19 - Steering for the procedures.

(20) Remove the screw from the center of the bulkhead wire harness connector and unplug the connector.

(21) Unplug the two body wire harness connectors located next to the bulkhead wire harness connector.

(22) Unplug the three wire harness connectors located closest to the dash panel from the junction block.

(23) Reach under the driver side outboard end of the instrument panel to access and unsnap the plastic retainer clip from the park brake release linkage rod at the back of the park brake release handle.

(24) Disengage the park brake release linkage rod end from the back of the park brake release handle.

(25) Unplug the wire harness connector from the stop lamp switch.

(26) If the vehicle is so equipped, unplug the wire harness connector from the Rear Wheel Anti-Lock

REMOVAL AND INSTALLATION (Continued)

(RWAL) brake module located on the inboard side of the pedal and steering column support brackets.

(27) Unplug the vacuum harness connector located near the left end of the heater-A/C housing.

(28) Remove the center support bracket from the instrument panel. See Instrument Panel Center Support Bracket in the Removal and Installation section of this group for the procedures.

(29) Remove the screw that secures the wire harness ground eyelets to the left side of the Airbag Control Module (ACM) bracket on the floor panel transmission tunnel.

(30) Unplug the wire harness connector from the ACM.

(31) Remove the glove box from the instrument panel. See Glove Box in the Removal and Installation section of this group for the procedures.

(32) Reach through the instrument panel glove box opening to unplug the antenna coaxial cable connector.

(33) Release the antenna half of the coaxial cable from the retainer clip near the lower outboard side of the instrument panel glove box opening.

(34) Reach through and above the instrument panel glove box opening to access and unplug the blower motor wire harness connector located near the heater-A/C support brace.

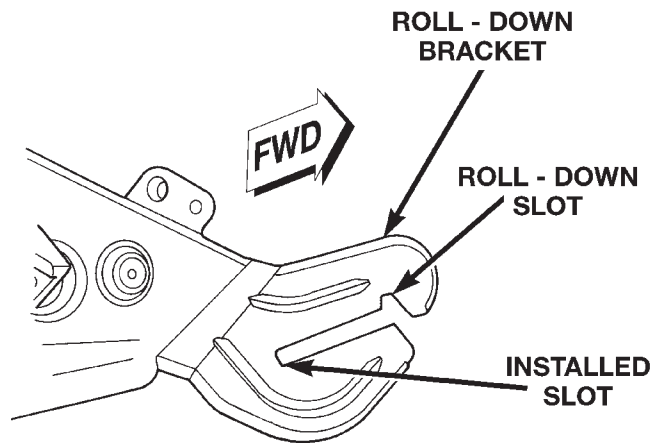
(35) If the vehicle is so equipped, unplug the two wire harness connectors from the Infinity speaker amplifier on the right cowl side inner panel.

(36) Remove the nut that secures the radio ground wire harness eyelet to the stud on the right cowl side inner panel.

(37) Loosen the right and left instrument panel cowl side roll-down bracket screws about 6 mm (0.25 inch) (Fig. 31).

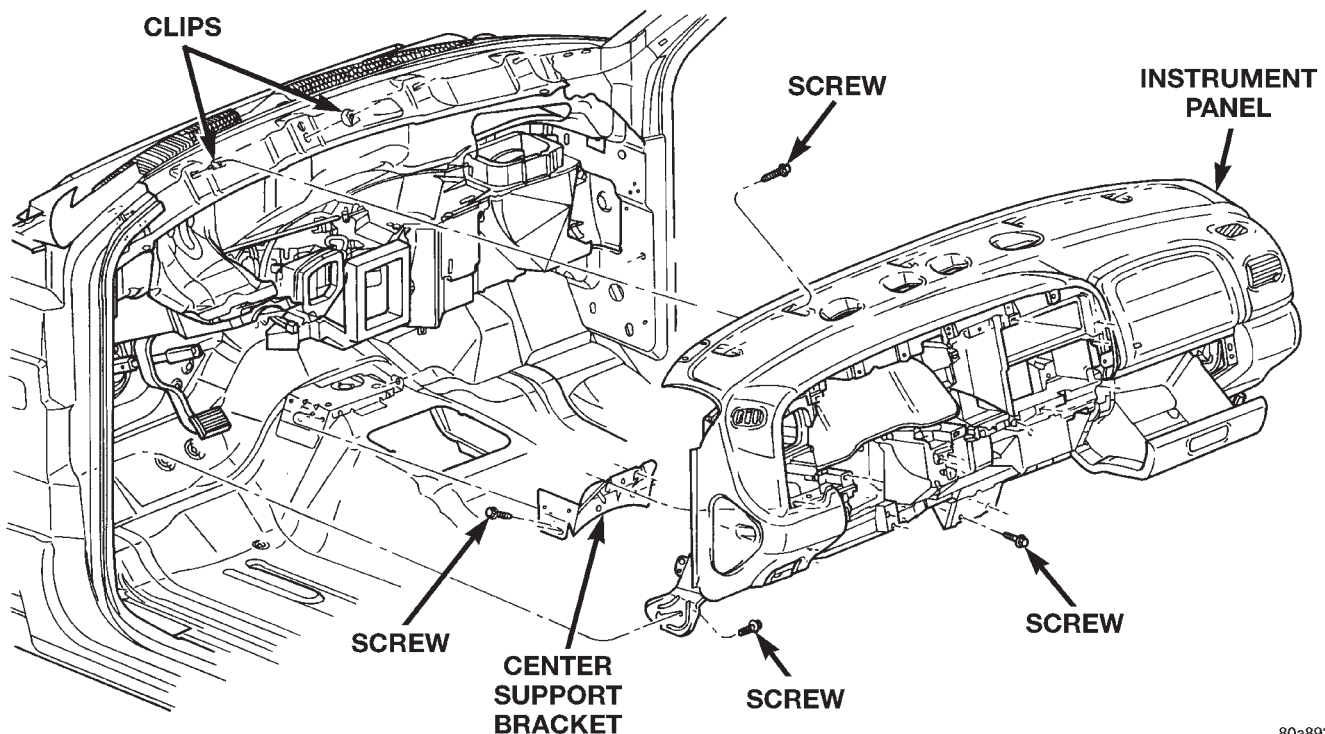
(38) Remove the five screws that secure the top of the instrument panel to the top of the dash panel, removing the center screw last.

(39) Pull the lower instrument panel outwards until the right and left cowl side roll-down bracket screws are in the roll-down slot position of both brackets (Fig. 32).



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Fig. 32 Roll-Down Bracket



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Fig. 31 Instrument Panel Assembly Remove/Install

REMOVAL AND INSTALLATION (Continued)

(40) Roll down the instrument panel and install a temporary hook in the center hole on top of the instrument panel. Secure the other end of the hook to the center hole in the top of the dash panel. The hook should support the instrument panel in its rolled down position about 46 cm (18 inches) from the dash panel.

(41) With the instrument panel supported in the roll-down position:

(a) Unplug the two door jumper wire harness connectors located on a bracket near the right end of the instrument panel.

(b) Unplug the wire harness connector at the blower motor resistor.

(c) Disconnect the temperature control cable flag retainer from the top of the heater-A/C housing and pull the cable core adjuster clip off of the blend-air door lever.

(d) Disconnect the demister duct flexible hose from the adapter on the top of the heater-A/C housing.

(42) With the aid of an assistant, remove the temporary hook and lift the instrument panel assembly off of the roll-down bracket screws and remove it from the vehicle.

(43) Reverse the removal procedures to install. Tighten the mounting hardware as follows:

- Instrument panel top to dash panel screws - 3 N·m (28 in. lbs.)
- Instrument panel roll-down screws - 12 N·m (105 in. lbs.)
- Inner cowl side trim panel mounting screw - 2.2 N·m (20 in. lbs.).

INSTRUMENT PANEL TOP COVER

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Remove the cluster bezel from the instrument panel. See Cluster Bezel in the Removal and Installation section of this group for the procedures.

(3) Remove the park brake release handle from the instrument panel. See Park Brake Release Handle in the Removal and Installation section of this group for the procedures.

(4) Remove the glove box from the instrument panel. See Glove Box in the Removal and Installation section of this group for the procedures.

(5) Remove the glove box lamp and switch from the instrument panel. See Glove Box Lamp and Switch in the Removal and Installation section of this group for the procedures.

(6) Reach through and above the instrument panel glove box opening to remove the two screws that secure the passenger side airbag module lower bracket to the instrument panel (Fig. 33).

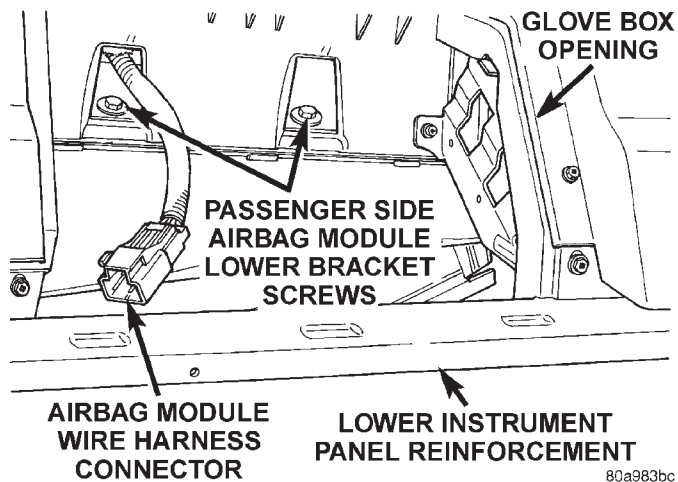


Fig. 33 Passenger Side Airbag Module Lower Bracket Screws

(7) Reach through the instrument panel glove box opening to access and unplug the passenger side airbag module wire harness connector. Disengage the connector retainer from the back of the instrument panel inboard glove box opening bracket.

(8) Remove the heater and air conditioner control from the instrument panel. Refer to Heater-A/C Control in Group 24 - Heating and Air Conditioning for the procedures.

(9) Reach through the instrument panel heater-A/C control opening to remove the screw that secures the flexible demister tube to the demister duct tee, and remove the tube from the tee.

(10) Reach through the instrument panel heater-A/C control opening to remove the screw that secures the demister duct tee to the instrument panel.

(11) Remove the instrument panel from the vehicle and place it on a work bench. See Instrument Panel Assembly in the Removal and Installation section of this group for the procedures.

(12) Use a drill motor with a large drill bit, a high-speed grinder, or a soldering iron with a cutting tip to remove the collapsed heat stakes from the underside of the five instrument panel to dash panel mounting screw holes at or below the illustrated cut line (Fig. 34). If the instrument panel top cover is to

REMOVAL AND INSTALLATION (Continued)

be reused, use care not to drill through or to enlarge the screw holes in the top cover. Using a trim stick or another suitable wide flat-bladed tool, gently pry between the top cover and the instrument panel base bracket near the heat stake during the removal process. This will cause the panels to separate noticeably when the collapsed heat stake has been sufficiently removed, and prevent the removal of too much material. After removal, the heat stakes should be flush with, or protruding no more than 4 millimeters (0.1875 inches) from the lower surface of the top cover.

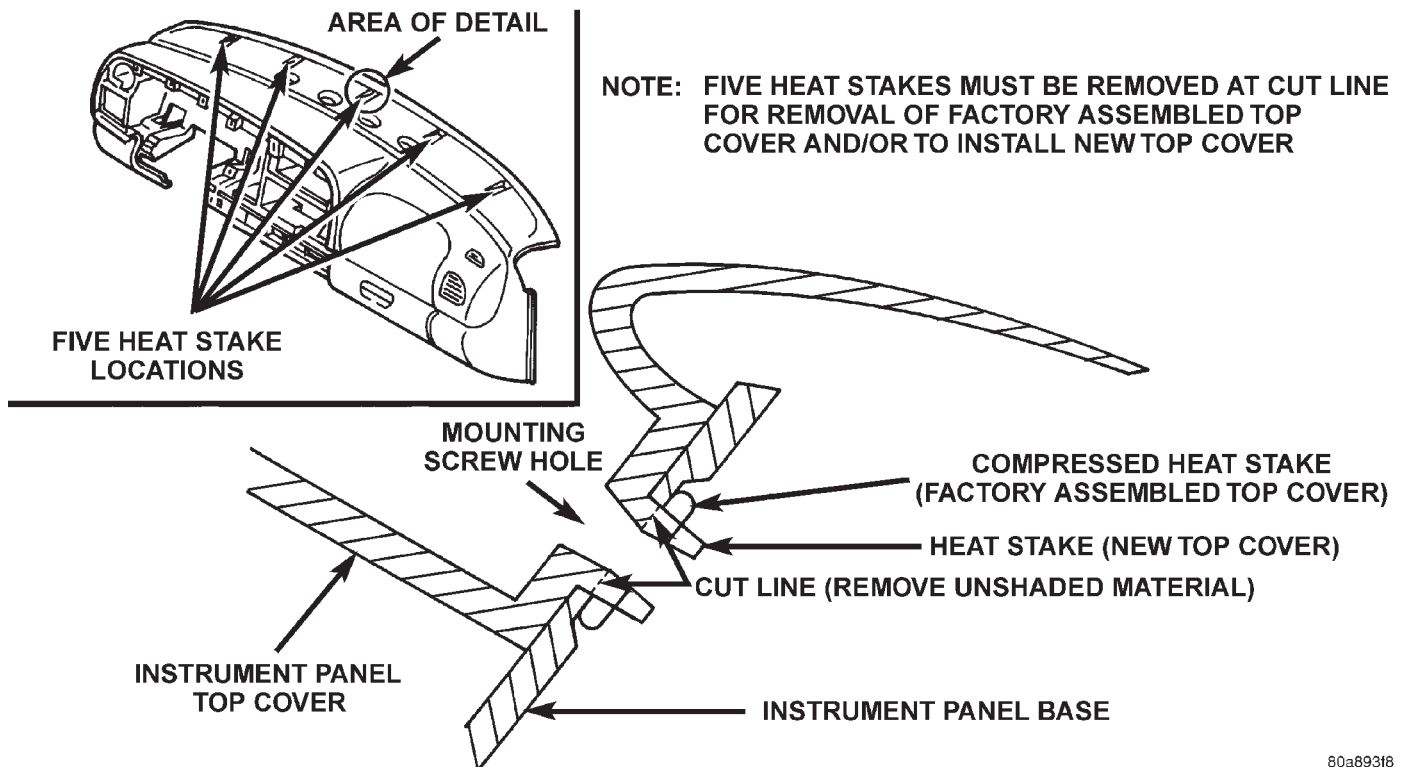
NOTE: New instrument panel top covers are supplied with heat stakes that have not been collapsed. These heat stakes must also be removed in order to install the new top cover. Use a hack saw or razor knife to remove the heat stakes from a new top cover. See Step 12 for the heat stake removal details.

(13) Remove the screws around the perimeter of the top cover that secure it to the instrument panel base.

(14) Lift the top cover off of the instrument panel.

WARNING: USE EXTREME CARE TO PREVENT ANY FOREIGN MATERIAL FROM ENTERING THE PASSENGER SIDE AIRBAG MODULE, OR BECOMING ENTRAPPED BETWEEN THE INSTRUMENT PANEL TOP COVER AND THE PASSENGER SIDE AIRBAG MODULE. FAILURE TO OBSERVE THIS WARNING COULD RESULT IN OCCUPANT INJURIES UPON AIRBAG DEPLOYMENT.

(15) Reverse the removal procedures to install. Tighten the passenger side airbag module lower bracket screws to 12 N·m (105 in. lbs.). Tighten the instrument panel top cover mounting screws to 2.2 N·m (20 in. lbs.).



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Fig. 34 Instrument Panel Top Cover Remove/Install

