

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 is molded from a blend of various plastics that are mechanically attached to the vehicle. Colors are molded into the plastic com-

ponents to minimize appearance degradation from scratches or abrasions. The panel components are internally ribbed and riveted to steel reinforcements for additional structural integrity and dimensional stability.

The instrument panel surface components are designed to deform upon impact without breaking. This type of construction provides improved energy absorption which, in conjunction with the dual airbag modules and seat belts, helps to improve occupant protection.

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 or heating and air conditioning components can be accessed without complete instrument panel removal. If necessary, the instrument panel can be rolled-down and removed from the vehicle as an assembly.

Removal of the instrument cluster bezel allows access to the instrument cluster, the heating and air conditioning controls, and the radio. Removal of the instrument cluster assembly allows access to the individual illumination and indicator lamp bulbs, and the instrument cluster wiring.

Removal of the steering column opening cover and knee blocker provides access to the steering column mounts, the steering column wiring, the junction block (removal of a snap-fit fuse access panel on the left end of the instrument panel allows access to the fuses and circuit breakers), the Central Timer Module (CTM), the Infinity speaker filter choke and relay unit, much of the instrument panel wiring, and the gear selector indicator cable (automatic transmission).

Removal of the glove box provides access to the passenger side airbag module, the glove box lamp and switch, the radio antenna coaxial cable, the heating and air conditioning vacuum harness connector, and additional instrument panel wiring.

INSTRUMENT CLUSTER

Two basic instrument cluster options are offered on this model. One is referred to as a low-line cluster, and the other is referred to as a high-line cluster. Both clusters are electromechanical units that utilize integrated circuitry and information carried on the Chrysler Collision Detection (CCD) data bus network

GENERAL INFORMATION (Continued)

for control of all gauges and many of the indicator lamps. These clusters also incorporate a Liquid Crystal Display (LCD) for the digital odometer/trip odometer display functions. Some variations of these clusters exist due to optional equipment and regulatory requirements.

Both of these clusters include the following analog gauges:

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

These clusters also include 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
- Four-wheel drive indicator lamp
- Headlamp high beam indicator lamp
- Low fuel warning lamp
- Low washer fluid warning lamp
- Malfunction indicator (Check Engine) lamp
- Overdrive-off indicator lamp (automatic transmission)
- Seat belt reminder lamp
- Security lamp
- Service Reminder Indicator (SRI) lamp (Maintenance Required - for certain heavy-duty emissions cycle engines)
- Transmission oil temperature warning lamp (automatic transmission)
- Turn signal indicator lamps
- Upshift indicator lamp (manual transmission)
- Wait-to-start indicator lamp (diesel engine)
- Water-in-fuel indicator lamp (diesel engine)

The high-line cluster includes all of the gauges and indicator lamps found in the low-line cluster, but adds an analog tachometer. Some of the low-line cluster gauges have different positions or sizes in the high-line cluster in order to accommodate the tachometer.

Both instrument clusters also have a provision for mounting the automatic transmission gear selector indicator in the lower right corner of the cluster. Models equipped with a manual transmission have a block-out plate installed in place of this indicator.

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 Instru-

ment 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

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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 lamp, headlamp high beam indicator lamp, low washer fluid warning lamp, overdrive off indicator lamp, security lamp, turn signal indicator lamps, and wait-to-start indicator lamp 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 messages from the Controller Anti-lock Brake (CAB). The instrument cluster circuitry uses CCD data bus messages from the Powertrain Control Module (PCM), ACM, and CAB 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. It is also sometimes referred to as the Integrated Electronic Module (IEM). The base version of the CTM combines the functions of a chime/buzzer module, an intermittent wipe 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
- Low fuel lamp warning
- Low washer fluid lamp warning
- Seat belt reminder lamp warning
- Transmission oil temperature lamp warning
- Ignition key lamp timer
- Intermittent wipe control
- Courtesy lamp time-out (high-line only)
- Enhanced accident response (high-line only)
- Horn chirp upon door lock with RKE (programmable) (high-line only)
- Illuminated entry (high-line only)
- 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).

Both versions of the CTM are mounted under the driver side end of the instrument panel, inboard of the instrument panel steering column 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 reinforcement on the left outboard end of the instrument panel. It is concealed behind the left end of the instrument panel 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 cover has a snap-fit fuse access panel that can be removed for

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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.

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 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 inac-

DESCRIPTION AND OPERATION (Continued)

curate 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 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

DESCRIPTION AND OPERATION (Continued)

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.

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

DESCRIPTION AND OPERATION (Continued)

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 next to the ash receiver near the center of the instrument panel, below the radio. 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 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 base is secured by a snap fit within the instrument panel.

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.

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.

DESCRIPTION AND OPERATION (Continued)

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.

FOUR-WHEEL DRIVE INDICATOR LAMP

On vehicles equipped with the optional four-wheel drive system, a four-wheel drive indicator lamp is located in the instrument cluster. This lamp lights any time the front axle is engaged in a four-wheel drive operating mode.

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 front axle disconnect housing is hard-wired in series between the other side of the indicator lamp bulb and ground.

When the transfer case is shifted into the 4L or 4H positions, a vacuum switch on the transfer case directs engine vacuum to a vacuum motor on the front axle disconnect housing. The vacuum motor actuates a shift fork within the front axle, which engages or disengages the inner and outer halves of the front axle shaft. The shift fork movement also actuates the plunger of the four-wheel drive switch, opening or closing the ground path for the indicator lamp.

Refer to Group 3 - Differential and Driveline for more information on the front axle disconnect mechanism. 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.

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.

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 reser-

DESCRIPTION AND OPERATION (Continued)

voir 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.

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 standard equipment on this model. The power outlet is installed in the inboard upper corner of the instrument cluster bezel, next to the instrument panel center panel outlets of the heating and air conditioning system. The power outlet base is secured by a snap fit within the instrument cluster bezel. A hinged flip-up door that is integral to the cluster bezel conceals 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 is available for service. The power outlet door is serviced only as a unit with the cluster bezel. 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 six 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 is used only for 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).

On club cab and quad cab models with the seat belts integrated into the structural seat unit, the seat

DESCRIPTION AND OPERATION (Continued)

belt reminder lamp is also used to indicate a fault with the outboard seat belt retractor latch solenoid control system. The Seatbelt Control Timer Module (SCTM) monitors the door jamb switches and the ignition switch through hard wired inputs. The SCTM uses these inputs and internal programming to control hard wired outputs to the seat belt retractor latch solenoids and the Airbag Control Module (ACM). The ACM sends messages to the instrument cluster on the Chrysler Collision Detection (CCD) data bus network to turn the seat belt reminder lamp on or off based upon its input from the SCTM.

The seat belt reminder lamp also serves as a backup for the airbag indicator lamp. About ten 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 ten seconds after the initial ignition-on sequence; it indicates an airbag system fault has been detected and that the airbag indicator lamp is inoperative, or that a fault has occurred in the seat belt retractor latch solenoid control system.

Refer to Airbag System and Structural Seat Belt Control System in Group 8M - Passive Restraint Systems, and Driver Seat Belt Switch in Group 8U - Chime/Buzzer Warning Systems for more information.

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.

SERVICE REMINDER INDICATOR LAMP

The Maintenance Required or Service Reminder Indicator (SRI) lamp is used on certain vehicles

equipped with a heavy-duty emissions cycle package. This lamp is intended to provide a reminder that certain scheduled vehicle emissions services and maintenance must be performed, as required by federal emissions laws.

The SRI lamp is turned on 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 status messages received from the Powertrain Control Module (PCM) on the Chrysler Collision Detection (CCD) data bus. The PCM uses a distance pulse input received from the Controller Anti-lock Brake (CAB) and internal programming to decide what status messages are required. The PCM then sends the proper messages to the instrument cluster circuitry on the CCD data bus.

This lamp is not intended to indicate a warning, or that a state of emergency exists. However, when the lamp has been activated, the required services and maintenance must be performed before the lamp can be legally reset. For a list of the required emission control system services and maintenance, stated in time or mileage, refer to Group 0 - Lubrication and Maintenance. Also refer to Group 25 - Emission Control Systems for more information.

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 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.

DESCRIPTION AND OPERATION (Continued)

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.

UPSHIFT INDICATOR LAMP

Vehicles equipped with a manual transmission have an upshift indicator lamp. The upshift indicator lamp gives an indication when the driver should shift to the next highest gear for the best fuel economy. The lamp is turned on by the instrument cluster circuitry for about three 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 inputs from many sensors and its internal programming to decide whether the engine speed and load conditions are correct for a transmission upshift. The PCM then sends the proper messages to the instrument cluster on the CCD data bus to turn the lamp on or off. The PCM will send lamp-off messages three to five seconds after a lamp-on message, if an upshift is not performed. The lamp will then remain off until the vehicle stops accelerating and is brought back into the range of lamp operation, or until the transmission is shifted into another gear.

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

WAIT-TO-START LAMP

Vehicles equipped with an optional diesel engine have a wait-to-start lamp. The wait-to-start lamp gives an indication that the conditions for easiest starting of the diesel engine have not yet been achieved. The wait-to-start lamp bulb in the instrument cluster is lighted by the Powertrain Control Module (PCM) after the ignition switch is turned to the On position.

One side of the wait-to-start lamp bulb receives battery voltage when the ignition switch is turned to the On position. The PCM switches the ground path for the other side of the bulb based upon several inputs and its internal programming.

The wait-to-start lamp lets the driver know that the intake manifold air heater grid has had sufficient time to warm the intake air for a good quality start. The intake manifold air preheat cycle is controlled by an electronic air heater control module. The lamp will be turned off by the PCM when the heater control module cycle is completed, or if the driver turns the ignition switch to the Start position prior to the end of the heater control module cycle. Refer to Group 14 - Fuel Systems for more information.

WATER-IN-FUEL LAMP

Vehicles equipped with an optional diesel engine have a water-in-fuel lamp. The water-in-fuel lamp gives an indication when the water contamination in the diesel fuel exceeds a certain level. 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 an input from the water-in-fuel sensor located within the fuel filter/water separator, along with its internal programming, to decide whether a condition exists that requires the water-in-fuel 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. The PCM will send messages to turn the lamp off when the excess water has been drained.

Refer to Group 14 - Fuel Systems for more information on the PCM or the water-in-fuel sensor.

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 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)

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 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 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 junction block 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 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), 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.

(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

DIAGNOSIS AND TESTING (Continued)

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.

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 -

DIAGNOSIS AND TESTING (Continued)

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 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 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 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 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 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.

DIAGNOSIS AND TESTING (Continued)

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.

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 instru-

ment 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 AIRBAG 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.

DIAGNOSIS AND TESTING (Continued)

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 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 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 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 to test 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.

DIAGNOSIS AND TESTING (Continued)

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 receptacle 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 cigar lighter receptacle from the instrument panel and unplug the wire harness connector. 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 counter-clockwise 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.

DIAGNOSIS AND TESTING (Continued)

(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.

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 front axle disconnect mechanism. Refer to Group 3 - Differential and Driveline for more information. If no front axle disconnect 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.

(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 four-wheel drive switch wire harness connector. Check for continuity between the ground circuit cavity of the four-wheel drive 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 four wheel drive indicator lamp driver circuit cavity of the four-wheel drive switch wire harness connector and a good ground. The four-wheel drive indicator lamp should light. If OK, replace the faulty four-wheel drive switch. If not OK, go to Step 5.

(5) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Unplug the wire harness connector at the Controller Anti-Lock Brake (CAB). Remove the instrument cluster. With the four-wheel drive switch wire harness connector still unplugged, check for continuity between the 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 four wheel drive indicator lamp driver circuit cavities of the instrument cluster wire harness connector (connector B) and the four-wheel drive switch 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)

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.

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 con-

DIAGNOSIS AND TESTING (Continued)

nector 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.

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.

DIAGNOSIS AND TESTING (Continued)

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.

(3) 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 cluster bezel from the instrument panel. Unplug the wire harness connector from the power outlet receptacle. 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. On club cab and quad cab models with the seat belts integrated into the seat unit, if the seat belt reminder lamp comes on and stays on following its display function, it indicates a fault with the structural seat belt control system. Refer to Structural Seat Belt Control System in Group 8M - Passive Restraint Systems for further 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 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 driver 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 Driver Seat Belt Switch in Group 8U - Chime/Buzzer Warning Systems for more information on this 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 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.

(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

DIAGNOSIS AND TESTING (Continued)

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, replace the faulty bulb. If not OK, repair the open circuit as required.

SERVICE REMINDER INDICATOR LAMP

The diagnosis found here addresses an inoperative Service Reminder (Maintenance Required) Indicator (SRI) lamp condition. If the SRI lamp comes on and stays on while driving, refer to Group 25 - Emission Control Systems for diagnosis. If the required emission control systems maintenance has been completed, use a DRB scan tool and the proper Diagnostic Procedures manual to reset the Powertrain Control Module (PCM) lamp mileage counter. 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 SRI 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 SRI lamp and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

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 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 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 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. Remove the instrument cluster.

DIAGNOSIS AND TESTING (Continued)

(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.

UPSHIFT INDICATOR LAMP

The diagnosis found here addresses an inoperative upshift indicator lamp condition. If lamp accuracy is suspect, diagnosis 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 upshift indicator lamp fails to light during the bulb test (about three seconds after the ignition switch is turned to the On position), replace the upshift 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 upshift indicator lamp and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

WAIT-TO-START LAMP

The diagnosis found here addresses an inoperative wait-to-start lamp condition. If the problem being diagnosed is an inaccurate wait-to-start lamp, use a DRB scan tool and the proper Diagnostic Procedures manual to diagnose the Powertrain Control Module (PCM) and its inputs. If no problem is found with the PCM, the following procedure will help locate a short or open in the 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 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. Remove the instrument cluster from the instrument panel. Connect the battery negative cable. Turn the ignition switch to the On position. Check for battery voltage at the fused ignition switch output circuit cavity of the instrument cluster wire harness connector (connector A). If OK, turn the ignition switch to the Off position and go to Step 4. If not OK, repair the open circuit to the junction block as required.

(4) Disconnect and isolate the battery negative cable. Unplug the white PCM wire harness connector (connector B). Check for continuity between the wait-to-start warning lamp driver circuit cavity of the instrument cluster 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) Reinstall the instrument cluster. Connect the battery negative cable. Install a jumper wire between the wait-to-start warning lamp driver circuit cavity of the white PCM wire harness connector (connector B) and a good ground. Turn the ignition switch to the On position. The wait-to-start lamp should light. If OK, use a DRB scan tool and the proper Diagnostic Procedures manual to diagnose the PCM and its inputs. If not OK, see Instrument Cluster in the Diagnosis and Testing section of this group for further diagnosis of the instrument cluster circuitry.

WATER-IN-FUEL LAMP

The diagnosis found here addresses an inoperative water-in-fuel lamp condition. If the lamp comes on and stays on with the ignition switch in the On position or while driving, be certain to check for excess water accumulation in the fuel filter/water separator before attempting further diagnosis. Refer to Group 14 - Fuel Systems for diagnosis and service of the water-in-fuel sensor. For circuit descriptions and dia-

DIAGNOSIS AND TESTING (Continued)

grams, 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 water-in-fuel 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 water-in-fuel lamp and the instrument cluster circuitry, see Instrument Cluster in the Diagnosis and Testing section of this group.

REMOVAL AND INSTALLATION

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.

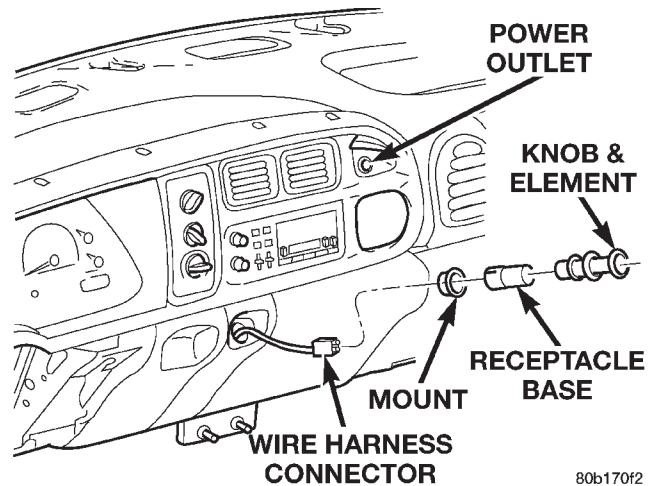
(1) Disconnect and isolate the battery negative cable.

(2) Pull the cigar lighter knob and element out of the cigar lighter receptacle base, or open the power outlet door in the upper inboard corner of the instrument cluster bezel (Fig. 1).

(3) 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 or the instrument cluster bezel (Fig. 2).

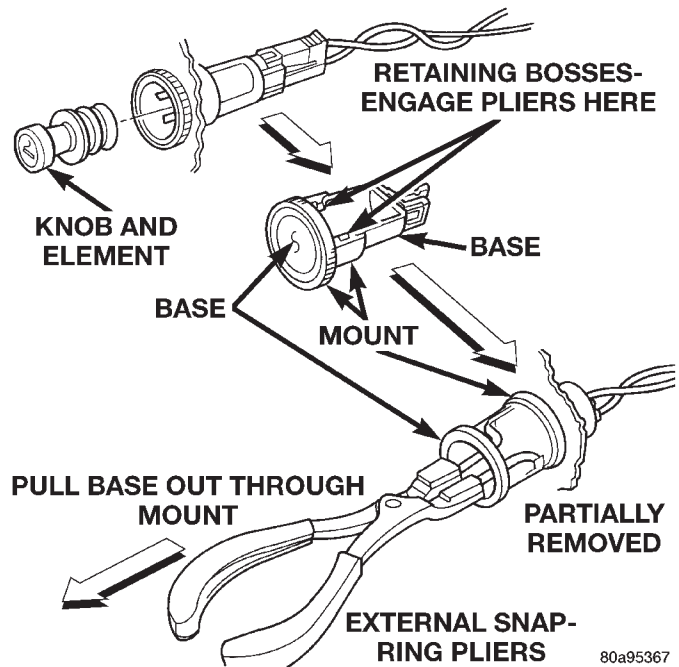
(4) Insert a pair of external snap ring pliers into the cigar lighter or power outlet receptacle base and engage the tips of the pliers with the retaining bosses of the mount.

(5) Squeeze the pliers to disengage the mount retaining bosses from the receptacle base and, using



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Fig. 1 Cigar Lighter and Power Outlet



80a95367

Fig. 2 Cigar Lighter and Power Outlet Remove/Install

a gentle rocking motion, pull the pliers and the receptacle base out of the mount.

(6) Pull the receptacle base away from the instrument panel or the instrument cluster bezel far enough to access and unplug the wire harness connector.

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

(8) Reverse the removal procedures to install.

REMOVAL AND INSTALLATION (Continued)

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) Open the door for the power outlet and remove the one screw that secures the cluster bezel to the instrument panel.

(5) Using a trim stick or another suitable wide flat-bladed tool, gently pry around the perimeter of the cluster bezel to disengage the snap clip retainers that secure the cluster bezel to the instrument panel (Fig. 3).

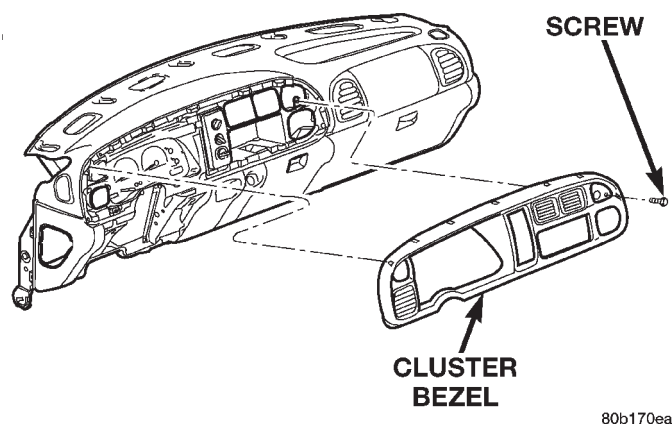


Fig. 3 Cluster Bezel Remove/Install

(6) Pull the cluster bezel away from the instrument panel far enough to access and unplug the wire harness connector from the back of the power outlet receptacle base.

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

(8) Reverse the removal procedures to install. Tighten the mounting screw 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).

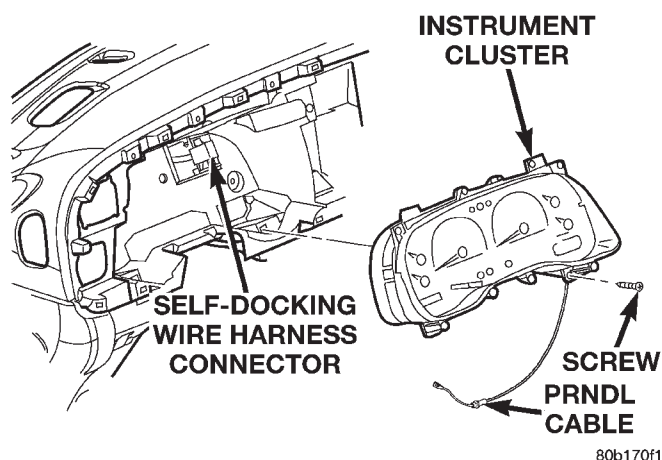


Fig. 4 Instrument Cluster Remove/Install

(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) If the vehicle is equipped with an automatic transmission, 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.).

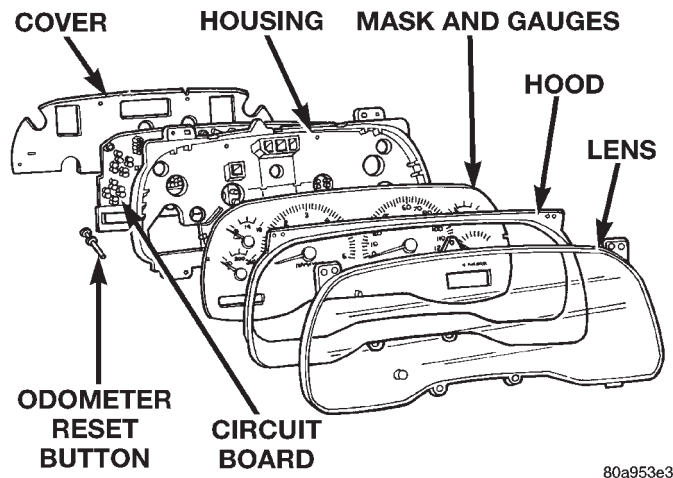
REMOVAL AND INSTALLATION (Continued)

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).



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Fig. 5 Instrument Cluster Components

- (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.

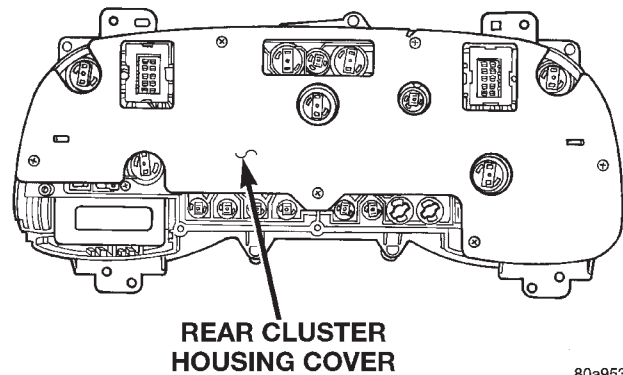
- (5) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

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 PRE-

CAUTIONS 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

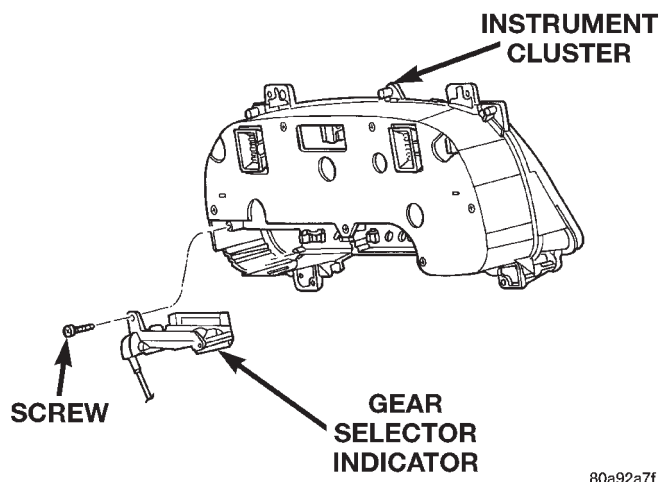
- (4) Remove the rear cover from the cluster housing.
- (5) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

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. 7).
- (4) Remove the gear selector indicator mechanism from the cluster housing.
- (5) Remove the steering column opening cover and knee blocker from the instrument panel. See Steering

REMOVAL AND INSTALLATION (Continued)

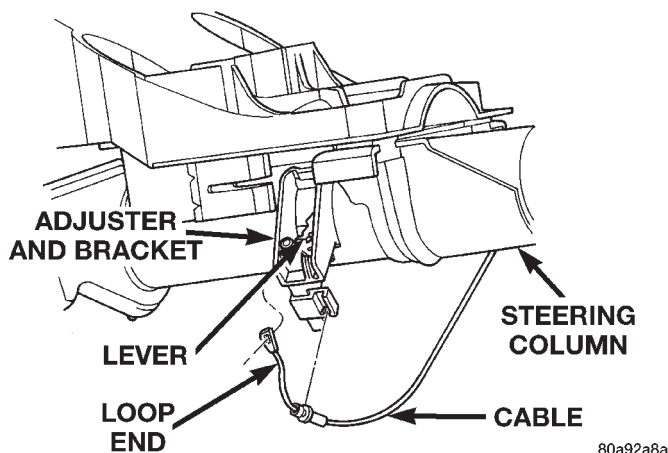


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Fig. 7 Gear Selector Indicator Remove/Install

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. 8).



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Fig. 8 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.

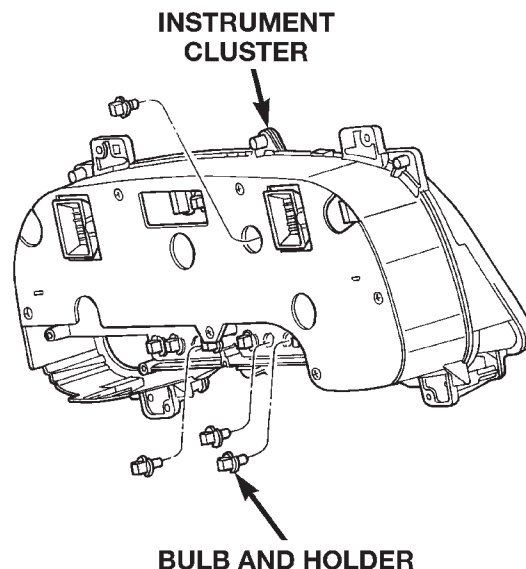
CLUSTER BULB

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 PRECAUTIONS 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. 9).



80a92a79

Fig. 9 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.

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.

REMOVAL AND INSTALLATION (Continued)

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. 10).

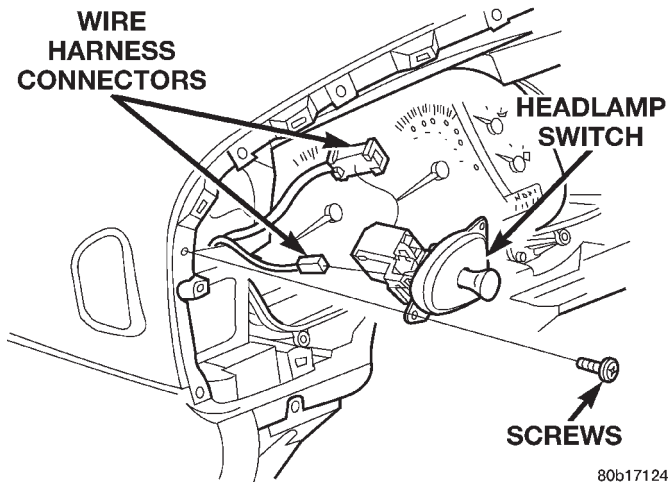


Fig. 10 Headlamp Switch and Bezel Remove/Install

- (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.
- (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 two push nut retainers that secure 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.).

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) Remove the three screws that secure the switch mounting plate to the instrument panel (Fig. 11).

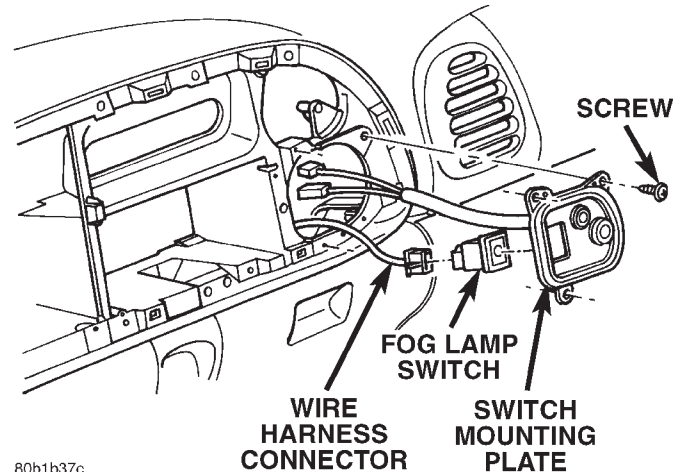


Fig. 11 Fog Lamp Switch Remove/Install

- (4) Pull the switch mounting plate away from the instrument panel far enough to access and unplug the wire harness connector from the back of the fog lamp switch.
- (5) Squeeze the tabs on the back of the fog lamp switch that secure it in the receptacle on the back of the switch mounting plate.
- (6) Pull the fog lamp switch out of the receptacle on the back of the switch mounting plate.
- (7) Reverse the removal procedures to install. Be certain that the fog lamp switch latches are fully engaged in the switch mounting plate receptacle. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

REMOVAL AND INSTALLATION (Continued)

PARK BRAKE RELEASE HANDLE

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) 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 park brake mechanism on the left cowl side inner panel.

(3) Disengage the park brake release linkage rod end from the park brake mechanism.

(4) Lift the park brake release handle to access and unsnap the plastic retainer clip from the park brake release linkage rod at the park brake release handle on the instrument panel.

(5) Lower the park brake release handle and reach under the instrument panel to disengage the park brake release linkage rod end from the park brake release handle.

(6) Lift the park brake release handle to access the handle mounting bracket. Using a trim stick or another suitable wide flat-bladed tool, gently pry each of the park brake release handle mounting bracket latch tabs away from the retaining notches in the instrument panel receptacle (Fig. 12).

(7) With both of the park brake release handle mounting bracket latches released, slide the handle and bracket assembly down and out of the instrument panel receptacle.

(8) 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.

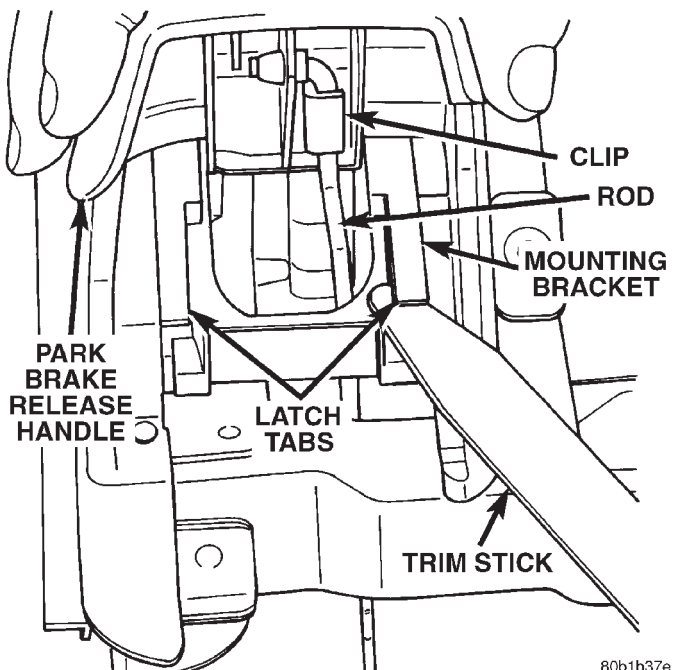


Fig. 12 Park Brake Release Handle Remove/Install

(2) Remove the three screws that secure the bottom of the steering column opening cover and knee blocker to the lower instrument panel reinforcement (Fig. 13).

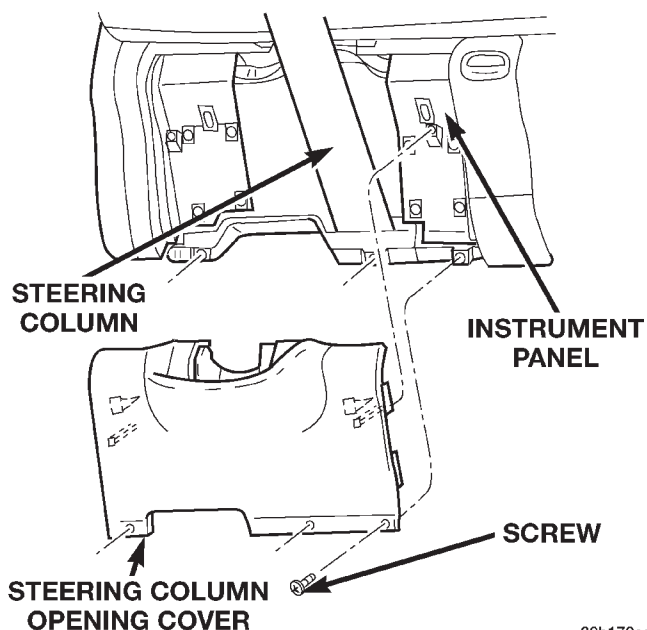


Fig. 13 Steering Column Opening Cover and Knee Blocker Remove/Install

(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

REMOVAL AND INSTALLATION (Continued)

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.).

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.

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 Central Timer Module (CTM) to the bracket on the inboard side of the instrument panel steering column opening (Fig. 14) or (Fig. 15).

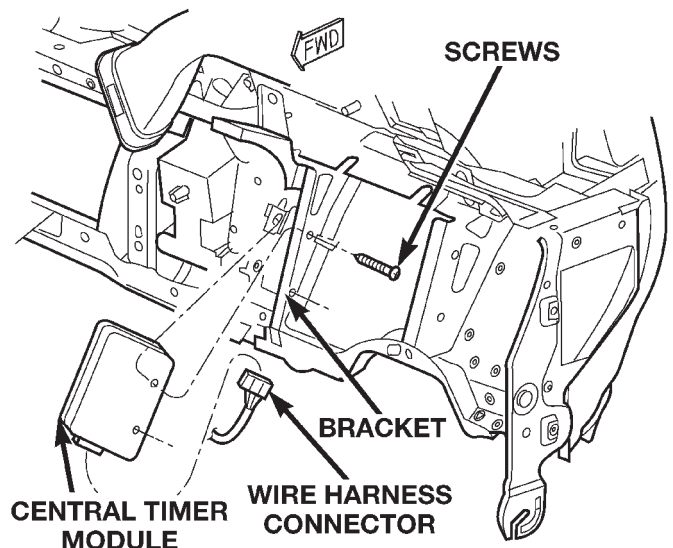


Fig. 14 Central Timer Module (Base) Remove/Install

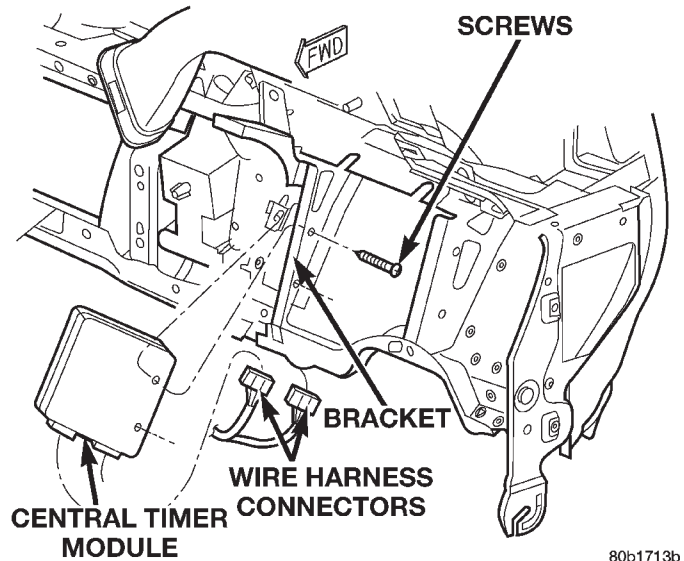


Fig. 15 Central Timer Module (High-Line) Remove/Install

(4) Pull the CTM into the instrument panel steering column opening far enough access and unplug the wire harness connector(s).

(5) Remove the CTM from the instrument panel.

(6) Reverse the removal procedures to install. Tighten the mounting screws to 1.6 N·m (15 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.

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.

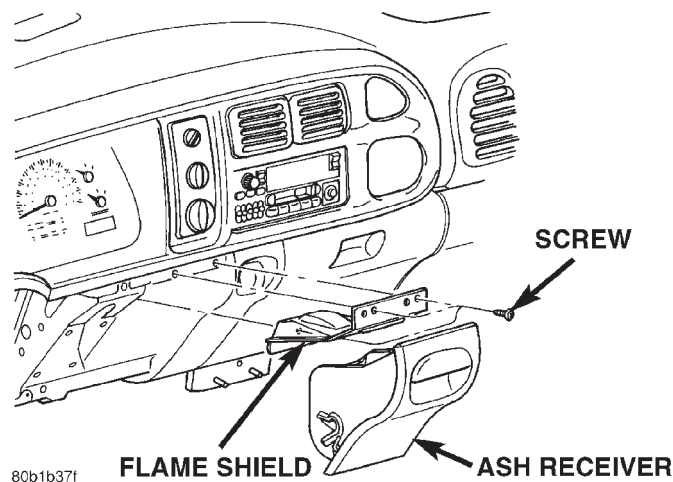
(1) Disconnect and isolate the battery negative cable.

(2) Open the ash receiver. From the open position, close the ash receiver slightly and pull it straight out from the pivot pins in the lower instrument panel.

(3) Remove the three screws that secure the flame shield to the lower instrument panel (Fig. 16).

(4) Pull the flame shield away from the lower instrument panel far enough to disengage the two

REMOVAL AND INSTALLATION (Continued)

**Fig. 16 Ash Receiver Remove/Install**

retaining tabs on the top, then lower the shield far enough to access the ash receiver lamp and hood.

(5) Disengage the ash receiver lamp and hood retainer clip from the mounting hole in the flame shield.

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

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

CUP HOLDER OR STORAGE BIN

Vehicles equipped with an automatic transmission have a lighted fold-down cup holder installed on the instrument panel just inboard of the glove box. Vehicles equipped with a manual transmission have a lighted storage bin installed on the instrument panel in place of the fold-down cup holder.

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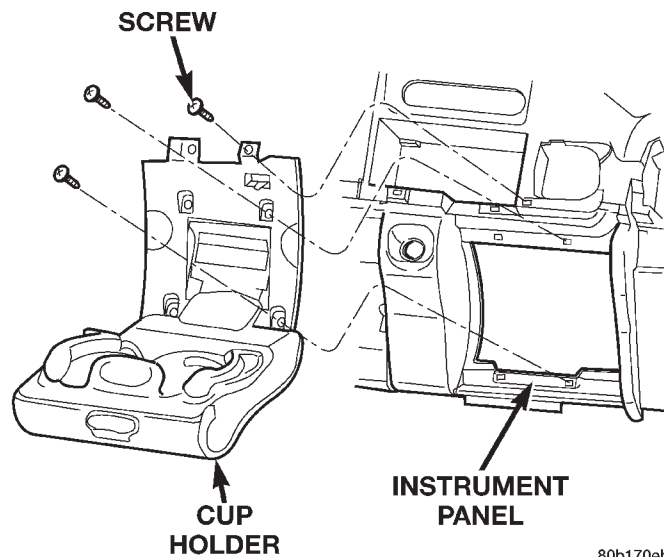
CUP HOLDER

(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) Unlatch and fold the cup holder down from the instrument panel to its open position.

(4) Remove the six screws that secure the cup holder to the instrument panel (Fig. 17).

**Fig. 17 Cup Holder Remove/Install - Automatic Transmission Only**

(5) Pull the cup holder away from the instrument panel far enough to access and disengage the lamp and hood retainer clip from the back of the unit.

(6) Remove the cup holder unit from the instrument panel.

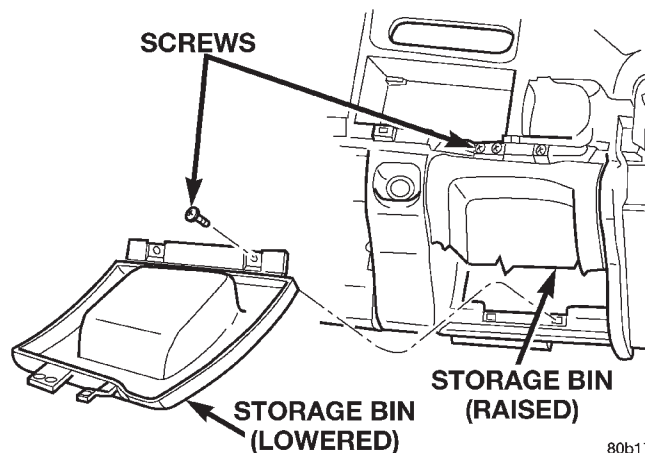
(7) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

STORAGE BIN

(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 two screws that secure the top of the storage bin to the instrument panel (Fig. 18).

**Fig. 18 Storage Bin Remove/Install - Manual Transmission Only**

REMOVAL AND INSTALLATION (Continued)

(4) Lower the top of the storage bin far enough to access and disengage the lamp and hood retainer clip from the back of the unit.

(5) Lower the top of the storage bin far enough to access and remove the two screws that secure the bottom of the storage bin to the instrument panel.

(6) Remove the storage bin unit from the instrument panel.

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

GLOVE BOX

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(1) Disconnect and isolate the battery negative cable.

(2) Open the glove box.

(3) While securing the glove box door with one hand, push the center of the glove box bin towards the front of the vehicle (Fig. 19). Flex the glove box bin far enough so that the glove box stops on each side of the bin will clear the sides of the instrument panel glove box opening.

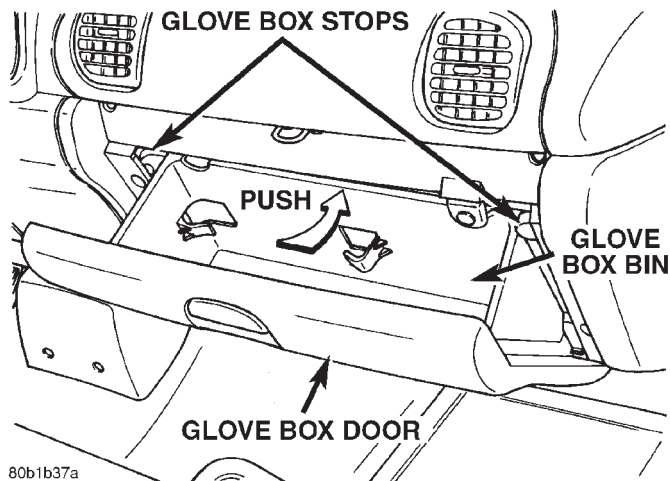


Fig. 19 Glove Box Remove/Install

(4) Roll the glove box downward until the stop bumpers are beyond the sides of the instrument panel glove box opening, then release the bin.

(5) Lift the bottom of the glove box upward to disengage the three glove box hinge hooks from the three hinge pins on the instrument panel.

(6) Reverse the removal procedures to install.

GLOVE BOX COMPONENTS

The only serviced component of the glove box is the glove box bin. If any other component of the glove box is faulty or damaged, the entire glove box assembly must be replaced.

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GLOVE BOX BIN

(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 out-board flange of the glove box bin to the glove box door (Fig. 20).

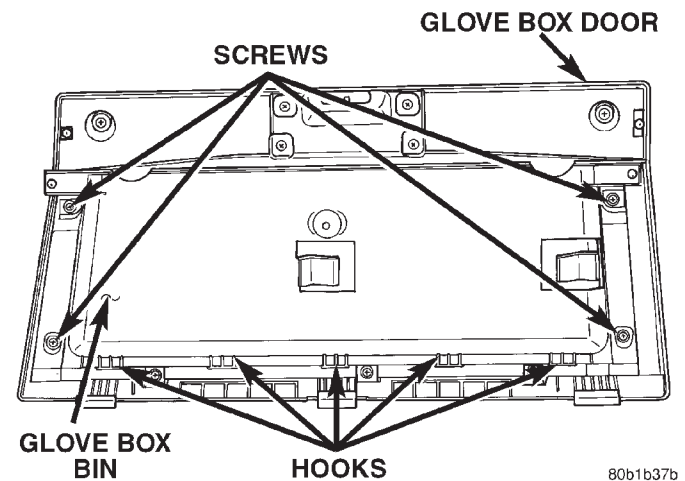


Fig. 20 Glove Box Bin Remove/Install

(4) Pull the top of the bin away from the top of the glove box door.

(5) Disengage the five hook formations on the bottom of the glove box bin from the slots near the bottom of the inner glove box door.

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

REMOVAL AND INSTALLATION (Continued)

GLOVE BOX LAMP AND SWITCH

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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) Reach through and above the instrument panel glove box opening to unplug the two wire harness connectors from the glove box lamp and switch (Fig. 21).

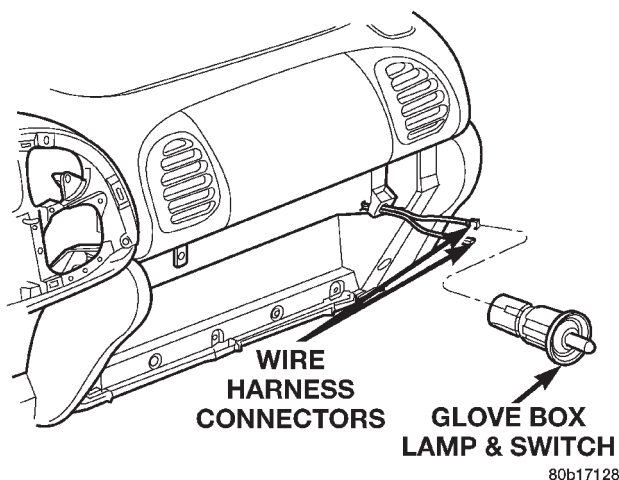


Fig. 21 Glove Box Lamp and Switch Remove/Install

- (4) Reach through and above the instrument panel glove box opening 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 hole in the mounting bracket on the instrument panel glove box opening upper reinforcement.
- (6) Reverse the removal procedures to install.

GLOVE BOX OPENING UPPER TRIM STRIP

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CAUTIONS 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 three screws that secure the trim strip to the glove box opening upper reinforcement (Fig. 22).

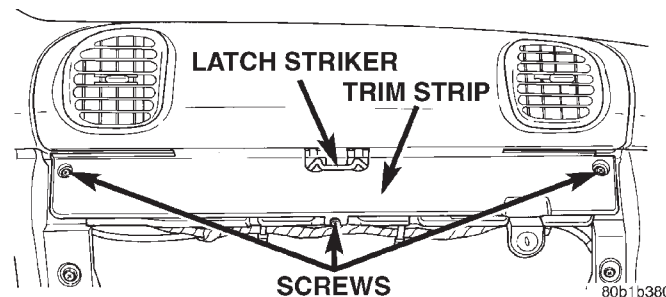


Fig. 22 Glove Box Opening Upper Trim Strip Remove/Install

- (4) Remove the trim strip from the instrument panel.
- (5) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

GLOVE BOX LATCH STRIKER

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- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the trim strip from the upper glove box opening. See Glove Box Opening Upper Trim Strip in the Removal and Installation section of this group for the procedures.
- (3) Remove the two screws that secure the latch striker to the glove box opening upper reinforcement (Fig. 23).
- (4) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

REMOVAL AND INSTALLATION (Continued)

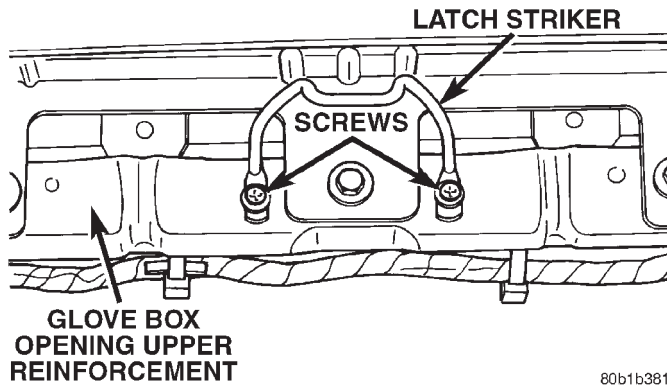


Fig. 23 Glove Box Latch Striker Remove/Install

INSTRUMENT PANEL ASSEMBLY

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

(2) Disconnect and isolate the battery negative cable.

(3) Remove the Airbag Control Module (ACM) and bracket from the floor panel transmission tunnel. Refer to Airbag Control Module in the Removal and Installation section of Group 8M - Passive Restraint Systems for the procedures.

(4) Remove the trim panels from the left and right cowl side inner panels. Refer to Group 23 - Body for the procedures.

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

(7) From under the driver side of the instrument panel:

(a) Disconnect the park brake release handle linkage rod from the park brake mechanism on the left cowl side inner panel. See Park Brake Release Handle in the Removal and Installation section of this group for the procedures.

(b) Unplug the wire harness connector from the park brake switch on the park brake mechanism.

(c) Unplug the three junction block wire harness connectors that are closest to the dash panel. See

Junction Block in the Removal and Installation section of this group for more information.

(d) Remove the screw in the center of the instrument panel to bulkhead wire harness connector and unplug the connector.

(e) Unplug the instrument panel to door wire harness connector located directly below the bulkhead wire harness connector.

(f) If the vehicle is equipped with the Infinity sound system option, unplug the Infinity wire harness connector located on the outboard side of the bulkhead wire harness connector.

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

(h) Unplug the heater and air conditioner vacuum harness connector located near the inboard end of the heater-A/C housing.

(i) 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.

(8) From the under the passenger side of the instrument panel, disconnect the radio antenna coaxial cable connector. Refer to Antenna in the Removal and Installation section of Group 8F - Audio Systems for the procedures.

(9) Loosen the right and left instrument panel cowl side roll-down bracket screws about 13 mm (0.50 inch) (Fig. 24).

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

(11) 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.

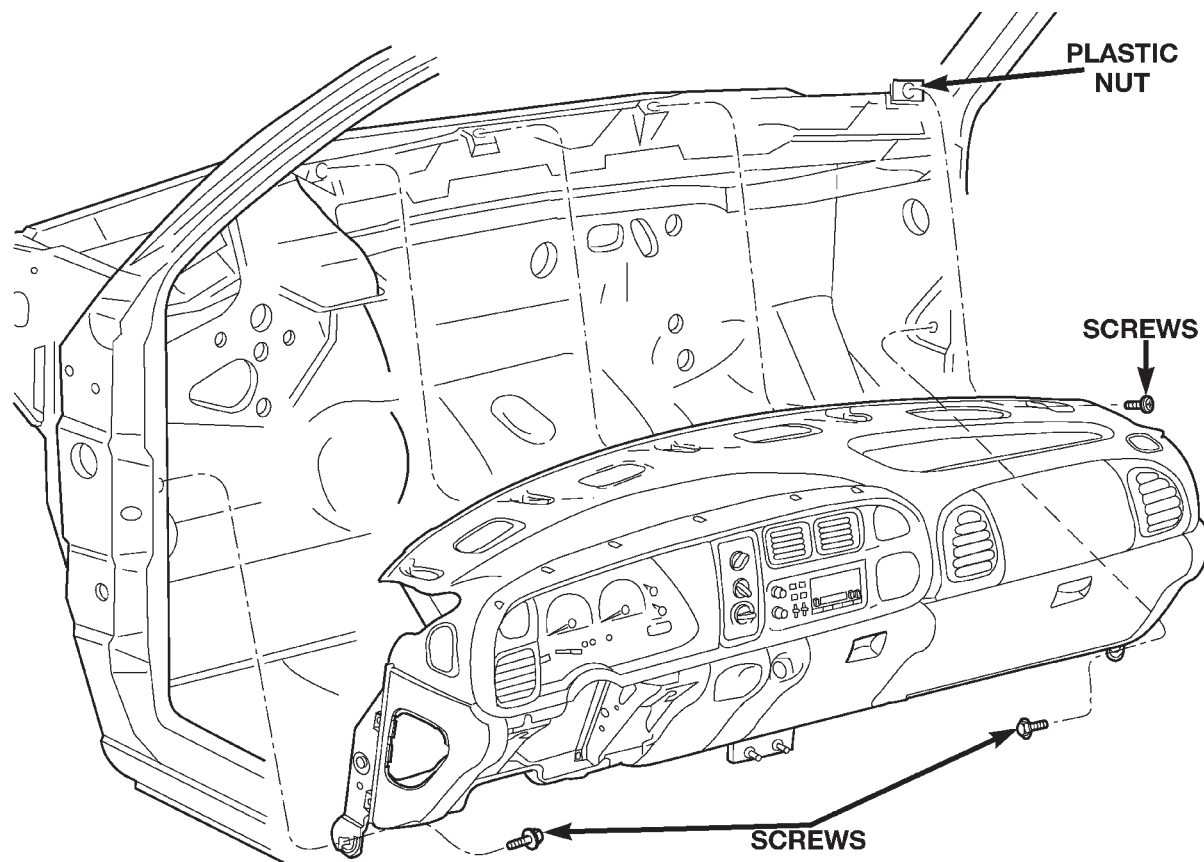
(12) With the instrument panel supported in the roll-down position, reach over the passenger side end of the instrument panel to:

(a) Unplug the two wire harness connectors located on the heater-A/C housing.

(b) 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. Refer to Temperature Control Cable in the Removal and Installation section of Group 24 - Heating and Air Conditioning for the procedures.

(13) 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.

REMOVAL AND INSTALLATION (Continued)



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Fig. 24 Instrument Panel Assembly Remove/Install

(14) 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.).

JUNCTION BLOCK

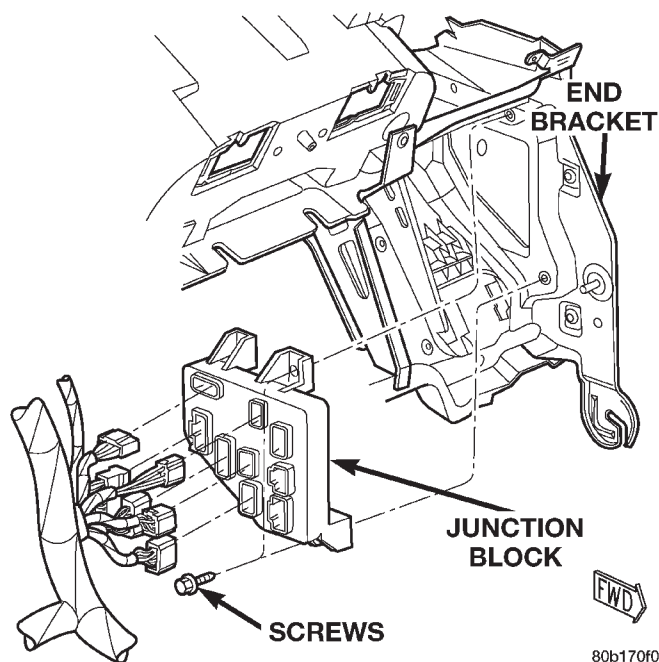
WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL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

(1) Disconnect and isolate the battery negative cable.

(2) Roll down, but do not remove the instrument panel. See Instrument Panel Assembly in the Removal and Installation section of this group for the procedures.

(3) 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 (Fig. 25).



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Fig. 25 Junction Block Remove/Install

REMOVAL AND INSTALLATION (Continued)

(4) Remove the three screws that secure the junction block to the left instrument panel end bracket.

(5) Remove the junction block from the left instrument panel end bracket.

(6) Reverse the removal procedures to install. Tighten the mounting screws to 4 N·m (35 in. lbs.).

INSTRUMENT PANEL TOP COVER

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(1) Disconnect and isolate the battery negative cable.

(2) 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.

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

(4) Remove the passenger side airbag module from the instrument panel. Refer to Airbag Module in the Removal and Installation section of Group 8M - Passive Restraint Systems for the procedures.

(5) Remove the screws that secure the perimeter of the instrument panel top cover to the instrument panel base, the defroster duct and the demister ducts.

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

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

